

Lise Tevik Løvseth  
Annet H. de Lange *Editors*

# Integrating the Organization of Health Services, Worker Wellbeing and Quality of Care

Towards Healthy Healthcare



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‘A Thousand Cranes’ (Chapt. 24. Photo: Pasi Alto)

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Editors

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Springer

*Editors*

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*Dedicated to my mother for her calm strength  
and father for focusing on abilities and  
possibilities*

*as young parents, in the aftermaths of his  
cerebral hemorrhage.*

*-Lise Tevik Løvseth*

*Dedicated to my family: my greatest source of  
inspiration and well-being*

*In loving memory of my father Henk de Lange  
and my sister Titia de Lange.*

*-Annet de Lange*

# **Foreword by Erik Gerritsen**

## **Healthy Healthcare: A Handbook Full of International Science as Well as Evidence-Based Practices**

The topic and handbook of “Healthy Healthcare” is timely as it is apparent that health systems in Europe and worldwide perform a difficult balancing act between increasing demands on healthcare services with restricted funds and resources available. While the workforce within nursing and the medical profession is declining, there is a steady increase in healthcare demands, and the health systems are under utmost pressure. In 2020, we even face a global crisis due to the onset of an unexpected pandemic COVID-19, resulting in increased work pressure and difficult challenges in organizing health care.

Healthcare systems need to cope with all these challenges that are caused by unexpected developments like COVID-19, but also other developments like an ageing population, an increasingly diverse population as a result of migration and conflict, the growth in chronic diseases, increased costs of newer drugs, new medical technologies, health inequalities and increased public expectations that go beyond medical problems.

Healthy Healthcare is a guide for anyone who is interested in healthcare practices and who wants to develop resource-efficient practices that benefits the workers and patients. Løvseth and De Lange’s perspective of Healthy Healthcare has the potential to advance healthcare practices and associated research and knowledge production that benefits global healthcare delivery. The interdisciplinary and national examples of healthcare practices provide us insights that help us to perform more interdisciplinary knowledge, focus on health care in the context and overcome fragmentation of knowledge. These powerful discoveries will not only stimulate local and national healthcare practices—they can also inspire us to foster community, systemic and social change.

The book is a must-read as it is one of the first books to create a comprehensive and interdisciplinary synthesis on how different parameters of workers’ health and performance actually affect the patients’ health and safety, and ultimately the delivery of

high-quality healthcare services. This book will therefore contribute significantly to new research as well as practices to create more healthy healthcare situations.

I can highly recommend the handbook for a great audience, ranging from students to healthcare professionals, but also governmental policymakers like myself.



The Hague, The Netherlands

Erik Gerritsen

**Erik Gerritsen** was appointed Secretary General at the Ministry of Health, Welfare and Sport in June 2015. During his many years of government service, he has gained experience in a wide range of fields. As Secretary General, he is not only in charge of the general governance of the Ministry, but he is also responsible for the Macroeconomic Issues and Labour Market Department and the Financial and Economic Affairs Department of the Ministry.

Mr. Gerritsen began his career at the Ministry of Finance. In 1996, he was appointed Director Financial and Economic Affairs of the Ministry of Foreign Affairs, where he became Deputy Secretary General in 1999. In 2000, he made the transition to the Municipality of Amsterdam. As City Manager of Amsterdam, he was the primary advisor to the College of Mayor and Alderpersons. He was ultimately responsible for services in the city and for representing the City of Amsterdam in various regional, national and European matters. From 2007 until 2009, he was “ambassador for knowledge” of the Municipality. In 2009, he became Chairman of the Amsterdam Regional Youth Protection Agency.

Erik Gerritsen was born in The Hague in 1962 and studied political science at the Erasmus University in Rotterdam and information management at the Amsterdam University. He also holds a Ph.D. in change management at the Amsterdam University.

# **Foreword by Jonas Gahr Støre**

## **How to Make a Difference. The Needed Integrative Perspective on Healthcare Services, Workers' Well-being and Quality of Care: Healthy Healthcare**

Løvseth and De Lange's perspective of Healthy Healthcare is breaking new ground. This book demonstrates the interplay between the three main pillars of health systems: the quality of care, the workforce and the organization of health care. In addition, the authors provide an outline of joint language and a framework of healthcare practice across disciplines and stakeholders of health care, ranging from patients, caregivers, workers, students, scholars to administrators and policymakers.

The design, management and financing of health systems affect employment and workers' performance, which in turn impacts the quality of care and safety for patients. The perspective of Healthy Healthcare is a guide for anyone who is interested in healthcare practices and who wants to develop resource-efficient practices that benefit both employees and patients.

Sound health policies require a clear understanding of the interplay between the key pillars of the health system. This book helps us define these key pillars, based on research and studies of evidence-based practice from a variety of local and national contexts. Coherent and updated knowledge is a key to guide and drive change in the healthcare sector. This book can be read as a handbook with a joint language available to all stakeholders in this essential sector of any society/from the health workers via the patients to administrators and policymakers.

Oslo, Norway

Jonas Gahr Støre

**Jonas Gahr Støre** is the leader of the Labour Party in Norway. During his many years of international and national government service, he has extensive experience in healthcare affairs and knowledge on the transitions of healthcare services for the last decades including developments, innovations and challenges of healthcare delivery. He was Executive Director at the World Health Organization from 1998 to 2000, Secretary General of the Norwegian Red Cross from 2003

to 2005, and Minister of Health and Care Services in Norway from 2012 to 2013. In addition, he has served an ambassador in the Norwegian Delegation to the United Nations Office at Geneva, Minister of Foreign Affairs from 2005 to 2012 and Deputy Chair of the Standing Committee on Finance and Economic Affairs from 2013 and is currently Member of the Standing Committee on Foreign Affairs and Defense in Norway.

Jonas Gahr Støre was born in Oslo in 1960. He studied political science at Institut d'Études Politiques de Paris from 1981 to 1985. He worked as adviser and later director general (1989–1997) at the Prime Minister Gro Harlem Brundtland's (later CEO of WHO) office.

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# About the Editors

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**Part I**

**System Based Perspective and Pillars  
of Healthy Healthcare**

# Chapter 1

## Integrating Organisation of Healthcare Services, Workers' Wellbeing, and Quality of Care: An Introduction to the System-Based Perspective of Healthy Healthcare



Lise Tevik Løvseth and Annet H. de Lange

**Abstract** The current chapter introduces *Healthy Healthcare*, an integrated perspective involving quality of care, workers' wellbeing, and organisation of healthcare services, for a system-based understanding of healthcare practice. Healthy Healthcare is based on three main conditions, herein termed pillars, of healthcare delivery: (a) quality of care; (b) workers' wellbeing; and (c) organisation of healthcare. This perspective is important to develop research approaches and to incorporate evidence-based practice and knowledge into Healthy Healthcare. The current volume provides perspectives on Healthy Healthcare based on research from different disciplines and different countries. This chapter introduces Healthy Healthcare with a brief presentation of the modern context of healthcare practice and a description and explanation of the system. It concludes with a brief outline of the volume's contents.

**Keywords** Healthcare · Healthcare practice · Healthcare organisation · Quality of care · Patient care · Healthcare worker · System perspective · Human resource management · Leadership · Labour economics · Logistics · Technology · Architecture · Learning and education · Reporting and control systems · Interventions

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## 1.1 Introduction

Countries all over the world aim to develop healthcare practices that provide resource-efficient delivery of high-quality healthcare services by competent, motivated, and efficient workforces. At the same time, healthcare organisations need to adapt to the changing characteristics of the societies and populations they serve. This is a difficult balancing act due to the increased complexity of responding to a steady increase in demand for healthcare services on the one hand, and a restricted supply of workers as a result of demographic changes on the other (Liu, Goryakin, Maeda, Bruckner, & Scheffler, 2017) (Illustration 1.1).

Healthcare systems must respond to unexpected developments, such as global pandemics or warfare, that may increase patient numbers. In addition, an ageing population, a growth in chronic diseases, higher costs of newer drugs, the changing impact of technological innovations, personalised medicine, revamped payment and public funding models, health inequalities, and increased public expectations challenge healthcare systems to go beyond traditional medical problems. These issues affect their business and financial performance, quality of care, workforces, and organisation. While healthcare spending in Europe is stable at approximately 10% of GDP on average, the proportion of income spent on health in virtually all developed countries is progressively increasing. Global healthcare spending was projected to rise from USD 7.7 trillion in 2017 to USD 10 trillion by 2020, and to continue

**Illustration 1.1** Healthy Healthcare



rising thereafter (World Bank, 2020; Xu, Soucat, Kutzin, & Brindley, 2018). This is not financially sustainable.

Addressing the complexity of these challenges has led to significant improvements in healthcare over the last 30 years. For instance, innovative digital healthcare technology as a part of e-health strategies has been introduced in several countries (European Commission, 2010, 2012). This can provide a solution to growing healthcare expenses through greater cost efficiency and economic productivity, but technological and scientific developments first must be integrated into healthcare practice. Indeed, while many improvements have led to more effective and efficient forms of care, they can result in additional and increasing costs, and may sometimes work to the detriment of quality care because the human factor is not sufficiently accounted for.

When we seek to examine relationships between concepts in healthcare practice, we find that some are stronger than others. It is rather surprising that concepts related to healthcare workers are not recognised when the organisation of healthcare and quality of care are studied. Their incorporation is a central tenet of the current system-based perspective of Healthy Healthcare.

## 1.2 Why is Healthy Healthcare Important?

Healthcare workers make up one of the largest segments of labour markets all over the world. In Europe they account for 10% of the total workforce. They are the highest cost drivers, and they are responsible for implementing and administrating all developments in healthcare. Accordingly, it is imperative to recruit and retain competent workers if a Healthy Healthcare system is to be created. Not only do there seem to be insufficient numbers available with an estimated net shortage of 15 million health workers by 2030 (Liu et al., 2017; Scheffler et al., 2018); what is also important is the ability of those who are recruited to deliver a high-quality performance. As we will see throughout this volume, healthcare practice affects working conditions that in turn impact the enlistment, retention, health, and efficiency of workers. The characteristics of the workforce affect quality of care, both directly and indirectly, along with the organisation of healthcare practices designed to achieve resource efficiency. Healthy Healthcare proposes a system-based theoretical lens through which the complexity of healthcare practice can be studied and understood.

The focus on healthcare workers as a necessary part of the relationship between organisations and quality of care is not new in the literature. In their publication in *The Lancet* on physician wellness, Wallace, Lemaire, and Ghali (2009) stated that worker wellbeing is an important quality indicator in the delivery of high-quality care. They demonstrated that the organisation of healthcare affects physician performance and health and in turn medical treatment, patient safety, and quality of care both positively and negatively. Similarly, Bodenheimer and Sinsky (2014) argued that their quadruple aim approach in enhancing patient experience, improving population health, reducing costs and improving the work life of healthcare providers,

can optimise health system performance. They emphasised that it is imperative to focus on the care of healthcare providers, just as healthcare organisations focus on patient experience and cost reduction. The term Healthy Healthcare was applied in Parkinson's (2018) systematic review, which stressed the importance of the health of workers and their families as a competitive advantage, as healthcare organisations strive to deliver resource efficient high-quality care to patients.

Neither is the application of system theories to healthcare new. It has been used to identify important concepts and tools for responding to the challenges of healthcare and to translate evidence-based knowledge into practice (Chandler, Rycroft-Malone, Hawkes, & Noyes, 2016; Kannampallil, Schauer, Cohen, & Patel, 2011; Sturmberg, 2018). Different types of system theories have been applied when different practices and phenomena in healthcare have been studied, whether these be organisations (Plsek & Greenhalgh, 2001), labour management (Montgomery & Oladapo, 2014), continuity of care (Sturmberg, 2000), decision making (Clancy & Delaney, 2005), or mental health and somatic care (Raman et al., 2016). However, no system-based perspective on healthcare has simultaneously considered the main concepts of quality of care, worker, and organisation as a response to the current challenges in healthcare delivery.

Existing research provides us with a good deal of knowledge of the pillars of Healthy Healthcare. There have been systematic reviews that aim to connect the dots between single studies of one or two of the pillars. Subject areas include improving the quality of somatic (Pannick, Beveridge, Wachter, & Sevdalis, 2014; Scott, Poole, & Jayathissa, 2008) and psychiatric care (Franx et al., 2008), hospital wards and nursing homes (Anderson, Bird, MacPherson, & Blair, 2016; Shin & Bae, 2012), and the interaction between healthcare financing and workers, patients, and quality of care (Giuffrida et al., 2000; Gosden et al., 2000; Scott et al., 2011).

However, we lack integrative studies that consider all three pillars of Healthy Healthcare or compare different organisational practices, their impact on workforces, and their individual or joint effects on the quality of healthcare services. The main reasons for this derive from the nature of current research initiatives.

- Existing research efforts have contributed to partial solutions only, because they focus on either one or two of the pillars of Healthy Healthcare. It is important to gather data and carry out studies that encompass all three. This will help interested parties to make better predictions and to model how changes in one pillar affect the others.
- There is a lack of consideration of the complex and interdependent relationships between the three pillars of Healthy Healthcare.
- There is also a lack of interdisciplinarity and cooperation between research fields and discipline; thus, scholars in the social sciences and humanities, medicine, health, policy, economics, and technology undertake their research independently, without coordinating or integrating their findings.
- Problems are often encountered when attempts are made to incorporate research findings into healthcare practice, even though this is vital if resource efficient high-quality healthcare performed by an efficient and motivated workforce is to be provided.

A lack of coherent knowledge of evidence-based data and practice means that stakeholders and scholars do not have suitable tools to conduct research or to monitor performance in respect of Healthy Healthcare. What knowledge there is tends to be fragmented and even obsolete, and this inhibits readiness for change.

Healthy Healthcare implies that the design, management, and financing of health systems affects employment and workers’ performance, which in turn impacts the quality of care, both directly and indirectly. Ultimately, an interdisciplinary system-based perspective that prioritises the interrelationship between the quality of care, the staff, and the way these are organised will lead to a more resource-efficient delivery of high-quality healthcare services performed by motivated, healthy, and skilled workers for the benefit of patients. We call this perspective—and its associated system—Healthy Healthcare.

### **1.3 A Multilevel and Interdisciplinary System-Based Perspective of Healthy Healthcare**

It is important to focus on the complex but interdependent relationship between the three pillars in Healthy Healthcare. These have their origins in interdisciplinary evidence-based research and practice. This is the only way to identify synergy, emergent processes, and to establish how change in one part of the system may affect others, or the entire system itself. The goal of Healthy Healthcare is to model the dynamics, constraints, and conditions of the three pillars and to elucidate the principles that underpin them, taking various disciplinary perspectives that consider the context in which the healthcare system operates. Appropriate suggestions can then made on how to plan interdisciplinary empirical multilevel studies and practices that integrate all three pillars of Healthy Healthcare.

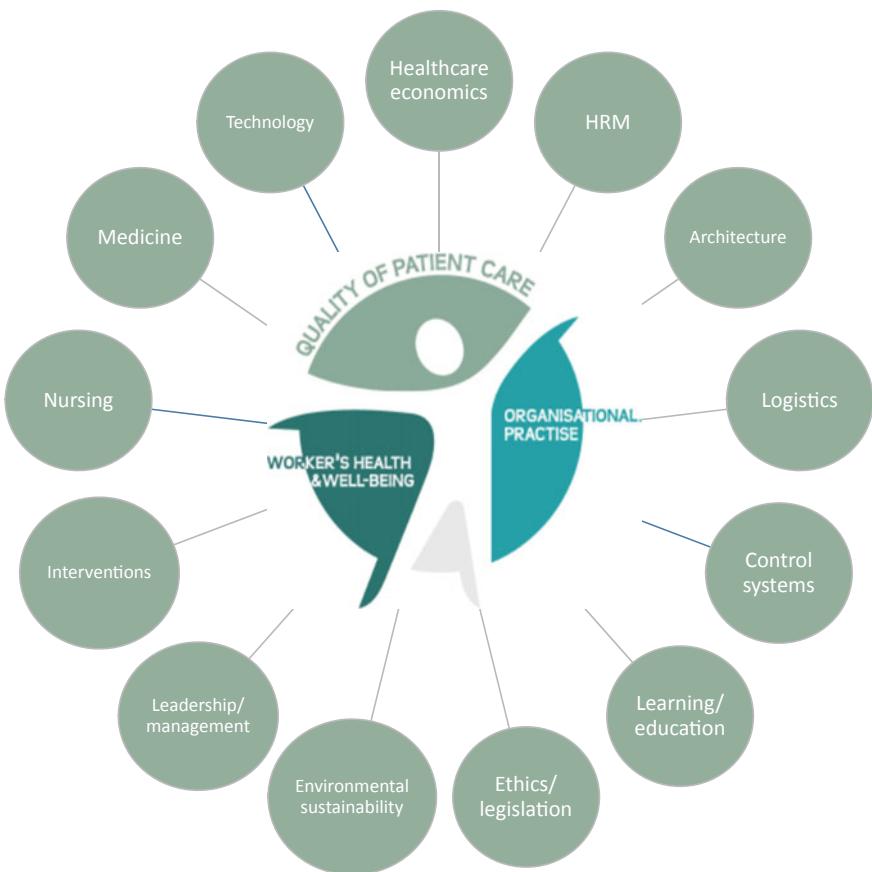
In doing so, we propose a set of conditions that needs to be considered in terms of an interdisciplinary focus on all three pillars of healthcare, study conditions, and translation of knowledge into Healthy Healthcare practice.

#### ***1.3.1 Interdisciplinary Focus of Healthy Healthcare***

The complexity and challenges of the delivery of healthcare require a continuous interdisciplinary focus on the system as a whole. Complexity is defined as the interrelatedness of components of a system (Simon, 1962), or the influence of system components on each other. Complexity is relative; as the number of concepts relating to a system grows, so does the number of unique relations between them. It is imperative to take a broad disciplinary perspective. Presently, the focus is on concepts of concern to the individual pillars of Healthy Healthcare, but it is important to incorporate those from the other two, whether through the examination of a concept in a

clinical study or a global phenomenon such as the effect of healthcare financing on workforce mobility. It is time to consider and realise the interrelatedness between the important components of all three pillars of Healthy Healthcare and of healthcare in general.

When conducting research into specific groups of patients, introducing a new device, or carrying out a clinical study within a department, clinicians or technologists often focus on the benefits of that specific solution in terms of one main outcome within one pillar. It is important to demonstrate how modifications of a concept that is associated with one pillar affect the others. For instance, architectural solutions that benefit patients may fail to support efficient workflow and impose higher demands on workers. This in turn affects resources in the organisation. Another example is the possibility that producing guidelines or adjusting clinical procedures may backfire, resulting in increased workload and reduced work engagement, greater administrative burdens, less time for healthcare delivery, greater complexity in procedures, or



**Fig. 1.1** Interdisciplinary perspectives on Healthy Healthcare

shortfalls in the professional competence required for the new platform or clinical treatment (Fig. 1.1).

### ***1.3.2 Study Conditions***

Healthy Healthcare can be perceived as a challenging practical mission. A system-based perspective does not mean that a complex system cannot be studied. It does imply that the focus or level of detail in studying certain parts of healthcare practice, regardless of discipline, needs to accommodate the interrelations between the three pillars of Healthy Healthcare. Regardless of the problem that needs to be solved, it must be specified in such a manner that the substantial associated interrelations between each pillar are acknowledged. This will involve taking into consideration varied system conditions, unspoken relationships, and the context of the concept under investigation. This is important, as some relationships in healthcare appear only in particular circumstances. For example, workflows in an emergency department can change when there is a sudden increase of patients during extraordinary circumstances. The 2020 COVID-19 pandemic is a case in point (World Health Organization, 2020a, 2020b). In such situations, new dependencies arise; some activities decrease such as university hospital teaching, while the need for more resources for clinical support increases. This is an example of how quality of care worker stress and organisation of services are interrelated. So, despite having apparent validity, many isolated safety, clinical, and quality improvement initiatives lack hard evidence of their effectiveness in real-world settings (Cullen et al., 1995; Frankel, 2011; Frankel, Gandhi, & Bates, 2003; Reilly et al., 2019; Shojania, Wald, & Gross, 2002) because they fail to incorporate system-based thinking such as Healthy Healthcare. Depending on the problem being studied, it is important to consider varied system conditions from the perspective of the three pillars and the relationships those conditions can expose.

### ***1.3.3 Translating Knowledge into Healthy Healthcare Practice***

Efficient translation of knowledge into Healthy Healthcare is a requirement of research, education, and practical interventions. Researchers from many disciplines are doing an exceptional job in making discoveries and generating new knowledge with the potential to improve health and develop healthcare practice. This research is most often published in academic journals and read primarily by peers. It is not placed into the hands of policy makers, healthcare managers, practitioners, the private sector, or the public, to be translated into action. It is important to initiate more active collaboration between scholars and these groups in all parts of the research process.

Studies whose research questions are shaped by their involvement and informed by Healthy Healthcare will most likely create more relevant problems for clinics, leaders, patients, or caregivers. Their engagement would also benefit decisions about methodology, data collection, development of instruments, interpretation of findings, and dissemination and implementation of the research results. Such evidence-based practice and research will help to generate knowledge that is relevant to and can be applied by stakeholders. This process is known variously as collaborative research, action-oriented research, and co-production of knowledge. Users of this research include investigators from different disciplines, collaboration teams or countries, as well as policy and decision makers, clinicians, and the general public.

In addition, involving students in research helps both staff and students to work together to advance each other's learning and education (Healey, Flint, & Harrington, 2014; Seymour, Hunter, Laursen, & Deantoni, 2004). Involving students as future healthcare workers in interdisciplinary Healthy Healthcare research will increase the uptake of system-based knowledge among future healthcare professionals and its subsequent incorporation into healthcare practice.

In terms of organisational interventions, it is important to consider what works for whom and under what circumstances, as one size does not fit all. Chapter 14 looks at this subject. Successful conversion of knowledge into practice requires bottom-up intervention where workers participate actively in developing, designing, and implementing change with leaders. Both groups will experience immediate benefit as they address concerns in need of resolution and as they develop Healthy Healthcare systems.

## 1.4 Concepts and Contents

This volume is divided into three sections. Part I introduces each pillar of Healthy Healthcare: (a) quality of care; (b) workers health; and (c) organisation of health care. The origins, complexity, theoretical foundations, and related concepts and research findings of each are discussed. Part II presents Healthy Healthcare from different disciplinary perspectives. Authors from different disciplines identify the pillar(s) that they most often apply in their evidence-based healthcare research and practice. They indicate the ability, or inability, of those working within their respective discipline to include the other pillars of Healthy Healthcare in research and practice. They point out any gaps and make recommendations for introducing a system-based Healthy Healthcare perspective. Part III presents examples of Healthy Healthcare in organisations, research, and practice drawn from different contexts and levels across several countries.

Part I includes a chapter on each of the pillars as the main conditions for a system-based perspective of Healthy Healthcare. The complex and multifaceted nature of quality of care is fully covered in Chap. 2. The quality of care pillar comprises a variety of concepts related to a safe, effective, timely, efficient, equitable, and people-centred provision (World Health Organization, 2015) that achieves desired health outcomes

and that is consistent with current professional knowledge (Institute of Medicine, 1991). Chapter 3, which looks at worker wellbeing from an evidence-based and theoretical perspective, examines the factors that contribute to the motivation and health of workers. The subject of Chap. 4 is the organisation of healthcare services. A health system “consists of all organisations, people and actions (inside and outside the healthcare sector) whose primary intent is to promote, restore or maintain health” (World Health Organization, 2007). The goal of a Healthy Healthcare system is ‘to improve health and health equity in ways that are responsive, financially fair, and that make the best, or most efficient, use of available resources’ (World Health Organization, 2007).

Part II synthesises evidence-based practice and research on the links between quality of care, workers’ health and wellbeing, and the organisation of health services from a discipline-based perspective. The chapters critically examine disciplinary practices and review research findings to identify gaps in both methodology and content, and make suggestions about how to apply a system-based perspective of Healthy Healthcare to human resource management (Chap. 5), leadership (Chap. 6), labour economics (Chap. 7), logistics (Chap. 8), technology (Chap. 9), workers’ health (Chap. 10), architecture (Chap. 11), learning and education (Chap. 12), and reporting and control systems in healthcare (Chap. 13). Chapter 14 presents a model of the implementation of evidence-based practice of Healthy Healthcare within healthcare organisations. Stakeholders can identify key issues when setting up interventions and investigate their impact from a system-based Healthy Healthcare perspective.

The discipline-based approaches in Part II demonstrate that generating knowledge about a concept is usually achieved by investigating its relevance to patient and worker outcomes and organisational factors, respectively. This is inadequate. Examining only one or two of the three pillars may mean that the potential negative impact on the third pillar is missed, and that in some respects certain concepts can apparently contradict each other. For instance, in situations when patient confidentiality negatively affects healthcare professionals wellbeing (Løvseth, 2011; Løvseth, Fridner, Jónsdóttir, Marini, & Linaker, 2013), or the simultaneously positive and negative effects of sickness presenteeism on the organisation, worker and quality of care (Giæver, Lohman-Lafrenz, & Løvseth, 2016). Another example is a change in organisational practice as a result of technological innovations or work procedures might have a short-term positive effect on patient care and economic resources (Halsteinli, Karterud, & Pedersen, 2008) but a negative effect on workers’ efficiency, organisational commitment, and health. This might reduce the quality of patient care in the long run (Bjork, Bejerot, Jacobshagen, & Harenstam, 2013; Virtanen et al., 2010). In addition, medical errors, the spread of contagious diseases from healthcare workers to patients, or a failure to administrate digital platforms can strongly affect healthcare, for example in terms of potentially negative economic consequences and a deterioration in service provision (Arefian, Vogel, Kwetkat, & Hartmann 2016). Many of these issues derive from known human reactions to systemic influencers within organisations.

Accordingly, each chapter in Part II shows how individual disciplines can move forward by generating evidence-based practice and knowledge concerning different concepts from the perspective of one pillar and simultaneously relate them to the other two. Each perspective influences and contributes to an evidence-based model of Healthy Healthcare. These disciplinary system-based Healthy Healthcare viewpoints can lead to improvements in measurement, research, and implementation, and quality of care, workers' wellbeing, and organisation.

Part III presents examples of Healthy Healthcare projects from different countries. These chapters provide insights into conceptual pathways within or between the three pillars of Healthy Healthcare and their outcomes at micro, meso, and macro levels—thereby demonstrating the contextual sensitivity of this system-based perspective. They identify potentially neglected relationships and show how important organisational, sectoral, societal, national, and international factors influence all three pillars of Healthy Healthcare.

## References

- Anderson, K., Bird, M., MacPherson, S., & Blair, A. (2016). How do staff influence the quality of long-term dementia care and the lives of residents? A systematic review of the evidence. *International Psychogeriatrics*, 28(8), 1263–1281. <https://doi.org/10.1017/s1041610216000570>
- Arefian, H., Vogel, M., Kwetkat, A., & Hartmann, M. (2016). Economic evaluation of interventions for prevention of hospital acquired infections: A systematic review. *PLoS ONE*, 11(1), e0146381. <https://doi.org/10.1371/journal.pone.0146381>
- Bjork, L., Bejerot, E., Jacobshagen, N., & Harenstam, A. (2013). I shouldn't have to do this: Illegitimate tasks as a stressor in relation to organisational control and resource deficits. *Work and Stress*, 27(3), 262–277. <https://doi.org/10.1080/02678373.2013.818291>
- Bodenheimer, T., & Sinsky, C. (2014). From triple to quadruple aim: Care of the patient requires care of the provider. *Annals of Family Medicine*, 12(6), 573–576. <https://doi.org/10.1370/afm.1713>
- Chandler, J., Rycroft-Malone, J., Hawkes, C., & Noyes, J. (2016). Application of simplified complexity theory concepts for healthcare social systems to explain the implementation of evidence into practice. *Journal of Advanced Nursing*, 72(2), 461–480. <https://doi.org/10.1111/jan.12815>
- Clancy, T. R., & Delaney, C. W. (2005). Complex nursing systems. *Journal of Nursing Management*, 13(3), 192–201. <https://doi.org/10.1111/j.1365-2834.2004.00518.x>
- Cullen, D. J., Bates, D. W., Small, S. D., Cooper, J. B., Nemeskal, A. R., & Leape, L. L. (1995). The incident reporting system does not detect adverse drug events—A problem for quality improvement. *Joint Commission Journal on Quality Improvement*, 21(10), 541–548. [https://doi.org/10.1016/S1070-3241\(16\)30180-8](https://doi.org/10.1016/S1070-3241(16)30180-8)
- European Commission. (2010). *EU eHealth interoperability roadmap. Final European progress report*. Brussels, Belgium: European Commission.
- European Commission. (2012). *eHealth action plan 2012–2020—Innovative healthcare for the 21st century*. Brussels, Belgium: European Commission.
- Frankel, A. S. (2011). Patient safety organisations are step 1; data sharing is step 2. *Virtual Mentor*, 13(9), 642–646. <https://doi.org/10.1001/virtualmentor.2011.13.9.pforl-1109>
- Frankel, A., Gandhi, T. K., & Bates, D. W. (2003). Improving patient safety across a large integrated health care delivery system. *International Journal for Quality in Health Care*, 15(Suppl 1), 31–40. <https://doi.org/10.1093/intqhc/mzg075>

- Franx, G., Kroon, H., Grimshaw, J., Drake, R., Grol, R., & Wensing, M. (2008). Organisational change to transfer knowledge and improve quality and outcomes of care for patients with severe mental illness: A systematic overview of reviews. *Canadian Journal of Psychiatry—Revue Canadienne De Psychiatrie*, 53(5), 294–305.
- Giuffrida, A., Gosden, T., Forland, F., Kristiansen, I. S., Sergison, M., Leese, B., & Sutton, M. (2000). Target payments in primary care: Effects on professional practice and health care outcomes. *Cochrane Database of Systematic Reviews* (3). <https://doi.org/10.1002/14651858.CD000531>
- Giæver, F., Lohman-Lafrenz, S., & Løvseth, L. T. (2016). Why hospital physicians attend work while ill? The spiraling effect of positive and negative factors. *BMC Health Services Research*, 16, 548. <https://doi.org/10.1186/s12913-016-1802-y>
- Gosden, T., Forland, F., Kristiansen, I. S., Sutton, M., Leese, B., Giuffrida, A., & Pedersen, L. (2000). Capitation, salary, fee-for-service and mixed systems of payment: Effects on the behaviour of primary care physicians. *Cochrane Database of Systematic Reviews* (3). <https://doi.org/10.1002/14651858.CD002215>
- Halsteinli, V., Karterud, S., & Pedersen, G. (2008). When costs count: The impact of staff size, skill mix and treatment intensity on patient outcome for psychotherapeutic day treatment programmes. *Health Policy*, 86(2–3), 255–265. <https://doi.org/10.1016/j.healthpol.2007.10.013>
- Healey, M., Flint, A., & Harrington, K. (2014). Engagement through partnership: Students as partners in learning and teaching in higher education. *International Journal for Academic Development*, 21(1), 84–90. <https://doi.org/10.1080/1360144X.2016.1124966>
- Institute of Medicine. (1991). *Medicare: New directions in quality assurance proceedings*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/1768>
- Kannampallil, T. G., Schauer, G. F., Cohen, T., & Patel, V. L. (2011). Considering complexity in healthcare systems. *Journal of Biomedical Informatics*, 44(6), 943–947. <https://doi.org/10.1016/j.jbi.2011.06.006>
- Liu, J. X., Goryakin, Y., Maeda, A., Bruckner, T., & Scheffler, R. (2017). Global health workforce labor market projections for 2030. *Human Resources for Health*, 15(1), 11. <https://doi.org/10.1186/s12960-017-0187-2>
- Løvseth, L. T. (2011). *The subjective burden of confidentiality*. Faculty of Medicine, NTNU.
- Løvseth, L. T., Fridner, A., Jónsdóttir, L. S., Marini, M., & Linaker, O. M. (2013). Associations between confidentiality requirements, support seeking and burnout among university hospital physicians in Norway, Sweden, Iceland and Italy (the HOUPE study). *Stress & Health*. <https://doi.org/10.1002/smj.2479>
- Montgomery, E., & Oladapo, V. (2014). Talent management vulnerability in global healthcare value chains: A general systems theory perspective. *Journal of Business Studies Quarterly*, 5(4), 17.
- Pannick, S., Beveridge, I., Wachter, R. M., & Sevdalis, N. (2014). Improving the quality and safety of care on the medical ward: A review and synthesis of the evidence base. *European Journal of Internal Medicine*, 25(10), 874–887. <https://doi.org/10.1016/j.ejm.2014.10.013>
- Parkinson, M. D. (2018). The healthy health care workplace: A competitive advantage. *Current Cardiology Reports*, 20(10), 98. <https://doi.org/10.1007/s11886-018-1042-3>
- Plesek, P. E., & Greenhalgh, T. (2001). Complexity science: The challenge of complexity in health care. *British Medical Journal*, 323(7313), 625–628. <https://doi.org/10.1136/bmj.323.7313.625>
- Raman, J., Leveson, N., Samost, A. L., Dobrilovic, N., Oldham, M., Dekker, S., & Finkelstein, S. (2016). When a checklist is not enough: How to improve them and what else is needed. *Journal of Thoracic and Cardiovascular Surgery*, 152(2), 585–592. <https://doi.org/10.1016/j.jtcvs.2016.01.022>
- Reilly, C. A., Cullen, S. W., Watts, B. V., Mills, P. D., Paull, D. E., & Marcus, S. C. (2019). How well do incident reporting systems work on inpatient psychiatric units? *Joint Commission Journal on Quality and Patient Safety*, 45(1), 63–69. <https://doi.org/10.1016/j.jcjq.2018.05.002>
- Scheffler, R. M., Campbell, J., Cometto, G., Maeda, A., Liu, J., Bruckner, T. A., Arnold, D. A. & Evans, T. (2018). Forecasting imbalances in the global health labor market and devising policy responses. *Human Resources for Health*, 16(1), 5. <https://doi.org/10.1186/s12960-017-0264-6>

- Scott, I. A., Poole, P. J., & Jayathissa, S. (2008). Improving quality and safety of hospital care: A reappraisal and an agenda for clinically relevant reform. *Internal Medicine Journal*, 38(1), 44–55. <https://doi.org/10.1111/j.1445-5994.2007.01456.x>
- Scott, A., Sivey, P., Ouakrim, D. A., Willenberg, L., Naccarella, L., Furler, J., & Young, D. (2011). The effect of financial incentives on the quality of health care provided by primary care physicians. *Cochrane Database of Systematic Reviews* (9). <https://doi.org/10.1002/14651858.CD008451.pub2>
- Seymour, E., Hunter, A. B., Laursen, S. L., & Deantoni, T. (2004). Establishing the benefits of research experiences for undergraduates in the sciences: First findings from a three-year study. *Science Education*, 88(4), 493–534. <https://doi.org/10.1002/sce.10131>
- Shin, J. H., & Bae, S. H. (2012). Nurse staffing, quality of care, and quality of life in U.S. nursing homes, 1996–2011: An integrative review. *Journal of Gerontological Nursing*, 38(12), 46–53. <https://doi.org/10.3928/00989134-20121106-04>
- Shojania, K. G., Wald, H., & Gross, R. (2002). Understanding medical error and improving patient safety in the inpatient setting. *Medical Clinics of North America*, 86(4), 847–867. [https://doi.org/10.1016/S0025-7125\(02\)00016-0](https://doi.org/10.1016/S0025-7125(02)00016-0)
- Simon, H. (1962). The architecture of complexity. *Proceedings of the American Philosophical Society*, 106(6), 467–482.
- Sturmberg, J. (2000). Continuity of care: Towards a definition based on experiences of practising GPs. *Family Practice*, 17(1), 16–20. <https://doi.org/10.1093/fampra/17.1.16>
- Sturmberg, J. P. (2018). Embracing complexity in health and health care—Translating a way of thinking into a way of acting. *Journal of Evaluation in Clinical Practice*, 24(3), 598–599. <https://doi.org/10.1111/jep.12935>
- Virtanen, M., Batty, G. D., Pentti, J., Vahtera, J., Oksanen, T., Tuisku, K., & Kivimaki, M. (2010). Patient overcrowding in hospital wards as a predictor of diagnosis-specific mental disorders among staff: A 2-year prospective cohort study. *Journal of Clinical Psychiatry*, 71(10), 1308–1312. <https://doi.org/10.4088/JCP.09m05238blu>
- Wallace, J. E., Lemaire, J. B., & Ghali, W. A. (2009). Physician wellness: A missing quality indicator. *The Lancet*, 374(9702), 1714–1721. [https://doi.org/10.1016/S0140-6736\(09\)61424-0](https://doi.org/10.1016/S0140-6736(09)61424-0)
- World Bank. (2020). *Current health expenditure* [Data file]. World Health Organization Global Health Expenditure Database.
- World Health Organization. (2007). *Everybody's business—Strengthening health systems to improve health outcomes: WHO's framework for action*. Geneva, Switzerland: World Health Organization.
- World Health Organization. (2015). *WHO global strategy on people-centred and integrated health services. Interim report*. Geneva, Switzerland: World Health Organization.
- World Health Organization. (2020a). *Global research on coronavirus disease (COVID-19)*. Retrieved from <https://www.who.int>
- World Health Organization. (2020b). *Mental health and psychosocial considerations during COVID-19 outbreak* [Press release]. Retrieved from <https://www.who.int>
- Xu, K., Soucat, A., Kutzin, J., Brindley, C., Maele, N. V., Toure, et. al. (2018). *Public spending on health. A closer look at global trends*. Geneva, Switzerland: World Health Organization.

# Chapter 2

## Quality of Care



Lise Tevik Løvseth

**Abstract** The current chapter provides an overview of the variety of concepts and practices within the pillar quality of care in Healthy Healthcare through a historical timeline. The developments and concepts include guidelines, innovations in medical research and technology, public health programmes, standards for professional training and credentials, healthcare financing, practice standards for the administration of healthcare, treatment procedures, standards for knowledge production, ethics, social context of healthcare practice, patient delivery, patient-centred care and environmentally sustainable healthcare. These concepts provide different perspectives on quality of care that scholars and stakeholders can apply as a starting point to study healthcare through the lens of quality of care. The last part of the chapter targets concerns and the relevance of approaching Healthy Healthcare from the perspective of quality of care.

**Keywords** Quality of care · Guidelines · Environmental sustainability · Innovation · Healthcare technology · Healthcare financing · Public health programs · Ethics · Patient · Patient-centred care · Responsiveness · Documentation · Care routines · Innovations in medical research and technology · And professional training and credentials · Medical guidelines · Public health programmes · Testing protocols · Healthcare financing · Healthcare administration · Healthcare systems · Symptom criteria · Treatment procedures · Index of quality of care · Health promotion · Diversity · Ethics · Knowledge production · Social context of healthcare · Patient perspective · Digital healthcare technology · Architecture · Workers health · Human resource management · Interventions

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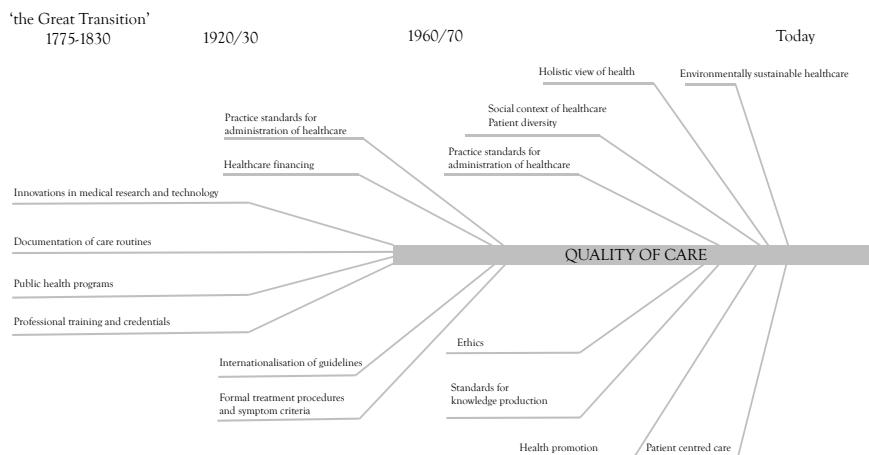
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## 2.1 Introduction

Quality of care is the most complex and multi-layered pillar in the trinity of Healthy Healthcare. It has been defined in different ways, and experts have struggled for decades to formulate a single concise, meaningful and generally applicable definition. After collecting and considering over one hundred definitions, the Institute of Medicine (US) Committee and Lohr (1990) agreed upon a frequently cited definition of quality as “the degree to which health care services provided to individuals and patient populations improve desired health outcomes and are consistent with current professional knowledge” (p. 4), adopted by the World Health Organization (WHO). However, the Healthy Healthcare paradigm includes a broader perspective of health concordant with the WHO (1986), including mental, physical and social wellbeing. In order to achieve this, healthcare must be safe, effective, timely, efficient, equitable and people-centred (Institute of Medicine & Lohr, 1990; World Health Organization, 2015).

In contrast to the two pillars described in Chaps. 3 and 4 on workers’ health and the organization of healthcare respectively, quality of care holds less theoretical content as a basis for the development of evidence-based practice and knowledge. It rather derives from many simultaneously historical processes and the development of practices that together create a multifaceted knowledge base containing different global and situation-specific definitions, concepts, and clinical and healthcare practice guidelines to ensure high quality of care across the globe. We believe the simplest way to present the complexity and various concepts of quality of care and its influence on healthcare practices is by presenting and discussing a historical timeline (see Fig. 2.1). Some of the introduced concepts are covered more fully in other chapters in this volume.



**Fig. 2.1** Quality of care timeline

## 2.2 Concepts of Quality of Care Introduced Over Time

In this section of the chapter, we learn that quality of care in the historical context started with a series of seemingly unrelated incidents and developments two centuries ago. These developments and concepts of quality of care derived from historical periods and events, advances in healthcare practice, education, research breakthroughs, technological innovations and organization of services. Led by increased healthcare financing and increased complexity in the delivery of healthcare services, quality improvement over time shifted from healthcare professionals' individual responsibility, manifested by the Hippocratic Oath, to systems thinking, particularly in the 1960s–1970s. In the 1990s, quality of care was heavily influenced by three main characteristics: (1) increased complexity of healthcare delivery; (2) increased spectrum of diagnoses and innovations in treatment, and consequently more responsibility for healthcare delivery; and (3) more economic spending on healthcare. Today, if you search the literature for 'quality of care', the results will divide into two main categories. One category focuses on quality indicators drawn up by professionals for specific diagnoses or groups of patients, the other on the broader concept of quality in healthcare provisions derived from different stakeholder practices and organization of healthcare service delivery.

Together, social and scientific developments have contributed to disregard obsolete knowledge and build up a joint knowledge base that affects how we organize today's healthcare services, care delivery and workforce diversity. The common denominator of all these activities the past 150 years is one main principle that begins and ends at the bedside: keeping the patient safe from harm, and the defining principle of Florence Nightingales' work: for the sick, it is important to have the best.

### 2.2.1 *Quality of Care Concepts Up to 1920. Documentation, Care Routines, Innovations in Medical Research and Technology, and Professional Training and Credentials*

So, where do we start our brief summary of the history of quality of care? We could start in Babylon 2100 BCE, with the first regulatory mindset in terms of quality of care, or bad care, by the code of Hammurabi: to maintain a minimum standard of care, the penalty for surgical malpractice was to amputate the hands of the surgeon; or perhaps 1500 years later with 'the father of medicine' on the Greek island of Kos and the Hippocratic Oath, with its main article *primum non nocere* (first do no harm). However, we decide to start during the Great Transition of 1775–1830 that gradually produced 'professional' scientists and disciplinary communities in many fields of knowledge. More specifically, our tipping point on the origins and development of quality of care starts in Florence, Italy, in the nineteenth century.

Tipping points in history often depend heavily on people with a set of rare social gifts (Gladwell, 2002). ‘The Lady with the Lamp’, Florence Nightingale (1820–1910) was such a person. All the practices to systematize quality measurement can be traced back to Nightingale, who was one of the first in Europe to grasp the principles of the new science of statistics and apply them to hospitals’ quality improvement (Keith, 1988; Kopf, 1978). Nightingale was very clear: if a patient died overnight who was not supposed to die, something was not seen, some clue had been missed, and the responsibility lay at the feet of the caregiver, whether nurse or physician. Basically, at the end of every missed detail or every error was the life and wellbeing of the patient. So, quality of care can be built on her assumptions. In fact, there was no separation or distinction between good practice and keeping the patient safe from harm, resulting in a fall in the mortality rate within six months of her arrival among British troops that fought in the Crimean war from 42.7 to 2.2% (Nightingale, 1863). Her sentiments not only addressed the medical needs of patients but stressed that care must also focus on other factors affecting patient wellbeing. The latter is reflected in the WHO constitution (World Health Organization, 1947) as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”.

Accordingly, quality of healthcare focuses on all these aspects of health in the delivery of healthcare and patient interaction with the healthcare system. Nightingale’s famous words (Nightingale, 1860, p. 53) “The amount of relief and comfort experienced by the sick after the skin has been carefully washed and dried, is one of the commonest observations made at a sick bed” echo the WHO’s responsiveness dimension of dignity, attention, quality of basic amenities and support in quality of care. Her focus that “the object and colour in the materials around us actually have a physical effect on us, on how we feel” or that “it is the unqualified result of all my experience with the sick that, second only to their need of fresh air, is their need of light. That, after a close room, what hurts them most is a dark room and that it is not only light but direct sunlight they want” (Nightingale, 1860, p. 48) reflects the quality of healthcare facilities and that architecture and design has a profound effect on our wellbeing and patient health, as described in Chap. 11, 22, 23 and 24 on architecture. Finally, her systematic documentation of factors that affected changes in health and wellbeing among patients under her supervision was the precursor for today’s quality systems and guidelines founded in evidence-based practice and research.

Until the 1920s, innovations in research and, technology emerged simultaneously with increased formal guidelines for healthcare services and formal standards for training and credentials for medical students and practitioners. These concepts emerged in the 1920s and have developed since as part of quality of care.

### 2.2.1.1 Documentation of Care Routines and Medical Guidelines

The new era of routines and documentation to improve the quality of healthcare derives from fragmented but related events, along with a period of warfare and

pandemic outbreaks in the US and Europe. Florence Nightingale's sanitary improvements and documentation of change were most likely influenced Dr. Ignaz Semmelweis' work, that linked handwashing and cleanliness in Vienna's maternity wards in the 1840s (Semmelweis, 1983). An ocean away, as the American Civil War began in 1861, the Sanitary Commission was founded to promote clean and healthy conditions in the Union camps and hospitals. Dr. Elizabeth Blackwell, who worked with Florence Nightingale in England and was the first female to graduate from medical school in the US, assisted the civilian volunteer, Clara Barton, to supervise nursing care to soldiers. The work of Semmelweis in the nineteenth century showed the importance of antiseptic procedures to prevent infections (Semmelweis, 1983). Today, many healthcare organizations still pay too little attention to washing and disinfecting hands or tools before and after patient interaction (Erasmus et al., 2009, 2010; Gilbert & Kerridge, 2020). Healthcare workers even go to work with contagious infections, with potentially adverse consequences for their patients and healthcare costs (Giæver, Lohmann-Lafrenz, & Løvseth, 2016; Løvseth & Giæver, 2018; Lui, Andres, & Johnston, 2018).

### **2.2.1.2 Innovations in Medical Research and Technology**

At the same time, in Lille, France, the chemist Louis Pasteur discovered that disease was caused by microorganisms, which later became known as germ theory. This evidence led to the wide-scale adoption of antiseptic practices by physicians and hospitals throughout Europe and eventually in the US. The research of Pasteur and former journal entries by a British physicist, Dr. Denis Papin (1679), who invented the pressure cooker, were influential on Dr. Charles Chamberland's early prototype of the modern-day autoclave for sterilization (1879). Pasteur, who provided "the most important scientific revolutions of the nineteenth century" (InstitutPasteur, 2020), also represents the beginning of an era of innovations in medical research and technology derived from disciplines outside the world of healthcare. Of all the advances in healthcare quality, few can rival the discovery of vaccines and the first two—the vaccines for anthrax (1881) and rabies (1885)—were discovered by Pasteur.

Years later, in England, Sir Alexander Fleming, known as a sloppy scientist, returned from a month-long vacation. He observed that mould had created a bacteria-free circle around itself on a culture plate he had worked on and forgotten. Further experiments led to his discovery of the 'wonder drug' penicillin in 1928.

Moving to Germany in 1895, Wilhelm Conrad Rontgen accidentally discovered x-rays when a fast stream of electrons came to a sudden stop at a metal plate. The discovery of radioactivity by Henri Becquerel in 1896 inspired Marie and Pierre Curie in their brilliant research that led to the isolation of polonium, named after the country of Marie's birth, and her later work on radium and radioactivity. Mme Curie made use of radium to alleviate suffering during World War I. Assisted by her daughter, Irene, she personally devoted herself to this remedial work by placing 200 permanent and mobile installations for x-rays and radiation to examine and treat the wounded.

Since then, the reach of medical research and technological innovation continues to provide extraordinary medical advances (Godlee, 2007). The list is long, including EEG (1924), minimally invasive surgery (1931), the pacemaker (1936/1958), dialysis (1943), the disposable catheter (1944), cardiac defibrillation (1947), risk of smoking (1950), antipsychotics (1952), DNA (1953), organ transplant (1954), immunology/immunotherapy (1958), the insulin pump (1963), intravenous/oral rehydration therapy (1960–70s), stem cell therapy (1970), robots and lasers (1987), and the development of artificial intelligence in the twenty-first century to invent smarter and faster ways to diagnose, treat and prevent diseases. All innovations change healthcare practices as they evolve. For instance, medical imaging has developed from x-rays to include ultrasound (1955), computed tomography (CT, 1967) and magnetic resonance imaging (MRI, 1973), while the lifesaving mechanical respirator named the ‘iron lung’ has been almost completely replaced by the endotracheal or tracheostomy tube, which reminds us that continued innovation is an integral part of quality of care and that innovation in diagnostics, treatment and recovery affects all levels of healthcare practice in terms of organization, patients and workers. The dramatic rise of digital platforms and health technology the past decades as means to provide a wider service to stakeholders, administrators and patients have transformed the organisation of healthcare completely affecting quality of care (Chaudhry et al., 2006; Jamal, McKenzie, & Clark, 2009). Chap. 9 in the current volume provides a systematic review of digital healthcare technology in the perspective of Healthy Healthcare.

### 2.2.1.3 Public Health Programmes

As the deployment of new technologies was complex and sometimes dangerous, it required the first guidelines and protocols for safe and effective use to protect the patient. However, clinicians and nurses were initially constrained to provide data that were both uniform and comparable, despite treatments becoming relevant for large groups of patients. The development of treatment innovations like vaccines and radium therapy initiated public health programmes that included treatment. As those directing public services needed information about the areas under their jurisdiction, one of the first guideline to be standardized was public health data.

The need to manage and treat large populations through proper classification, documentation and guidelines became an important contribution to quality of care. With increased demands for treatment and care for larger populations derived from warfare and murderous and sporadic epidemics such as the Spanish flu, cholera and yellow fever (Weisz et al., 2007), public health standards entered the world of clinical medicine. At the turn of the twentieth century, public health expanded to include endemic diseases like tuberculosis and sexually transmitted diseases. In San Francisco, the surgeon general, Dr. Rupert Blue, was responsible for providing healthcare improvements during the bubonic plague (1900–1904), mosquito control to prevent malaria during the opening of the Panama Canal (1914), the effects of long term flu on pregnant women, outbreaks of polio, smallpox and typhoid, and during the worst

outbreak of disease in our history. The influenza pandemic of 1918 killed 50 million people: this was one fifth of the world's population. Dr. Blue knew how disease was spread, but science had not advanced enough to stop it, his quality tools were, for instance, quarantine, masks while in public, and newsletters with information. Dr. Blue is viewed by many historians as representing the kind of visionary quality leader needed in the event of future global disease pandemics, and his routines are similar to the response by countries affected by outbreaks today such as severe acute respiratory syndrome (SARS) in 2003, Middle East respiratory syndrome coronavirus (MERS) in 2012, Ebola in 2019 and the Covid-19 pandemic in 2020 (World Health Organization, 2020). The medical records kept during the 1918 influenza pandemic continue to be some of the most researched archival documents used by international scientists today. They serve to inform how we should respond to similar outbreaks of biological disease. Unfortunately, there are concerns that policymakers and leaders still tend to ignore the global risk of pandemics (Institute of Medicine (US) Forum on Microbial Threats et al., 2004; Global Preparedness Monitoring Board, 2019a, 2019b; The Lancet, 2020).

#### **2.2.1.4 Standards for Professional Training and Credentials**

The transformation of intellectual perspectives provided axes along which medical doctors and certain specialities were able to develop. Prior to 1880, specialization was primarily about producing and teaching specialized knowledge necessary to train general practitioners. It was locally organized and, for many, a highly individual career choice (Weisz, 2006). Growing public interest in specific health issues encouraged the emergence and development of (many) specialities. From a handful of specialists practising in major cities at the beginning of the 1800s, the number of specialists began to rise precipitously. Consequently, practitioners everywhere faced much the same societal realities: professional competition, increased public faith in scientific expertise, and increased interventions by public authorities in healthcare.

From 1880 to 1914, medical curricula throughout the Western world were restructured according to what were deemed the demands of modern science. From the medieval universities, and especially after the War of 1812, there was a rapid increase in medical schools across the US, but the quality was inconsistent. The restructuring was imposed either by the state, as in France, or as a result of campaigns by the medical professions/associations seeking to improve their quality and status. For instance, influenced by his studies of education in Germany, Abraham Flexner was sponsored by the Carnegie Foundation to advise how standards of medical teaching in the US and Canada could be improved. His report on medical education in the United States and Canada (Flexner & Pritchett, 1910) resulted in the closure of many medical schools. A few years later, medical schools became active research university departments linked to teaching hospitals, with formal requirements for admission from high school and college science, and a four-year curriculum with two years of basic science education followed by two years of clinical training. The content of the medical curriculum contrasted Flexner's colleagues from the John Hopkins

University where the father of modern medicine, Sir William Osler contended that teaching should be at the bedside rather than in the lecture hall. Influenced by his studies at teaching hospitals in England, he introduced a clerkship system that gave students a role in the clinical service to provide practice in the context they will practise in. Still today, these distinct cultures of medical education are in opposition (Dornan, 2005; Rae, 2001), though many faculties try to merge them in medical education for the benefit of professional quality in healthcare (Kiessling, Schubert, Scheffner, & Burger, 2004; Reed et al., 2011; Rohe et al., 2006; Schauber, Hecht, Nouns, Kuhlmeijer, & Dettmer, 2015; Schwartz & Loten, 2003; Slavin, Schindler, & Chibnall, 2014; Wright & Richmond Mynett, 2019). Recognizing that the quality of study conditions and curricula affect students' and future practitioners' performance directly (Cave, Woolf, Jones, & Dacre, 2009; Finset et al., 2005; Grotmol, Gude, Mourn, Vaglum, & Tyssen, 2013; Misra-Hebert, Kay, & Stoller, 2004; Tyssen, Vaglum, Gronvold, & Ekeberg, 2001) and indirectly by their health and wellbeing (Dahlin, Fjell, & Runeson, 2010; Dahlin, Joneborg, & Runeson, 2005; Dyrbye et al., 2010; Ishak et al., 2013; O'Neill, Wallstedt, Eika, & Hartvigsen, 2011; Park et al., 2012; Puthran, Zhang, Tam, & Ho, 2016; Rogers, Creed, Searle, & Nicholls, 2016; Rotenstein et al., 2016; Sletta, Tyssen, & Løvseth, 2019).

### ***2.2.2 The Period 1920–1960. Internationalization of Guidelines, Testing Protocols, Practice Standards and Healthcare Financing***

The period after 1920 is characterized by healthcare financing and the internationalization of knowledge and practice through the development of practice guidelines and procedures and contributions from biomedical research. The year 1920 represents a significant point in time with the establishment of the League of Nations health committee, later known as the World Health Organization (WHO) in 1946. The organization is the prime example and outcome when nations work together for the greater good and benefit for healthcare worldwide. The WHO contribution 'Health systems: Improving performance' (World Health Organization, 2000) is a main inspiration for the current book on Healthy Healthcare.

#### **2.2.2.1 Healthcare Financing**

After World War II, all aspects of medical enterprise expanded dramatically and budgetary spending on healthcare grew significantly. How healthcare was funded and spending emerged differently among nations that, in turn, generated different results and quality indicators. In Germany, chancellor and father of healthcare in Germany Otto Von Bismarck designed a state-run medical insurance programme in 1883 that was originally defined as a state-run medical insurance programme with

treatment and sick pay for up to 13 weeks. The current healthcare system in Germany is grounded in the Bismarck era (Sawicki & Bastian, 2008). William Beveridge provided the Beveridge report (Beveridge, 1944) with options on how the British healthcare system should rebuild, including the establishment of a National Health Service in 1948 with free medical treatment for all as a priority. The Beveridge and Bismarck styles of healthcare system serve as models for universal coverage across the rest of Europe.

In Europe, the Nordic model for a healthcare system as part of a larger public welfare system constitutes a system with mostly tax-based funding, publicly owned and operated hospitals, and extramural institutions, universal access based on residency, and comprehensive coverage (Magnussen, Vrangbæk, & Saltman, 2009). The same trend holds for countries in (Southeast) Asia, where healthcare systems with dominant tax funding are stable with a strong role of governments and effective controls by health agencies to overcome inequity problems. These continue to improve with different stages of socioeconomic development that have favourable growing conditions in nations and regions characterized by an absence of warfare, conflicts and continual natural disasters (GBD 2016 SGD Collaborators, 2017; World Health Organization, 2000).

Across the Atlantic, healthcare in the US was based on a variety of voluntary, religious and charitable initiatives. The exception was for those who had money and could pay for medicine and care. In the 1930–1940s, Henry Kaiser, an American industrialist, wanted to provide a healthcare plan for construction workers in his employ and designed a prepaid programme. The model evolved into Kaiser Permanente, which opened to the public in 1945. Today it exists as the largest health maintenance organization (HMO) in the world. The predominantly employer-based health insurance system in the US developed in a fragmented, decentralized manner, with private insurers and the government eventually filling some, but not all, of the gaps (Ubokudom, 2012).

Different frameworks and paradigms of healthcare financing have a tremendous effect on the way the functions of providing health services and generating the necessary resources to make that possible are carried out. Types of healthcare system are one of the pillars of Healthy Healthcare and are more fully covered in Chap. 4. Unfortunately, the WHO (2000) has found that many countries are falling far short of their potential, and most are making inadequate efforts in terms of responsiveness and fairness of financial contribution. There are serious shortcomings in the performance of one or more functions in virtually all countries. This means that high healthcare financing is not equal to high quality healthcare. Even among countries with similar income levels, there are unacceptably large variations in health outcomes and quality of care.

### 2.2.2.2 Internationalization of Guidelines

Rising health costs and budgetary constraints were invoked in one of the very first analyses of guidelines development and reappear regularly. However, early efforts

in the development of guidelines and standardizations emerged from a variety of public and private agencies, including governments, associations devoted to specific diseases, and different medical societies (Armstrong, 2002; Merry & Crago, 2001; Nigam, 2012; Weisz, 2006; Weisz et al., 2007; Wiener, 2000).

On an international level, the League of Nations health committee and subcommittees promoted international standardization for nomenclature, statistical methods, epidemiological databases, definition of biological agents, and training programmes for public health personnel. Innovations resulting from the expansion of medical research required guidelines and protocols for safe and effective use of new products and therapies. These were provided by some pharmaceutical manufacturers, while countries like France imposed regulations and emerging governmental agencies also regulated healthcare. Other initiatives came from professionals themselves, such as Dr. Portman, who devised a classification system for breast cancer in the 1930–1940s (Nachlas, 1991). In different domains, private American and British organizations have collaborated to standardize blood pressure measurement, and national professional associations have provided manuals on practice guidelines and organizing treatment services in hospitals.

Guidelines have also been imposed through the development of formal credentials among students and increased specialization among healthcare professionals in the generation of knowledge and practice. In addition to improved quality of care, these efforts derive from the need for joint terminology and standardization of classifications, measures and procedures to transfer knowledge into better healthcare. This process has taken over a century and is filled with debates, controversies and, at times, conflicts that we do not cover here. However, disagreements have also led to positive outcomes, as the attempt and sometimes failure to produce effective procedural guidelines has sometimes led to the standardization of design and terminology. While practice guidelines offer a potential solution to unwarranted practice variation and controversies, the subsequent volume and variety of regional, national and international guidelines on professional practice, treatment procedures and outcomes are unfortunately one of the main reasons why defining and measuring quality of care becomes challenging (Klein, 2006), as the number of guidelines with a variety of quality of care concepts becomes complex and is, at times, perceived as fragmented with different antecedents, foci and outcomes. This makes it difficult to measure, document and perform international comparisons of quality of care (Mattke, Epstein, Leatherman, 2006; Mainz, Hjulsager, Og, & Burgaard, 2009). We even have different guidelines for producing guidelines (Eccles et al., 1996; Guyatt et al., 2006; Guyatt & Vandvik, 2013). Together with differences in healthcare financing and variation in training and credentials, this affects the complexity of quality of care.

### 2.2.2.3 Practice Standards for the Administration of Healthcare

Derived from the growing task interdependencies, the main part of healthcare expenditure is hospitals that continue to expand and modernize everywhere. This requires their own forms of coordination, with subsequent rationalization and standardized

procedures (Gosselin, 1985). Hospitals grew at a prodigious rate at the end of the nineteenth century, and generated demand for standardized organizational structures, practices and data collection to ensure efficient high-quality care. The organization of healthcare services in general and hospitals in particular derives from within the organization and the industry and mass production. The saying “we are charged with discovering the best way of doing everything”, that today includes quality improvements in healthcare, derives from Henry Ford’s assembly lines in 1908 to reduce waste and increase productivity (Ford & Crowther, 1988). Later, Toyota’s product system in Japan adopted the six-sigma method. The method was introduced and defined as Lean production in the book ‘The machine that changed the world’ (Womack, Jones, Roos, & Massachusetts Institute of Technology, 1990). Lean was formally introduced into hospital practice by the Virginia Mason Medical Centre in Seattle, Washington, which became the first lean hospital in 2002. Since then, Lean has begun to find a place in the modern organization of healthcare services worldwide to improve quality of care and workers’ engagement (de Bucourt et al., 2011; Graban, 2016; Krafcik, 1988). In the current volume, the chapters on labour marked economy (Chap. 7), logistics and capacity planning (Chap. 8), report systems (Chap. 13) and lean management (Chap. 19) in healthcare are excellent examples of how modern healthcare practice has adopted structured management and monitoring of healthcare practice and resource allocation to improve quality of care.

However, this perspective also derives from healthcare organizations themselves setting uniform and high standards for physicians practising in hospitals. For instance, in Boston, the surgeon called by some the father of healthcare management, Ernest A. Codman, published his book *A study in hospital efficiency* (Codman, 1996) that focused on improvements based on the end results and correction of treatment errors. Dr. Codman was also involved in the American College of Surgeons (ACS) and its hospital standardization programme as a response to address great variation in the competence of employed physicians within a hospital and between hospitals. Along with development in the organization of healthcare, medical knowledge and practice had become so specialized by the 1920s that general medical licences no longer seemed adequate. Accordingly, formal speciality training and certification was introduced in from 1920 (Weisz, 2006) as the dominant form of medical practice. This followed from the medical associations’ need to curb unbridled specialist practice, and from the expansion of the government’s role as a provider and purchaser of health services and guarantor of the public health. Specialist credentials evolved from largely local to a point where each nation worked out a system of regulation, in the 1920s and 1930s in Germany and US, the late 1940s in France and the UK.

Since then, healthcare organizations have required formal knowledge and experience credentials for a variety of positions and for workers that work with care and supporting services as a means of standardizing practice. In addition, they often require a continual focus on increased speciality credentials for certain roles and tasks to ensure professional development, productivity, employability and high quality of care, termed workplace learning. The latter is fully covered in Chap. 12 of the current volume.

### 2.2.2.4 Formal Treatment Procedures and Symptom Criteria

Accelerating after World War II, the expansion of (medical) research both contributed to and complicated healthcare and its regulation. It was important to translate this knowledge into better healthcare, so organizations intensified their effort to standardize classification categories, instruments, measures and research protocols of new products and procedures. Research, particularly multicentre research, with collaboration between researchers, complex technologies, clinics and laboratories, required standardized categories and practices that allowed the aggregation of data.

The conduction of new and increasingly complex procedures, diagnostic laboratory tests and instruments required elaborated testing protocols and instructions. With healthcare organizations as part of biomedical research—for instance, cancer research—these procedures found their way into clinical practice. Research was one of the motivations for the development of the US DSM-1 in 1952 (American Psychiatric Association Committee on Nomenclature and Statistics, 1952), that later became the international Diagnostic and Statistical Manual of Mental Disorders (DSM III) in the 1970s (Kendell, 1980) to include all mental disorders. Sir Austin Bradford Hill, father of the modern randomized clinical trial (RCT) (Crofton, 2006), together with Richard Doll, demonstrated the connection between cigarette smoking and lung cancer (Doll & Hill, 1950). Hill is known for pioneering the Bradford Hill criteria (Hill, 1965) for determining a causal association. The RCT gradually became the gold standard or ultimate paradigm of clinical research for evaluating therapies based on the breakthrough for the lone medical student, Archie Cochrane, who marched through London in 1935 carrying a homemade placard that read “All effective treatments must be free.” According to him, nobody noticed. His experience as an imprisoned medical officer in camps during World War II led him to believe that much of medicine did not have enough evidence to justify its use. He said, “I knew that there was no real evidence that anything we had to offer had any effect on tuberculosis, and I was afraid that I shortened the lives of some of my friends by unnecessary intervention” (Cochrane, 1972) As a result, he spent his career urging the medical community to adopt the RCT as a scientific method. In this seminal book on the scientific validity of current medical procedures, Effectiveness and efficiency, first published in 1972 by the Nuffield Provincial Hospitals Trust (Cochrane, 1972), Cochrane called for an international register of RCTs and for explicit quality criteria for appraising published research. Neither goal was achieved in his lifetime. Today, the Cochrane Controlled Trials Register has more than 400,000 entries, and an international movement to improve the methodology of research synthesis also bears his name. Many consider the RCT to be one of the most important medical developments of the twentieth century, manifested by Cochrane as a practical means of applying the experimental method to clinical medicine, where the results have since dictated clinical practice and, in turn, quality of care.

Along with increased scientific knowledge and innovation, physicians until now had the possibility to develop tacit skills on procedures and approaches from colleagues, expert papers published, presentations at medical meetings, conferences and travel clubs. However, all these modalities left practitioners largely free to pick

and choose from the information and skills available. The turn of a new decade between the 1960s and 1970s aimed to bring structure to the number of stakeholders, innovations, information, guidelines and areas in quality of healthcare.

### ***2.2.3 From 1960 Until Today. Global Standards for Healthcare Practice: Diverse, Ethical, Health-Promoting and Environmentally Sustainable Healthcare Based on the Patient***

Until the 1960–1970s, medical/healthcare actions were indirectly regulated through the training and credentials guaranteed by organized professional and official authorities concordant with increased emphasis on practice standards and the administration of healthcare. Individual physicians and their healthcare organizations were assumed to be competent enough to determine appropriate medical procedures and provide quality of care. In the 1960s and 1970s, there was a marked shift from the use of “essentially intuitive local criteria to find problems in individual cases, towards the use of explicit, more nationally uniform criteria to examine patterns of healthcare practices and patterns of outcomes” (Jencks & Wilensky, 1992, p. 900). The standardized credentials granted by recognized medical schools or national/regional authorities became an insufficient guarantee of quality. This was not surprising, as the numerous innovations from the expansion of medical research created serious dilemmas even as they offered healthcare professionals new therapeutic tools. Individual clinical judgement failed to evaluate the effect of ever-increasing developments of treatments and healthcare practice (Nigam, 2012; Weisz, 2006).

Accordingly, quality assessment as we know it today began during this period of reform in the 1960s and 1970s along two axes. One was establishing comprehensive, general standards for healthcare organizations and personnel based upon previous developments of general standards of healthcare practice and guidelines, drawing upon existing developments in licensing criteria; formalization of expert advice on topics such as tobacco, nutrition, healthy diet, vaccines, salt and more by national and international health authorities; and accreditation standards and laws of confidentiality, healthcare acts and ethics. The other axis was based on knowledge production and educational models and their concepts as standards to measure quality of care. In addition, three influential perspectives of quality of healthcare emerged in this decade, with an increased focus on ethical practice, the feminist philosophy in science, and the patient perspective in terms of what illness and health in fact means to patients.

### 2.2.3.1 General Standards of Healthcare Practice

With the increased governmental expenditure and need for public accountability, medical practice and healthcare came into the political arena and under scrutiny. When politicians became vulnerable to public criticism, expert guidelines were important to ensure resource-efficient delivery of high-quality healthcare services. It was not patient variation, but inconsistent quality of care and practice variation that generated widely variable patient outcomes from region to region and from health system to health system. Standardizing medical curricula and implementing criteria for practice and specialist credentials was not enough. Practice variation was still problematic, and the private relationship between doctor and patient became part of the public realm and subject to new forms of bureaucratic control, rationality and knowledge. This became evident in the research by John Wennberg and colleagues documenting geographic variation in healthcare practice (Scott et al., 2007; Wennberg, 1979; Wennberg, Freeman, Shelton, & Bubolz, 1989; Wennberg & Gittelsohn, 1973). In addition, Robert Brook and his group of researchers at the Rand Corporation published a series of articles documenting the prevalence of inappropriate care (Brook et al., 1988; Chassin, Kosecoff, Solomon, & Brook, 1987).

Complemented by the work of Cochrane questioning the scientific value of many widely diffused medical procedures, scholars questioning and documenting the appropriateness of certain medical practices and practice variation challenged the notion of a universal medical science and raised serious quality issues that are still relevant (Braithwaite et al., 2018; Fleshner, Rakovitch, & Klotz, 2000; Mangione-Smith et al., 2007; McGlynn et al., 2003; McPherson & Bunker, 2007; Runciman et al., 2012; Wennberg, 2014). In particular, the overuse of undocumented diagnostic and therapeutic healthcare that has little or no value that can lead directly to injury and errors, or hidden or indirect harm, including in terms of productivity, costs and waste of resources (Berwick & Hackbart, 2012; Organisation for Economic Co-operation and Development Health Division, 2017; Saini, Brownlee, Elshaug, Glasziou, & Heath, 2017; Saini, Garcia-Armesto et al., 2017). Studies show that approximately 30% of clinical practice and innovative but unproven quality improvement strategies provide little or no gain in patient health for a variety of treatments (Bhatt et al., 2004; Cardona-Morrell et al., 2016; Fisher & Welch, 1999; Gotzsche, 2004; Lagrew & Adashek, 1998; Moseley et al., 2002; Patwardhan et al., 2007; Scott et al., 2004; Scott, Poole, & Jayathissa, 2008; Taylor & Murray, 2018; Winslow et al., 1988; Wright, 2002; Young, 2008) and prescriptions for medication (Armstrong, 2018; Brownlee, 2007). This affects healthcare practice and quality of care every day worldwide.

### 2.2.3.2 Standards for Knowledge Production

This period originated knowledge production and influential educational models and standards to measure quality of care, such as Paul Ellwood's outcomes measurement concept and modern case management system in the US (Mullner, 2009), along with

Avedis Donabedian's (1966, 1980, 1988) structure-process-outcome quality model that is one of the most cited models in publications on quality indicators and quality of care worldwide (Boerebach et al., 2014; Collier & Harrington, 2008; Currie, Harvey, West, McKenna, & Keeney, 2005; Derose & Petitti, 2003; Gergen et al., 2017; Grimmer et al., 2014; Grp, 2010; Hearld, Alexander, Fraser, & Jiang, 2008; Koy, Yunibhand, & Angsuroch, 2016; Kruse, Stadhouders, Adang, Groenewoud, & Jeurissen, 2018; Lorini, Porchia, Pieralli, & Bonaccorsi, 2018; Merry & Crago, 2001; Patwardhan et al., 2007; Scott et al., 2011; Spilsbury, Hewitt, Stirk, & Bowman, 2011; Tripathi, 2016; Varkey, Reller, & Resar, 2007).

According to Donabedian's model, quality measures are traditionally classified as structural, process or outcome measures. Structural measures relate to the stable characteristics of providers of healthcare services. These are necessary but are not sufficient basis for healthcare delivery. Accordingly, they are considered indirect measures of quality, as they enable the provision of services but do not ensure it. Structural factors such as ownership, staffing, technology and other factors that affect the service provided are regarded as indirect measures of quality. Process measures assess the activities undertaken by the organization and the experiences of patients as they interact with healthcare providers and the health system. They aim to increase the probability of the outcome measures where the outcome measures reflect the net effect of healthcare delivery and quality of care.

Educational models were an important gateway to make characteristics of workers and their wellbeing relevant for quality of care, as they affected both the structural characteristics and processes of healthcare practice (Long, 2002; Lucero, Lake, & Aiken, 2009). Merging quality of care with research from work and organizational psychology constitutes one of the pillars in Healthy Healthcare that are covered in Chap. 3. How health and wellbeing among workers affect quality of care is the topic of Chap. 10 in the current volume.

### 2.2.3.3 Ethics

A minority of guidelines published until the 1960s dealt with issues of (bio)ethical concerns, including the standardization of informed consent requirements. The expansion of biomedical research revealed many ethical dilemmas long associated with research on human subjects and created new ones, as medical research and technological innovations created a variety of ethically complex conditions and practices in clinical medicine, such as assisted conception, life-sustaining technologies, anonymity, requiring ethical guidance to supplement their very complex technical guidelines (Rothman, 2003). These guidelines became integral parts of the protocols defining research and healthcare practice, so today the very work of ethics is itself becoming subject to special guidelines and evidence-based research (World Medical Association, 2013). The growing influence of ethics in contemporary medicine since the 1970s can be seen in the increasing use of institutional review boards, data inspectorate and national or hospital ethical committees to evaluate research projects including human subjects and health data, legal acts and ethics among emergency

and healthcare personnel, and the integration of ethics into medical school curricula (Lakhan, Hamlat, McNamee, & Laird, 2009). Principle of ethics provide and support appropriate standards for conduct by which everyday healthcare practice and administration (Veatch, 2000) can increase professionalism, communication, accountability, responsiveness (World Health Organization, 2000), workers wellbeing (Løvseth, 2017; Løvseth et al., 2010; Løvseth, Fridner, Jónsdóttir, Marini, & Linaker, 2013), patient safety and quality of care (Kossaify, Hleihel, & Lahoud, 2017).

#### 2.2.3.4 Social Context of Healthcare and Patient Diversity

In the 1960s, feminism as a social, political movement and ideology that aimed to create political, economic, personal and social equality of the sexes flourished again with the women's liberation movement (Ritzer & Ryan, 2011). The campaign for legal and social equity for women generated important perspectives in knowledge generation within feminist philosophy in science. Their question on how scientific research and scientific knowledge itself may be 'situated knowledge' (Haraway, 1988; Kurki, 2015), influenced and possibly compromised by the social and professional framework, has attracted considerable attention since the 1970s. Feminist philosophy in science highlighted the under-representation of female scientists in academia, claiming that integrating feminine modes of thought and logic into scientific theory would facilitate the improvement and broadening of scientific perspectives (Tickner, 1997).

Feminist philosophy in science was also driven by a deep concern that the reductions and conceptions that underlie the social context, which, in turn, serves as the foundation of scientific knowledge and evidence-based medicine, reflect and reproduce the perspectives and characteristics of their originators (usually white, male, prosperous and educated) and what they regard as universal (Code, 1991) and relevant in their field of knowledge. These concepts question scientific objectivity, generalizability and predictability, as they exclude and can even harm women and their health (Rogers, 2004), or fail to investigate properly gender dimensions of other health problems that appear to have sex-differentiated causes, incidences, responses to treatment and prognoses due to a combination of biological factors, social conditions and social processes (Rogers, 2004). Through this position, they increased focus on the great diversity beyond gender medicine in medical research and quality of care. Giving priority to the role of gender, age, socioeconomic status and cultural diversity in physiological and pathological processes and medical research is crucial in terms of efficient prevention, diagnostics and treatment (Harrison, Cohen, & Walton, 2015; Saleh, Alameddine, Mourad, & Natafgi, 2015). Unfortunately, there are still numerous reports of bias in the natural and biological sciences, including in the performance of research where these groups still are underrepresented or omitted as subjects regardless of the type of research study (Bonevski et al., 2014; Frew et al., 2014; Gemmati et al., 2019; Heiat, Gross, & Krumholz, 2002; Johnson, 1990; Poon et al., 2012; Singh, Azuine, & Siahpush, 2012). It is important to obtain evidence-based medical knowledge that accurately reflects the breadth of the whole population.

If not, this can result in errors, overuse or underuse of healthcare and an inability to identify groups that can potentially place the highest demands on healthcare services and benefit the most from resource-efficient interventions or developments and health promotion programmes. This is regarded as a crucial development in healthcare practice to achieve the goal of high quality of care (World Health Organization, 2000).

### 2.2.3.5 Holistic View of Health

Another important approach that challenged traditional notions of health and illness came from phenomenology and was forcefully described by Elaine Scarry in *The body in pain: The making and unmaking of the world* (Scarry, 1985). Seven years later, Dr. S. Kay Toombs' (1992) philosophical reflections on living with multiple sclerosis led her to conclude that health is not experienced as the absence of disease, but as a state of unselfconscious being shattered by illness. This strips the natural scientific paradigm that neglects the subjective and personal components of human distress and (ill) health. This theoretical approach was grounded in the philosophy of Edmund Husserl (1970), who questioned the philosophical completeness of natural sciences and its inability to address questions of human self-understanding that emphasize the subjective features of illness that remain crucial to the experience of illness and recovery. Toombs examined the different ways that physicians and patients approach and understand illness and encouraged physicians to try to understand what illness means to the patient (Toombs, 2001). This perspective on illness emphasizes that diagnosis is not necessarily tailored to medical categorization, as the goal of treatment is not centred so much on the elimination of disease, but rather on the reintegration of the patient into their lifeworld (Reiser & Rosen, 1984; Svenaeus, 2001; Toombs, 2001). This approach to medical practice implies a completely different understanding of quality of care, in that illness damages the patient's (cap)ability to relate to, interact and function in the world. This echoes the WHO's holistic view of health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (World Health Organization, 1947), which incorporates aspects of mental, physical and social wellbeing, as stated in the Ottawa Charter for Health Promotion (World Health Organization, 1986).

This brings us to the three final concepts in our timeline of quality of healthcare—health promotion, patient-centred care and environmentally sustainable healthcare—to understand the multifaceted perspectives of the Healthy Healthcare pillar of quality of care as we know it today.

### 2.2.3.6 Health Promotion

Through the Ottawa Charter, health takes a socioecological approach that is no longer seen as the objective for living, but as a resource for people's daily lives, as good

health is a major source for social, economic and personal development and an important dimension of quality of life. As such, healthcare focuses on health promotion, which is the process of enabling people to increase control over and to improve their health (World Health Organization, 1986). The Ottawa Charter and the WHO emphasize that health is a positive concept, emphasizing social and personal resources as well as physical capacities. This view of health was adopted in disciplines such as psychology. In 1998, positive psychology emerged as a new domain through Martin Seligman, who chose it as the theme for his term as president of the American Psychological Association (Seligman & Csikszentmihalyi, 2000). It was a reaction against the main foci of maladaptive behaviour and negative thinking in psychology. Positive psychology became a focus on positive human functioning, flourishing and happiness in different dimensions of people's lives and how these should be fostered to promote people's health and wellbeing. Chapters 3 on workers' health, 5 on human resource management, Chap. 6 on health-promoting leadership, Chap. 10 on the relationship between workers' health and quality of care, and Chap. 14 on interventions to create health-promoting workplaces present the substantial evidence-based knowledge that has been produced over the last decades. As these chapters demonstrate several ways that health can be fostered, we will not go into more detail in the current chapter.

The emergence of the current paradigm of healthcare practice had three main implications. Firstly, it implied that healthcare systems must look beyond focusing on cures to health promotion and preventive measures, as presented in chapters of the current volume, through providing treatment and services, and how health is promoted by the surroundings, atmosphere and physical environment in which the services are delivered. Accordingly, health goes beyond healthcare to healthy lifestyles and wellbeing.

Secondly, the responsibility for health promotion in health services is not just the responsibility and cannot be assured by the health sector alone. It demands coordinated actions by all concerned and shared responsibility among health professionals, healthcare organizations, governments, individuals, communities, voluntary organizations, caregivers, families, and the patient/person themselves. All must work together towards a healthcare system which contributes to the pursuit of health. It also means that more stakeholders are involved in the quality of care. As stated in the introduction to this chapter, this very notion is what makes quality of care difficult to define, and it explains why no clear academic consensus has emerged on a definition of quality of care or the key elements of it. Definitions can be broad or narrow depending on whether the perspective is that of the patient, healthcare worker, discipline or other stakeholder (Blumenthal, 1996; Chassin, 1996; Donabedian, 1988; Nylenna, Bjørtnæs, Saunes, & Lindahl, 2015).

Thirdly, the person or the patient themselves should be able to take decisions and have control over their life circumstances, including healthcare treatment, emphasizing the patient perspective in quality of care (Reiser, 1993).

### 2.2.3.7 Patient Perspective

In 1990, the foundation of the Institute for Patient- and Family-Centered Care in the US and the Picker Institute introduced the notion of patient- and family-centred care with a stronger focus on the needs of patients and collaboration among patients, their families and healthcare providers (Johnson et al., 2008; Park et al., 2018). Together with the WHO's health promotion, a renewed focus on people in healthcare has emerged in recent decades: patient-centred care, person-centred care, people-centred care and health activation emphasize the involvement of the patient and their families in decision-making on medical treatments.

In addition to improving health and ensure equitable financing of health systems, the way health systems interact with people have an impact on their wellbeing. WHO (2000) defines this as systems responsiveness that constitutes of respect for dignity of persons, autonomy to participate in health-related decisions, confidentiality, prompt attention, adequate quality of care, communication, access to social support networks and choice of healthcare providers. People-centred care is an umbrella term, articulated by the WHO among others entails the right and duty of people to participate actively in decisions at all levels of the healthcare system. People-centred care focuses on both the individual's right to health, access to healthcare and information, and on health literacy on a collective level (Goodwin, 2014; World Health Organization, 2015). Person-centred care describes the whole person in a wider context, while the patient-centred approach is based on the person's role as a patient. By focusing on the perspectives of the patient(s), healthcare practice includes tailoring service delivery to the context of the family and broader local community, and the use of resources in the community and cultural competence to gain knowledge and understanding of the community in which the healthcare service is delivered. Health or patient activation and engagement refer to healthcare practice where the patient is equipped, educated and motivated to be an effective manager of their own health (Greene, Hibbard, Sacks, Overton, & Parrotta, 2015; Hibbard & Greene, 2013; Lara-Cabrera & Nessel, 2017; Lara-Cabrera et al., 2016; Prey et al., 2014; Sorensen et al., 2012). This includes patient involvement in care, patient information, clinical-patient communication and patient empowerment to improve the quality of care for patients and satisfaction for the families of patients and healthcare providers.

Despite the emphasis and popularity of patient-centred care, this focus remains largely unrealized in clinical practice, where the development quality indexes, guidelines and clinical research are primarily guided by the biomedical tradition and evidence-based medicine. The rise in patient satisfaction surveys in the 1980s to gain understanding of the patients' view (Brédart et al., 2015; Lloyd, Jenkinson, Hadi, Gibbons, & Fitzpatrick, 2014; Mohammed et al., 2016; Stevenson, 2006; Williams, Gavin, Carter, & Glass, 2015) was a response to increased accountability due to governmental financing and patient-centred care. However, patient satisfaction is largely disregarded in clinical practice and research, whose primary aim is to eliminate disease rather than reintegrate the patient into their lifeworld (Williams, 1994; Levine et al., 2012; Bombard et al., 2018).

### 2.2.3.8 Environmentally Sustainable Healthcare

Since the 1960s, there have been concerns that the impact of human activity and pressure from overconsumption, population growth and technology have a negative impact on our natural environment. Though we find some disagreement on what means are most efficient—the environmental impact of human actions and some actors that want to disregard this topic to protect their own interest—environmental concerns have led governments and organizations worldwide to make joint and national efforts to reduce the impact of our activity on nature. This global trend has fostered generations that let environmental considerations guide their actions, such as investing in green technology. The WHO (2017) defines an environmentally sustainable health system as one that “improves, maintains or restores health, while minimizing negative impacts on the environment and leveraging opportunities to restore and improve it, to the benefit of the health and well-being of current and future generations”. Environmental sustainability has increased and will continue to increase its impact on how healthcare systems are organized and, in turn, quality of care (Australian Medical Association, 2019). Enhancing environmental sustainability through reducing carbon emissions, curtailing waste and managing resources efficiently will deliver better outcomes for patients and provide broader social and economic benefits (Furukawa, Cunha, Pedreira, & Marck, 2016; Jameton & Pierce, 2001; Langstaff & Brzozowski, 2017; Lopes, Scavarda, de Carvalho, Vaccaro, & Korzenowski, 2019; McGain & Naylor, 2014; Migdadi & Omari, 2019; Mousa & Othman, 2020; Ordway, Pitonyak, & Johnson, 2020; Petre et al., 2019; Piccoli et al., 2015; Pichler, Jaccard, Weisz, & Weisz, 2019; Ryan-Fogarty, Becker, Moles, & O'Regan, 2017; Seifert & Guenther, 2019).

## 2.3 The Quality of Care Pillar in Healthy Healthcare

The history of quality of care shows that while quality has persisted as an enduring goal in healthcare practice, there has been a shift in intellectual paradigms to conceptualize and manage quality. Looking back on the historical timeline of quality of care, we find that all periods originated concepts included in the quality of care pillar as contemporary perspectives from which today's research and evidence-based practice originate. The historical timeline shows that quality of care started with a widespread belief that individual expertise and responsibility, grounded in the training and skills of physicians, was the most important determinant of quality. With increased complexity in innovations and complexity and variations in healthcare practices and government financing, there has been a shift from physicians' and healthcare workers' individual responsibility to systems thinking. Given this belief, public policy has focused on creating standards for the education of healthcare professionals, increasing the skills of healthcare workers, and standards for knowledge production, guidelines and healthcare practices. Today, the patient perspective

of quality and quality improvement, health promotion and a holistic perspective on health have gained increasing weight.

All concepts constituting the current Healthy Healthcare pillar of quality of care fully acknowledge and present the complexity involved in defining, operationalizing and measuring quality of care. The concepts introduced in the historical timeline provide concepts or perspectives relevant for interdisciplinary small-scale and large-scale studies on Healthy Healthcare from the perspective of quality of care, whether guidelines for personalized care, clinical trials, leadership, financing, healthcare technology, health systems responsiveness, education, the provision of family and community support to patients, or dignity.

There are some main concerns regarding the quality of care perspective in Healthy Healthcare. Firstly, with regard to the main emphasis on clinical outcomes, including the patient perspective, an emphasis on health promotion and a holistic view of health by the WHO are lacking, while an emphasis on both patient and worker perspectives in quality of care hardly exists.

Secondly, though the store of new knowledge about quality of care is growing at an ever-increasing pace, the insights introduced and implemented in relation to quality of care are considerably lesser. Concepts introduced in the historical timeline are a reminder that many historical insights are still important. Lastly, we lack uptake of this knowledge and consideration of this pillar in relation to the two others, workers and the organization of healthcare services.

How do we link workers' health and working conditions to outcomes of quality of care when the operationalization of quality of care is so diverse, depending on discipline and foci? The historical timeline of quality of care illustrates that the pillar of quality of care can be implemented in a systems-based understanding of Healthy Healthcare by different concepts of quality of care. Different stakeholders and a growing number of groups, including patients and their caregivers, have important views of proper practice. Politicians, healthcare managers and others with responsibility for healthcare practices focus on efficiency and just distribution, sustainability of research, education and economy. In the literature, we often find that healthcare workers and professional associations focus on quality indicators, taxonomy, indexes and guidelines regarding clinical outcomes of treatment, while patients and their relatives might be more concerned about responsiveness, safety and quality of life. This can be interpreted as meaning that including the pillar of quality of healthcare in the systems-based perspective of Healthy Healthcare is complicated or even impossible. We think it is a matter of looking at the glass half empty or half full, where the latter emphasizes the need to include quality of care variables in all knowledge production of organization and workers' health to attain a Healthy Healthcare perspective.

Accordingly, Healthy Healthcare system perspective poses a great opportunity to identify the synergy, emergent processes and potential contradictions and changes by which one concept of quality of care affects the rest of the system in terms of the organization of healthcare services and the workers' wellbeing and motivation.

## References

- American Psychiatric Association Committee on Nomenclature and Statistics. (1952). *Diagnostic and statistical manual of mental disorders*. Washington: American Psychiatric Association.
- Armstrong, D. (2002). Clinical autonomy, individual and collective: The problem of changing doctors' behaviour. *Social Science and Medicine*, 55(10), 1771–1777. [https://doi.org/10.1016/s0277-9536\(01\)00309-4](https://doi.org/10.1016/s0277-9536(01)00309-4)
- Armstrong, N. (2018). Overdiagnosis and overtreatment as a quality problem: Insights from health-care improvement research. *BMJ Quality & Safety*, 27(7), 571–574. <https://doi.org/10.1136/bmjqqs-2017-007571>
- Australian Medical Association. (2019). *Environmental sustainability in health care*. Retrieved from <https://ama.com.au/position-statement/environmental-sustainability-health-care-2019>
- Berwick, D. M., & Hackbart, A. D. (2012). Eliminating waste in US health care. *JAMA*, 307(14), 1513–1516. <https://doi.org/10.1001/jama.2012.362>
- Beveridge, W. H. B. (1944). *Full employment in a free society*. London: Liberal Publication Dept.
- Bhatt, D. L., Roe, M. T., Peterson, E. D., Li, Y., Chen, A. Y., Harrington, R. A., & CRUSADE Investigators. (2004). Utilization of early invasive management strategies for high-risk patients with non-ST-segment elevation acute coronary syndromes: Results from the CRUSADE quality improvement initiative. *JAMA*, 292(17), 2096–2104. <https://doi.org/10.1001/jama.292.17.2096>
- Blumenthal, D. (1996). Part 1: Quality of care—What is it? *New England Journal of Medicine*, 335(12), 891–894. <https://doi.org/10.1056/NEJM19960919335123>
- Boerebach, B. C. M., Scheepers, R. A., Van der Leeuw, R. M., Heineman, M. J., Arah, O. A., & Lombarts, K. (2014). The impact of clinicians' personality and their interpersonal behaviors on the quality of patient care: A systematic review. *International Journal for Quality in Health Care*, 26(4), 426–481. <https://doi.org/10.1093/intqhc/mzu055>
- Bombard, Y., Baker, G. R., Orlando, E., Fancott, C., Bhatia, P., Casalino, S., Onate, K., Denis, J., & Pomey, M. P. (2018). Engaging patients to improve quality of care: A systematic review. *Implementation Science: IS*, 13(1), 98. <https://doi.org/10.1186/s13012-018-0784-z>
- Bonevski, B., Randell, M., Paul, C., Chapman, K., Twyman, L., Bryant, J., & Hughes, C. (2014). Reaching the hard-to-reach: A systematic review of strategies for improving health and medical research with socially disadvantaged groups. *BMC Medical Research Methodology*, 14, 42. <https://doi.org/10.1186/1471-2288-14-42>
- Braithwaite, J., Hibbert, P. D., Jaffe, A., White, L., Cowell, C. T., Harris, M. F., & Muething, S. S. (2018). Quality of health care for children in Australia, 2012–2013. *JAMA*, 319(11), 1113–1124. <https://doi.org/10.1001/jama.2018.0162>
- Brédart, A., Kop, J. L., Efficace, F., Beaudeau, A., Brito, T., Dolbeault, S., & Aronson, A. (2015). Quality of care in the oncology outpatient setting from patients' perspective: A systematic review of questionnaires' content and psychometric performance. *Psycho-Oncology*, 24(4), 382–394. <https://doi.org/10.1002/pon.3661>
- Brook, R. H., Kosecoff, J. B., Park, R. E., Chassin, M. R., Winslow, C. M., & Hampton, J. R. (1988). Diagnosis and treatment of coronary disease: Comparison of doctors' attitudes in the USA and the UK. *Lancet*, 1(8588), 750–753. [https://doi.org/10.1016/s0140-6736\(88\)91550-4](https://doi.org/10.1016/s0140-6736(88)91550-4)
- Brownlee, S. (2007). *Overtreated: Why too much medicine is making us sicker and poorer* (1st US ed.). New York, NY: Bloomsbury.
- Cardona-Morrell, M., Kim, J. C. H., Turner, R. M., Anstey, M., Mitchell, I. A., & Hillman, K. (2016). Non-beneficial treatments in hospital at the end of life: A systematic review on extent of the problem. *International Journal for Quality in Health Care*, 28(4), 456–469. <https://doi.org/10.1093/intqhc/mzw060>
- Cave, J., Woolf, K., Jones, A., & Dacre, J. (2009). Easing the transition from student to doctor: How can medical schools help prepare their graduates for starting work? *Medical Teacher*, 31(5), 403–408. <https://doi.org/10.1080/01421590802348127>

- Chassin, M. R. (1996). Quality of health care. Part 3: Improving the quality of care. *New England Journal of Medicine*, 335(14), 1060–1063. <https://doi.org/10.1056/NEJM199610033351413>
- Chassin, M. R., Kosecoff, J., Solomon, D. H., & Brook, R. H. (1987). How coronary angiography is used. Clinical determinants of appropriateness. *JAMA*, 258(18), 2543–2547.
- Chaudhry, B., Wang, J., Wu, S., Maglione, M., Mojica, W., Roth, E., ... Shekelle, P. G. (2006). Systematic review: Impact of health information technology on quality, efficiency, and costs of medical care. *Annals of Internal Medicine*, 144(10), 742–752. <https://doi.org/10.7326/0003-4819-144-10-200605160-00125>
- Cochrane, A. L. (1972). *Effectiveness and efficiency: Random reflections on health services*. London: Nuffield Provincial Hospitals Trust.
- Code, L. (1991). *What can she know? Feminist theory and the construction of knowledge*. Ithaca, NY: Cornell University Press.
- Codman, E. A. (1996). *A study in hospital efficiency: As demonstrated by the case report of the first five years of a private hospital*. Oakbrook Terrace, IL: Joint Commission on Accreditation of Healthcare Organizations.
- Collier, E., & Harrington, C. (2008). Staffing characteristics, turnover rates, and quality of resident care in nursing facilities. *Research in Gerontological Nursing*, 1(3), 157–170. <https://doi.org/10.3928/00220124-20091301-03>
- Crofton, J. (2006). The MRC randomized trial of streptomycin and its legacy: A view from the clinical front line. *Journal of the Royal Society of Medicine*, 99(10), 531–534. <https://doi.org/10.1258/jrsm.99.10.531>
- Currie, V., Harvey, G., West, E., McKenna, H., & Keeney, S. (2005). Relationship between quality of care, staffing levels, skill mix and nurse autonomy: Literature review. *Journal of Advanced Nursing*, 51(1), 73–82. <https://doi.org/10.1111/j.1365-2648.2005.03462.x>
- Dahlin, M., Fjell, J., & Runeson, B. (2010). Factors at medical school and work related to exhaustion among physicians in their first postgraduate year. *Nordic Journal of Psychiatry*, 64(6), 402–408. <https://doi.org/10.3109/08039481003759219>
- Dahlin, M., Joneborg, N., & Runeson, B. (2005). Stress and depression among medical students: A cross-sectional study. *Medical Education*, 39(6), 594–604. <https://doi.org/10.1111/j.1365-2929.2005.02176.x>
- de Bucourt, M., Busse, R., Guttler, F., Wintzer, C., Collettini, F., Kloeters, C., & Teichgraber, U. K. (2011). Lean manufacturing and Toyota production system terminology applied to the procurement of vascular stents in interventional radiology. *Insights Imaging*, 2(4), 415–423. <https://doi.org/10.1007/s13244-011-0097-0>
- Derose, S. F., & Petitti, D. B. (2003). Measuring quality of care and performance from a population health care perspective. *Annual Review of Public Health*, 24, 363–384. <https://doi.org/10.1146/annurev.publhealth.24.10091.140847>
- Doll, R., & Hill, A. B. (1950). Smoking and carcinoma of the lung: Preliminary report. *British Medical Journal*, 2(4682), 739–748. <https://doi.org/10.1136/bmj.2.4682.739>
- Donabedian, A. (1966). Evaluating the quality of medical care. *The Milbank Quarterly*, 83(4), 691–729. <https://doi.org/10.1111/j.1468-0009.2005.00397.x>
- Donabedian, A. (1980). *The definition of quality and approaches to its assessment*. Ann Arbor, MI: Health Administration Press.
- Donabedian, A. (1988). The quality of care. How can it be assessed? *JAMA*, 260(12), 1743–1748. <https://doi.org/10.1001/jama.260.12.1743>
- Dornan, T. (2005). Osler, Flexner, apprenticeship and ‘the new medical education’. *Journal of the Royal Society of Medicine*, 98(3), 91–95. <https://doi.org/10.1258/jrsm.98.3.91>
- Dyrbye, L. N., Thomas, M. R., Power, D. V., Durning, S., Moutier, C., Massie, F. S., Jr., & Shanafelt, T. D. (2010). Burnout and serious thoughts of dropping out of medical school: A multi-institutional study. *Academic Medicine*, 85(1), 94–102. <https://doi.org/10.1097/ACM.0b013e3181c46aad>
- Eccles, M., Clapp, Z., Grimshaw, J., Adams, P. C., Higgins, B., Purves, I., & Russell, I. (1996). North of England evidence based guidelines development project: Methods of guideline development. *BMJ*, 312(7033), 760–762. <https://doi.org/10.1136/bmj.312.7033.760>

- Erasmus, V., Brouwer, W., van Beeck, E. F., et al. (2009). A qualitative exploration of reasons for poor hand hygiene among hospital workers: Lack of positive role models and of convincing evidence that hand hygiene prevents cross-infection. *Infection Control & Hospital Epidemiology*, 30(5), 415–419. <https://doi.org/10.1086/596773>
- Erasmus, V., Daha, T. J., Brug, H., et al. (2010). Systematic review of studies on compliance with hand hygiene guidelines in hospital care. *Infection Control & Hospital Epidemiology*, 31(3), 283–294. <https://doi.org/10.1086/650451>
- Finset, K. B., Gude, T., Hem, E., Tyssen, R., Ekeberg, O., & Vaglum, P. (2005). Which young physicians are satisfied with their work? A prospective nationwide study in Norway. *BMC Medical Education*, 5(1), 19. <https://doi.org/10.1186/1472-6920-5-19>
- Fisher, E. S., & Welch, H. G. (1999). Avoiding the unintended consequences of growth in medical care: How might more be worse? *JAMA*, 281(5), 446–453. <https://doi.org/10.1001/jama.281.5.446>
- Fleshner, N., Rakovitch, E., & Klotz, L. (2000). Differences between urologists in the United States and Canada in the approach to prostate cancer. *Journal of Urology*, 163(5), 1461–1466. [https://doi.org/10.1016/S0022-5347\(05\)67643-4](https://doi.org/10.1016/S0022-5347(05)67643-4)
- Flexner, A., & Pritchett, H. S. (1910). *Medical education in the United States and Canada: A report to the Carnegie Foundation for the Advancement of Teaching*. New York, NY: Carnegie Foundation for the Advancement of Teaching.
- Ford, H., & Crowther, S. (1988). *Today and tomorrow*. Cambridge, MA: Productivity Press.
- Frew, P. M., Saint-Victor, D. S., Isaacs, M. B., Kim, S., Swamy, G. K., Sheffield, J. S., & Ault, K. (2014). Recruitment and retention of pregnant women into clinical research trials: An overview of challenges, facilitators, and best practices. *Clinical Infectious Diseases*, 59(Suppl 7), S400–S407. <https://doi.org/10.1093/cid/ciu726>
- Furukawa, P. O., Cunha, I. C. K. O., Pedreira, M. L. G., & Marck, P. B. (2016). Environmental sustainability in medication processes performed in hospital nursing care. *Acta Paulista de Enfermagem*, 29(3), 316–324. <https://doi.org/10.1590/1982-0194201600044>
- GBD 2016 SDG Collaborators. (2017). Measuring progress and projecting attainment on the basis of past trends of the health-related Sustainable Development Goals in 188 countries: An analysis from the Global Burden of Disease Study 2016. *Lancet (London, England)*, 390(10100), 1423–1459. [https://doi.org/10.1016/S0140-6736\(17\)32336-X](https://doi.org/10.1016/S0140-6736(17)32336-X)
- Gemmatti, D., Varani, K., Bramanti, B., Piva, R., Bonaccorsi, G., Trentini, A., & Bellini, T. (2019). ‘Bridging the gap’. Everything that could have been avoided if we had applied gender medicine, pharmacogenetics and personalized medicine in the gender-omics and sex-omics era. *International Journal of Molecular Sciences*, 21(1). <https://doi.org/10.3390/ijms21010296>
- Gergen, J., Josephson, E., Coe, M., Ski, S., Madhavan, S., & Bauhoff, S. (2017). Quality of care in performance-based financing: How it is incorporated in 32 programs across 28 countries. *Global Health-Science and Practice*, 5(1), 90–107. <https://doi.org/10.9745/ghsp-d-16-00239>
- Gilbert, G. L., & Kerridge, I. (2020). Hospital infection control: Old problem—Evolving challenges. *Internal Medicine Journal*, 50(1), 105–107. <https://doi.org/10.1111/imj.14686>
- Giæver, F., Lohmann-Lafrenz, S., & Løvseth, L. T. (2016). Why hospital physicians attend work while ill? The spiralling effect of positive and negative factors. *BMC Health Services Research*, 16(1), 548. <https://doi.org/10.1186/s12913-016-1802-y>
- Gladwell, M. (2002). *The tipping point: How little things can make a big difference*. Boston, MA: Back Bay Books.
- Global Preparedness Monitoring Board. (2019a). *A world at risk. Annual report on global preparedness for health emergencies*. Retrieved from [https://apps.who.int/gpmb/assets/annual\\_report/GPMB\\_Annual\\_Report\\_Exec\\_Summary\\_Foreword\\_and\\_About\\_English.pdf](https://apps.who.int/gpmb/assets/annual_report/GPMB_Annual_Report_Exec_Summary_Foreword_and_About_English.pdf)
- Global Preparedness Monitoring Board. (2019b). *World at risk from deadly pandemics*. Retrieved from [https://apps.who.int/gpmb/assets/annual\\_report/GPMB%20Press%20Release%202017%20Sep.pdf](https://apps.who.int/gpmb/assets/annual_report/GPMB%20Press%20Release%202017%20Sep.pdf)
- Godlee, F. (2007). Milestones on the long road to knowledge. *BMJ*, 334(Suppl 1), s2–s3. <https://doi.org/10.1136/bmj.39062.570856.94>

- Goodwin, N. (2014). Thinking differently about integration: People-centred care and the role of local communities. *International Journal of Integrated Care*, 14, e026. <https://doi.org/10.5334/ijic.1736>
- Gosselin, R. (1985). Probing into task interdependencies: The case of physicians in a teaching hospital. *Journal of Management Studies*, 22(5), 466–497. <https://doi.org/10.1111/j.1467-6486.1985.tb00008.x>
- Gotzsche, P. C. (2004). On the benefits and harms of screening for breast cancer. *International Journal of Epidemiology*, 33(1), 56–64. <https://doi.org/10.1093/ije/dyh014>
- Graban, M. (2016). *Lean hospitals: Improving quality, patient safety, and employee engagement* (3rd ed.). Boca Raton, FL: CRC Press, Taylor & Francis Group.
- Greene, J., Hibbard, J. H., Sacks, R., Overton, V., & Parrotta, C. D. (2015). When patient activation levels change, health outcomes and costs change, too. *Health Affairs*, 34(3), 431–437. <https://doi.org/10.1377/hlthaff.2014.0452>
- Grimmer, K., Lizarondo, L., Kumar, S., Bell, E., Buist, M., & Weinstein, P. (2014). An evidence-based framework to measure quality of allied health care. *Health Research Policy and Systems*, 12. <https://doi.org/10.1186/1478-4505-12-10>
- Grotmol, K. S., Gude, T., Mourit, T., Vaglum, P., & Tyssen, R. (2013). Risk factors at medical school for later severe depression: A 15-year longitudinal, nationwide study (NORDOC). *Journal of Affective Disorders*, 146(1), 106–111. <https://doi.org/10.1016/j.jad.2012.08.047>
- Grp, T. S. (2010). Health systems, patients factors, and quality of care for diabetes: A synthesis of findings from the TRIAD study. *Diabetes Care*, 33(4), 940–947. <https://doi.org/10.2337/dc09-1802>
- Guyatt, G., Guterman, D., Baumann, M. H., Addrizzo-Harris, D., Hylek, E. M., Phillips, B., & Schunemann, H. (2006). Grading strength of recommendations and quality of evidence in clinical guidelines: Report from an American College of Chest Physicians task force. *Chest*, 129(1), 174–181. <https://doi.org/10.1378/chest.129.1.174>
- Guyatt, G., & Vandvik, P. O. (2013). Creating clinical practice guidelines: Problems and solutions. *Chest*, 144(2), 365–367. <https://doi.org/10.1378/chest.13-0463>
- Haraway, D. (1988). Situated knowledges: The science question in feminism and the privilege of partial perspective. *Feminist Studies*, 14(3), 575–599. <https://doi.org/10.2307/3178066>
- Harrison, R., Cohen, A. W., & Walton, M. (2015). Patient safety and quality of care in developing countries in Southeast Asia: A systematic literature review. *International Journal for Quality in Health Care: Journal of the International Society for Quality in Health Care*, 27(4), 240–254. <https://doi.org/10.1093/intqhc/mzv041>
- Hearld, L. R., Alexander, J. A., Fraser, I., & Jiang, H. J. (2008). How do hospital organizational structure and processes affect quality of care? A critical review of research methods. *Medical Care Research and Review*, 65(3), 259–299. <https://doi.org/10.1177/1077558707309613>
- Heiat, A., Gross, C. P., & Krumholz, H. M. (2002). Representation of the elderly, women, and minorities in heart failure clinical trials. *Archives of Internal Medicine*, 162(15), 1682–1688. <https://doi.org/10.1001/archinte.162.15.1682>
- Hibbard, J. H., & Greene, J. (2013). What the evidence shows about patient activation: Better health outcomes and care experiences, fewer data on costs. *Health Affairs*, 32(2), 207–214. <https://doi.org/10.1377/hlthaff.2012.1061>
- Hill, A. B. (1965). The environment and disease: Association or causation? *Proceedings of the Royal Society of Medicine*, 58, 295–300.
- Husserl, E. (1970). *The crisis of European sciences and transcendental phenomenology: An introduction to phenomenological philosophy*. Evanston, IL: Northwestern University Press.
- Institute of Medicine (US) Committee to Design a Strategy for Quality Review and Assurance in Medicare. Division of Health Care Services, & Lohr, K. N. (Eds.). (1990). *Medicare: A strategy for quality assurance*. Washington, DC: National Academy Press.
- Institute of Medicine (US) Forum on Microbial Threats, Knobler, S., Mahmoud, A., Lemon, S., Mack, A., Sivitz, L., & Oberholtzer, K. (Eds.). (2004). *Learning from SARS: Preparing for the next disease outbreak*. National Academies Press (US).

- InstitutPasteur. (2020). *Our history*. Retireved from <https://www.pasteur.fr/en/institut-pasteur/history>
- Ishak, W., Nikravesh, R., Lederer, S., Perry, R., Ogunyemi, D., & Bernstein, C. (2013). Burnout in medical students: A systematic review. *The Clinical Teacher*, 10(4), 242–245. <https://doi.org/10.1111/tct.12014>
- Jamal, A., McKenzie, K., & Clark, M. (2009). The impact of health information technology on the quality of medical and health care: A systematic review. *Health Information Management: Journal of the Health Information Management Association of Australia*, 38(3), 26–37. <https://doi.org/10.1177/183335830903800305>
- Jameton, A., & Pierce, J. (2001). Environment and health: 8. Sustainable health care and emerging ethical responsibilities. *CMAJ: Canadian Medical Association Journal = Journal de l'Association Medicale Canadienne*, 164(3), 365–369.
- Jencks, S. F., & Wilensky, G. R. (1992). The health-care quality improvement initiative: A new approach to quality assurance in medicare. *JAMA*, 268(7), 900–903. <https://doi.org/10.1001/jama.268.7.900>
- Johnson, M. S. (1990). Perspectives in medicine. Generalizability of homogenous samples in clinical trials. *Journal of the Association for Academic Minority Physicians: The Official Publication of the Association for Academic Minority Physicians*, 1(2), 31–33.
- Johnson, B., Abraham, M., Conway, J., Simmons, L., Edgman-Levitin, Sodomka, S., & Ford, D. (2008). *Partnering with patients and families to design a patient- and family-centered health care system recommendations and promising practices*. Retrieved from <https://www.ipfcc.org/resources/PartneringwithPatientsandFamilies.pdf>
- Keith, J. M. (1988). Florence Nightingale: Statistician and consultant epidemiologist. *International Nursing Review*, 35(5), 147–150.
- Kendell, R. E. (1980). Diagnostic and statistical manual of mental disorders, 3rd ed. *American Journal of Psychiatry*, 137(12), 1630–1631. <https://doi.org/10.1176/ajp.137.12.1630>
- Kiessling, C., Schubert, B., Scheffner, D., & Burger, W. (2004). First year medical students' perceptions of stress and support: A comparison between reformed and traditional track curricula. *Medical Education*, 38(5), 504–509. <https://doi.org/10.1046/j.1365-2929.2004.01816.x>
- Klein, R. (2006). The troubled transformation of Britain's National Health Service. *New England Journal of Medicine*, 355(4), 409–415. <https://doi.org/10.1056/NEJMhp062747>
- Kopf, E. W. (1978). Florence Nightingale as statistician. *Research in Nursing Health*, 1(3), 93–102. <https://doi.org/10.1002/nur.4770010302>
- Kossaify, A., Hleihel, W., & Lahoud, J. C. (2017). Team-based efforts to improve quality of care, the fundamental role of ethics, and the responsibility of health managers: Monitoring and management strategies to enhance teamwork. *Public Health*, 153, 91–98. <https://doi.org/10.1016/j.puhe.2017.08.007>
- Koy, V., Yunibhand, J., & Angsuroch, Y. (2016). The quantitative measurement of nursing care quality: A systematic review of available instruments. *International Nursing Review*, 63(3), 490–498. <https://doi.org/10.1111/inr.12269>
- Krafcić, J. F. (1988). Triumph of the lean production system. *Sloan Management Review*, 30(1), 41–52.
- Kruse, F. M., Stadhouders, N. W., Adang, E. M., Groenewoud, S., & Jeurissen, P. P. T. (2018). Do private hospitals outperform public hospitals regarding efficiency, accessibility, and quality of care in the European Union? A literature review. *International Journal of Health Planning and Management*, 33(2), E434–E453. <https://doi.org/10.1002/hpm.2502>
- Kurki, M. (2015). Stretching situated knowledge: From standpoint epistemology to cosmology and back again. *Millennium-Journal of International Studies*, 43(3), 779–797. <https://doi.org/10.1177/0305829815583322>
- Lagrew, D. C., Jr., & Adashek, J. A. (1998). Lowering the cesarean section rate in a private hospital: Comparison of individual physicians' rates, risk factors, and outcomes. *American Journal of Obstetrics and Gynecology*, 178(6), 1207–1214. [https://doi.org/10.1016/s0002-9378\(98\)70324-2](https://doi.org/10.1016/s0002-9378(98)70324-2)

- Lakhan, S. E., Hamlat, E., McNamee, T., & Laird, C. (2009). Time for a unified approach to medical ethics. *Philosophy, Ethics, and Humanities in Medicine*, 4, 13. <https://doi.org/10.1186/1747-5341-4-13>
- Langstaff, K., & Brzozowski, V. (2017). Managing environmental sustainability in a healthcare setting. *Healthcare Management Forum*, 30(2), 84–88. <https://doi.org/10.1177/0840470416675178>
- Lara-Cabrera, M., & Nesset, M. B. (2017). The effects of a brief educational programme added to community mental health treatment to improve patient activation and attendance: A randomized controlled trial. *European Psychiatry*, 41, S610. <https://doi.org/10.1016/j.eurpsy.2017.01.965>
- Lara-Cabrera, M. L., Salvesen, O., Nesset, M. B., De las Cuevas, C., Iversen, V. C., & Grawe, R. W. (2016). The effect of a brief educational programme added to mental health treatment to improve patient activation: A randomized controlled trial in community mental health centres. *Patient Education and Counseling*, 99(5), 760–768. <https://doi.org/10.1016/j.pec.2015.11.028>
- Levine, R., Shore, K., Lubalin, J., Garfinkel, S., Hurtado, M., & Carman, K. (2012). Comparing physician and patient perceptions of quality in ambulatory care. *International Journal for Quality in Health Care: Journal of the International Society for Quality in Health Care*, 24(4), 348–356. <https://doi.org/10.1093/intqhc/mzs023>
- Lloyd, H., Jenkinson, C., Hadi, M., Gibbons, E., & Fitzpatrick, R. (2014). Patient reports of the outcomes of treatment: A structured review of approaches. *Health and Quality of Life Outcomes*, 12, 5. <https://doi.org/10.1186/1477-7525-12-5>
- Long, M. J. (2002). An explanatory model of medical practice variation: A physician resource demand perspective. *Journal of Evaluation in Clinical Practice*, 8(2), 167–174. <https://doi.org/10.1046/j.1365-2753.2002.00343.x>
- Lopes, C. M., Scavarda, A. J., de Carvalho, M. N. M., Vaccaro, G., & Korzenowski, A. L. (2019). Analysis of sustainability in hospital laundry: The social, environmental, and economic (cost) risks. *Resources-Basel*, 8(1), 37. <https://doi.org/10.3390/resources8010037>
- Lorini, C., Porchia, B. R., Pieralli, F., & Bonaccorsi, G. (2018). Process, structural, and outcome quality indicators of nutritional care in nursing homes: A systematic review. *BMC Health Services Research*, 18. <https://doi.org/10.1186/s12913-018-2828-0>
- Lucero, R. J., Lake, E. T., & Aiken, L. H. (2009). Variations in nursing care quality across hospitals. *Journal of Advanced Nursing*, 65(11), 2299–2310. <https://doi.org/10.1111/j.1365-2648.2009.05090.x>
- Lui, J., Andres, E. B., & Johnston, J. M. (2018). Presenteeism exposures and outcomes amongst hospital doctors and nurses: A systematic review. *BMC Health Services Research*, 18(1), 985. <https://doi.org/10.1186/s12913-018-3789-z>
- Løvseth, L. T. (2017). The hidden stressor of child welfare workers: Client confidentiality as a barrier for coping with emotional work demands. *Child & Family Social Work*, 22(2), 923–931. <https://doi.org/10.1111/cfs.12312>
- Løvseth, L. T., Aasland, O. G., Fridner, A., Jonsdottir, L. S., Marini, M., & Linaker, O. M. (2010). Confidentiality and physicians' health. A cross-sectional study of university hospital physicians in four european cities (the HOUPE study). *Journal of Occupational Health*, 52(5), 263–271. <https://doi.org/10.1539/joh.L10014>
- Løvseth, L. T., Fridner, A., Jonsdottir, L. S., Marini, M., & Linaker, O. M. (2013). Associations between confidentiality requirements, support seeking and burnout among university hospital physicians in Norway, Sweden, Iceland and Italy (the HOUPE study). *Stress and Health*, 29(5), 432–437. <https://doi.org/10.1002/smj.2479>
- Løvseth, L. T., & Giæver, F. (2018). Physician parents attending work despite own sick children. A qualitative study on Caregiver presenteeism among Norwegian hospital physicians. *Health Services Insight*, 11, 1–11. <https://doi.org/10.1177/1178632918817298>
- Magnussen, J., Vrangbæk, K., & Saltman, R. B. (2009). *Nordic health care systems. Recent reforms and current challenges*. Berkshire, England: McGraw-Hill, Open University Press.

- Mainz, J., Hjulsager, M., Og, M. T., & Burgaard, J. (2009). National benchmarking between the Nordic countries on the quality of care. *Journal of Surgical Oncology*, 99(8), 505–507. <https://doi.org/10.1002/jso.21204>
- Mangione-Smith, R., DeCristofaro, A. H., Setodji, C. M., Keesey, J., Klein, D. J., Adams, J. L., & McGlynn, E. A. (2007). The quality of ambulatory care delivered to children in the United States. *New England Journal of Medicine*, 357(15), 1515–1523. <https://doi.org/10.1056/NEJMsa064637>
- Mattke, S., Epstein, A. M., & Leatherman, S. (2006). The OECD Health Care Quality Indicators Project: History and background. *International Journal for Quality in Health Care*, 18(Suppl. 1), 1–4. <https://doi.org/10.1093/intqhc/mzl019>
- McGain, F., & Naylor, C. (2014). Environmental sustainability in hospitals: A systematic review and research agenda. *Journal of Health Services Research & Policy*, 19(4), 245–252. <https://doi.org/10.1177/1355819614534836>
- McGlynn, E. A., Asch, S. M., Adams, J., Keesey, J., Hicks, J., DeCristofaro, A., & Kerr, E. A. (2003). The quality of health care delivered to adults in the United States. *New England Journal of Medicine*, 348(26), 2635–2645. <https://doi.org/10.1056/NEJMsa022615>
- McPherson, K., & Bunker, J. P. (2007). Costs, risks and benefits of surgery: A milestone in the development of health services research. *Journal of the Royal Society of Medicine*, 100(8), 387–390. <https://doi.org/10.1177/014107680710000819>
- Merry, M. D., & Crago, M. G. (2001). The past, present and future of health care quality. Urgent need for innovative, external review processes to protect patients. *Physician Executive*, 27(5), 30–35.
- Migdadi, Y. K. A. A., & Omari, A. A. (2019). Identifying the best practices in green operations strategy of hospitals. *Benchmarking: An International Journal*, 26(4), 1106–1131. <https://doi.org/10.1108/Bij-09-2017-0242>
- Misra-Hebert, A. D., Kay, R., & Stoller, J. K. (2004). A review of physician turnover: Rates, causes, and consequences. *American Journal of Medical Quality*, 19(2), 56–66. <https://doi.org/10.1177/106286060401900203>
- Mohammed, K., Nolan, M. B., Rajjo, T., Shah, N. D., Prokop, L. J., Varkey, P., & Murad, M. H. (2016). Creating a patient-centered health care delivery system: A systematic review of health care quality from the patient perspective. *American Journal of Medical Quality: The Official Journal of the American College of Medical Quality*, 31(1), 12–21. <https://doi.org/10.1177/1062860614545124>
- Moseley, J. B., O'Malley, K., Petersen, N. J., Menke, T. J., Brody, B. A., Kuykendall, D. H., & Wray, N. P. (2002). A controlled trial of arthroscopic surgery for osteoarthritis of the knee. *New England Journal of Medicine*, 347(2), 81–88. <https://doi.org/10.1056/NEJMoa013259>
- Mousa, S. K., & Othman, M. (2020). The impact of green human resource management practices on sustainable performance in healthcare organisations: A conceptual framework. *Journal of Cleaner Production*, 243, 118595. <https://doi.org/10.1016/j.jclepro.2019.118595>
- Mullner, R. M. (2009). *Encyclopedia of health services research*. Los Angeles, CA: Sage.
- Nachlas, M. M. (1991). Irrationality in the management of breast cancer. I. The staging system. *Cancer*, 68(4), 681–690. [https://doi.org/10.1002/1097-0142\(19910815\)68:4%3c681::aid-cncr2820680403%3e3.0.co;2-2](https://doi.org/10.1002/1097-0142(19910815)68:4%3c681::aid-cncr2820680403%3e3.0.co;2-2)
- Nigam, A. (2012). Changing health care quality paradigms: The rise of clinical guidelines and quality measures in American medicine. *Social Science & Medicine*, 75(11), 1933–1937. <https://doi.org/10.1016/j.socscimed.2012.07.038>
- Nightingale, F. (1860). *Notes on nursing: What it is, and what it is not*. London: Harrison.
- Nightingale, F. (1863). *Notes on hospitals* (3rd ed.). London: Longman, Green, Longman, Roberts, and Green.
- Nylenna, M., Bjertnaes, ØA., Saunes, I. S., & Lindahl, A. K. (2015). What is good quality of health care? *Professions & Professionalism*, 5(1), 13. <https://doi.org/10.7577/pp.909>

- O'Neill, L. D., Wallstedt, B., Eika, B., & Hartvigsen, J. (2011). Factors associated with dropout in medical education: A literature review. *Medical Education*, 45(5), 440–454. <https://doi.org/10.1111/j.1365-2923.2010.03898.x>
- Ordway, A., Pitonyak, J. S., & Johnson, K. L. (2020). Durable medical equipment reuse and recycling: Uncovering hidden opportunities for reducing medical waste. *Disability and Rehabilitation: Assistive Technology*, 15(1), 21–28. <https://doi.org/10.1080/17483107.2018.1508516>
- Organisation for Economic Co-operation and Development Health Division. (2017). *Tackling wasteful spending on health*. Paris: OECD.
- Park, J., Chung, S., An, H., Park, S., Lee, C., Kim, S. Y., & Kim, K. S. (2012). A structural model of stress, motivation, and academic performance in medical students. *Psychiatry Investigation*, 9(2), 143–149. <https://doi.org/10.4306/pi.2012.9.2.143>
- Park, M., Giap, T. T. T., Lee, M., Jeong, H., Jeong, M., & Go, Y. (2018). Patient- and family-centered care interventions for improving the quality of health care: A review of systematic reviews. *International Journal of Nursing Studies*, 87, 69–83. <https://doi.org/10.1016/j.ijnurstu.2018.07.006>
- Patwardhan, M., Fisher, D. A., Mantyh, C. R., McCrory, D. C., Morse, M. A., Prosnitz, R. G., & Samsa, G. P. (2007). Assessing the quality of colorectal cancer care: Do we have appropriate quality measures? A systematic review of literature. *Journal of Evaluation in Clinical Practice*, 13(6), 831–845. <https://doi.org/10.1111/j.1365-2753.2006.00762.x>
- Petre, M. A., Bahrey, L., Levine, M., van Rensburg, A., Crawford, M., & Matava, C. (2019). A national survey on attitudes and barriers on recycling and environmental sustainability efforts among Canadian anesthesiologists: An opportunity for knowledge translation. *Canadian Journal of Anesthesia (Journal Canadien D'Anesthésie)*, 66(3), 272–286. <https://doi.org/10.1007/s12630-018-01273-9>
- Piccoli, G. B., Nazha, M., Ferraresi, M., Vigotti, F. N., Pereno, A., & Barbero, S. (2015). Eco-dialysis: The financial and ecological costs of dialysis waste products: Is a ‘cradle-to-cradle’ model feasible for planet-friendly haemodialysis waste management? *Nephrology Dialysis Transplantation*, 30(6), 1018–1027. <https://doi.org/10.1093/ndt/gfv031>
- Pichler, P. P., Jaccard, I. S., Weisz, U., & Weisz, H. (2019). International comparison of health care carbon footprints. *Environmental Research Letters*, 14(6), 064004. <https://doi.org/10.1088/1748-9326/ab19e1>
- Poon, S., Goodman, S. G., Yan, R. T., Bugiardini, R., Bierman, A. S., Eagle, K. A., & Yan, A. T. (2012). Bridging the gender gap: Insights from a contemporary analysis of sex-related differences in the treatment and outcomes of patients with acute coronary syndromes. *American Heart Journal*, 163(1), 66–73. <https://doi.org/10.1016/j.ahj.2011.09.025>
- Prey, J. E., Woollen, J., Wilcox, L., Sackheim, A. D., Hripcak, G., Bakken, S., & Vawdrey, D. K. (2014). Patient engagement in the inpatient setting: A systematic review. *Journal of the American Medical Informatics Association*, 21(4), 742–750. <https://doi.org/10.1136/amiajnl-2013-002141>
- Puthran, R., Zhang, M. W. B., Tam, W. W., & Ho, R. C. (2016). Prevalence of depression amongst medical students: A meta-analysis. *Medical Education*, 50(4), 456–468. <https://doi.org/10.1111/medu.12962>
- Rae, A. (2001). Osler vindicated: The ghost of Flexner laid to rest. *Canadian Medical Association Journal*, 164(13), 1860–1861.
- Reed, D. A., Shanafelt, T. D., Satele, D. W., Power, D. V., Eacker, A., Harper, W., & Dyrbye, L. N. (2011). Relationship of pass/fail grading and curriculum structure with well-being among preclinical medical students: A multi-institutional study. *Academic Medicine*, 86(11), 1367–1373. <https://doi.org/10.1097/ACM.0b013e3182305d81>
- Reiser, S. J. (1993). The era of the patient. Using the experience of illness in shaping the missions of health care. *JAMA*, 269(8), 1012–1017. <https://doi.org/10.1001/jama.269.8.1012>
- Reiser, D. E., & Rosen, D. H. (1984). *Medicine as a human experience*. Baltimore, MD: University Park Press.
- Ritzer, G., & Ryan, J. M. (2011). *The concise encyclopedia of sociology*. Chichester, UK; Malden, MA: Wiley-Blackwell.

- Rogers, W. (2004). Evidence-based medicine and women: Do the principles and practice of EBM further women's health? *Bioethics*, 18(1), 50–71. <https://doi.org/10.1111/j.1467-8519.2004.00378.x>
- Rogers, M. E., Creed, P. A., Searle, J., & Nicholls, S. L. (2016). Coping with medical training demands: Thinking of dropping out, or in it for the long haul. *Studies in Higher Education*, 41(9), 1715–1732. <https://doi.org/10.1080/03075079.2014.999318>
- Rohe, D. E., Barrier, P. A., Clark, M. M., Cook, D. A., Vickers, K. S., & Decker, P. A. (2006). The benefits of pass-fail grading on stress, mood, and group cohesion in medical students. *Mayo Clinic Proceedings*, 81(11), 1443–1448. <https://doi.org/10.4065/81.11.1443>
- Rotenstein, L. S., Ramos, M. A., Torre, M., Segal, J. B., Peluso, M. J., Guille, C., & Mata, D. A. (2016). Prevalence of depression, depressive symptoms, and suicidal ideation among medical students. A systematic review and meta-analysis. *JAMA*, 316(21), 2214–2236. <https://doi.org/10.1001/jama.2016.17324>
- Rothman, D. J. (2003). *Strangers at the bedside: A history of how law and bioethics transformed medical decision making* (2nd ed.). New York, NY: Aldine de Gruyter.
- Runciman, W. B., Hunt, T. D., Hannaford, N. A., Hibbert, P. D., Westbrook, J. I., Coiera, E. W., & Braithwaite, J. (2012). CareTrack: Assessing the appropriateness of health care delivery in Australia. *Medical Journal of Australia*, 197(2), 100–105. <https://doi.org/10.5694/mja12.10510>
- Ryan-Fogarty, Y., Becker, G., Moles, R., & O'Regan, B. (2017). Backcasting to identify food waste prevention and mitigation opportunities for infant feeding in maternity services. *Waste Management*, 61, 405–414. <https://doi.org/10.1016/j.wasman.2016.12.029>
- Saini, V., Brownlee, S., Elshaug, A. G., Glasziou, P., & Heath, I. (2017). Addressing overuse and underuse around the world. *Lancet*, 390(10090), 105–107. [https://doi.org/10.1016/S0140-6736\(16\)32573-9](https://doi.org/10.1016/S0140-6736(16)32573-9)
- Saini, V., Garcia-Armesto, S., Klemperer, D., Paris, V., Elshaug, A. G., Brownlee, S., & Fisher, E. S. (2017). Drivers of poor medical care. *Lancet*, 390(10090), 178–190. [https://doi.org/10.1016/S0140-6736\(16\)30947-3](https://doi.org/10.1016/S0140-6736(16)30947-3)
- Saleh, S., Alameddine, M., Mourad, Y., & Natafgi, N. (2015). Quality of care in primary health care settings in the Eastern Mediterranean region: A systematic review of the literature. *International Journal for Quality in Health Care*, 27(2), 79–88. <https://doi.org/10.1093/intqhc/mzu103>
- Sawicki, P. T., & Bastian, H. (2008). German health care: A bit of Bismarck plus more science. *BMJ*, 337. <https://doi.org/10.1136/bmj.a1997>
- Scarry, E. (1985). *The body in pain: The making and unmaking of the world*. New York, NY: Oxford University Press.
- Schauber, S. K., Hecht, M., Nouns, Z. M., Kuhlmeier, A., & Dettmer, S. (2015). The role of environmental and individual characteristics in the development of student achievement: A comparison between a traditional and a problem-based learning curriculum. *Advances in Health Sciences Education: Theory and Practice*, 20(4), 1033–1052. <https://doi.org/10.1007/s10459-015-9584-2>
- Schwartz, P. L., & Loten, E. G. (2003). Effects of a revised preclinical curriculum on students' perceptions of their cognitive behaviors, attitudes to social issues in medicine, and the learning environment. *Teaching and Learning in Medicine*, 15(2), 76–83. [https://doi.org/10.1207/S15328015TLM1502\\_01](https://doi.org/10.1207/S15328015TLM1502_01)
- Scott, I. A., Darwin, I. C., Harvey, K. H., Duke, A. B., Buckmaster, N. D., Atherton, J., & CPIC Cardiac Collaborative. (2004). Multisite, quality-improvement collaboration to optimise cardiac care in Queensland public hospitals. *Medical Journal of Australia*, 180(8), 392–397. <https://doi.org/10.5694/j.1326-5377.2004.tb05992.x>
- Scott, I. A., Derhy, P. H., O'Kane, D., Lindsay, K. A., Atherton, J. J., Jones, M. A., & CPIC Cardiac Collaborative. (2007). Discordance between level of risk and intensity of evidence-based treatment in patients with acute coronary syndromes. *Medical Journal of Australia*, 187(3), 153–159. <https://doi.org/10.5694/j.1326-5377.2007.tb01173.x>
- Scott, I. A., Poole, P. J., & Jayathissa, S. (2008). Improving quality and safety of hospital care: A reappraisal and an agenda for clinically relevant reform. *Internal Medicine Journal*, 38(1), U44–U55. <https://doi.org/10.1111/j.1445-5994.2007.01456.x>

- Scott, A., Sivey, P., Ouakrim, D. A., Willenberg, L., Naccarella, L., Furler, J., & Young, D. (2011). The effect of financial incentives on the quality of health care provided by primary care physicians. *Cochrane Database of Systematic Reviews*, 9. <https://doi.org/10.1002/14651858.CD008451.pub2>
- Seifert, C., & Guenther, E. (2019). Prevention is better than cure: Environmental management measures in hospitals. *Corporate Social Responsibility and Environmental Management*, 26(4), 781–790. <https://doi.org/10.1002/csr.1720>
- Seligman, M. E., & Csikszentmihalyi, M. (2000). Positive psychology. An introduction. *American Psychologist*, 55(1), 5–14. <https://doi.org/10.1037/0003-066x.55.1.5>
- Semmelweis, I. (1983). *The etiology, concept, and prophylaxis of childbed fever* (K. C. Carter, Trans.). Madison, WI: University of Wisconsin Press.
- Singh, G. K., Azuine, R. E., & Siahpush, M. (2012). Global inequalities in cervical cancer incidence and mortality are linked to deprivation, low socioeconomic status, and human development. *International Journal of Maternal and Child Health & AIDS*, 1(1), 17–30. <https://doi.org/10.21106/ijma.12>
- Slavin, S. J., Schindler, D. L., & Chibnall, J. T. (2014). Medical student mental health 3.0: Improving student wellness through curricular changes. *Academic Medicine*, 89(4), 573–577. <https://doi.org/10.1097/ACM.0000000000000166>
- Sletta, C., Tyssen, R., & Løvseth, L. T. (2019). Change in subjective well-being over 20 years at two Norwegian medical schools and factors linked to well-being today: A survey. *BMC Medical Education*, 19. <https://doi.org/10.1186/s12909-019-1476-3>
- Sørensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z. & Brand, H. (2012). Health literacy and public health: A systematic review and integration of definitions and models. *BMC Public Health*, 12. <https://doi.org/10.1186/1471-2458-12-80>
- Spilsbury, K., Hewitt, C., Stirk, L., & Bowman, C. (2011). The relationship between nurse staffing and quality of care in nursing homes: A systematic review. *International Journal of Nursing Studies*, 48(6), 732–750. <https://doi.org/10.1016/j.ijnurstu.2011.02.014>
- Stevenson, D. G. (2006). Nursing home consumer complaints and quality of care: A national view. *Medical Care Research and Review: MCRR*, 63(3), 347–368. <https://doi.org/10.1177/1077558706287043>
- Svenaeus, F. (2001). The phenomenology of health and illness. In S. K. Toombs (Ed.), *Handbook of phenomenology and medicine* (pp. 87–108). Dordrecht: Kluwer.
- Taylor, D. R., & Murray, S. A. (2018). Improving quality of care for end-stage respiratory disease: Changes in attitude, changes in service. *Chronic Respiratory Disease*, 15(1), 19–25. <https://doi.org/10.1177/1479972317707654>
- The Lancet. (2020). COVID-19: Learning from experience. *Lancet*, 395(10224), 1.
- Tickner, J. A. (1997). You just don't understand: Troubled engagements between feminists and IR theorists. *International Studies Quarterly*, 41(4), 611–632. <https://doi.org/10.1111/1468-2478.00060>
- Toombs, S. K. (1992). *The meaning of illness: A phenomenological account of the different perspectives of physician and patient*. Dordrecht; Boston, MA: Kluwer Academic Publishers.
- Toombs, S. K. (2001). Introduction: Phenomenology and medicine. In *Handbook of phenomenology and medicine* (pp. 1–26). Dordrecht; Boston, MA: Kluwer Academic.
- Tripathi, V. (2016). A literature review of quantitative indicators to measure the quality of labor and delivery care. *International Journal of Gynecology & Obstetrics*, 132(2), 139–145. <https://doi.org/10.1016/j.ijgo.2015.07.014>
- Tyssen, R., Vaglum, P., Gronvold, N. T., & Ekeberg, O. (2001). Factors in medical school that predict postgraduate mental health problems in need of treatment. A nationwide and longitudinal study. *Medical Education*, 35(2), 110–120. <https://doi.org/10.1046/j.1365-2923.2001.00770.x>
- Ubokudom, S. E. (2012). *United States health care policymaking: Ideological, social and cultural differences and major influences*. New York, NY: Springer Verlag.
- Varkey, P., Reller, M. K., & Resar, R. K. (2007). Basics of quality improvement in health care. *Mayo Clinic Proceedings*, 82(6), 735–739. <https://doi.org/10.4065/82.6.735>

- Veatch, R. M. (2000). *Cross-cultural perspectives in medical ethics* (2nd ed.). Boston, MA: Jones and Bartlett.
- Weisz, G. (2006). *Divide and conquer. A comparative history of medical specialization*. Oxford: Oxford University Press.
- Weisz, G., Cambrosio, A., Keating, P., Knaapen, L., Schlich, T., & Tournay, V. J. (2007). The emergence of clinical practice guidelines. *Milbank Quarterly*, 85(4), 691–727. <https://doi.org/10.1111/j.1468-0009.2007.00505.x>
- Wennberg, J. E. (1979). Factors governing utilization of hospital services. *Hospital Practice*, 14(9), 115–121, 126–127. <https://doi.org/10.1080/21548331.1979.11707610>
- Wennberg, J. E. (2014). Forty years of unwarranted variation—And still counting. *Health Policy*, 114(1), 1–2. <https://doi.org/10.1016/j.healthpol.2013.11.010>
- Wennberg, J. E., Freeman, J. L., Shelton, R. M., & Bubolz, T. A. (1989). Hospital use and mortality among medicare beneficiaries in Boston and New Haven. *New England Journal of Medicine*, 321(17), 1168–1173. <https://doi.org/10.1056/NEJM198910263211706>
- Wennberg, J. E., & Gittelsohn, A. (1973). Small area variations in health care delivery. *Science*, 182(4117), 1102–1108. <https://doi.org/10.1126/science.182.4117.1102>
- Wiener, C. L. (2000). *The elusive quest: Accountability in hospitals*. New York, NY: Aldine de Gruyter.
- Williams, B. (1994). Patient satisfaction: A valid concept? *Social Science & Medicine*, 38(4), 509–516. [https://doi.org/10.1016/0277-9536\(94\)90247-x](https://doi.org/10.1016/0277-9536(94)90247-x)
- Williams, J. R., Gavin, L. E., Carter, M. W., & Glass, E. (2015). Client and provider perspectives on quality of care: A systematic review. *American Journal of Preventive Medicine*, 49(2 Suppl 1), S93–S106. <https://doi.org/10.1016/j.amepre.2015.03.017>
- Winslow, C. M., Solomon, D. H., Chassin, M. R., Kosecoff, J., Merrick, N. J., & Brook, R. H. (1988). The appropriateness of carotid endarterectomy. *New England Journal of Medicine*, 318(12), 721–727. <https://doi.org/10.1056/Nejm198803243181201>
- Womack, J. P., Jones, D. T., Roos, D., & Massachusetts Institute of Technology. (1990). The machine that changed the world: Based on the Massachusetts Institute of Technology 5-million dollar 5-year study on the future of the automobile. New York, NY: Rawson Associates.
- World Health Organization. (1947). Constitution of the World Health Organization. *Chronicle of the World Health Organization*, 1(1–2), 29–43.
- World Health Organization. (1986). *Ottawa Charter for health promotion*. Paper presented at the First International Conference on Health Promotion, Ottawa. Retrieved from [https://www.healthpromotion.org.au/images/ottawa\\_charter\\_hp.pdf](https://www.healthpromotion.org.au/images/ottawa_charter_hp.pdf)
- World Health Organization. (2000). The world health report 2000—Health systems: Improving performance. Geneva, Switzerland.
- World Health Organization. (2015). *WHO global strategy on people-centred and integrated health services. Interim Report*. Retrieved from [https://apps.who.int/iris/bitstream/handle/10665/155002/WHO\\_HIS\\_SDS\\_2015.6\\_eng.pdf;sequence=1](https://apps.who.int/iris/bitstream/handle/10665/155002/WHO_HIS_SDS_2015.6_eng.pdf;sequence=1)
- World Health Organization. (2017). *Environmentally sustainable health systems: A strategic document*. Retrieved from [https://www.euro.who.int/\\_\\_data/assets/pdf\\_file/0004/341239/ESHS\\_Revised\\_WHO\\_web.pdf?ua=1](https://www.euro.who.int/__data/assets/pdf_file/0004/341239/ESHS_Revised_WHO_web.pdf?ua=1)
- World Health Organization. (2020). *Global research on coronavirus disease (COVID-19)*. Retrieved from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov>
- World Medical Association. (2013). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*, 310(20), 2191–2194. <https://doi.org/10.1001/jama.2013.281053>
- Wright, J. M. (2002). The double-edged sword of COX-2 selective NSAIDs. *Canadian Medical Association Journal*, 167(10), 1131–1137.

- Wright, B., & Richmond Mynett, J. (2019). Training medical students to manage difficult circumstances: A curriculum for resilience and resourcefulness? *BMC Medical Education*, 19(1), 280. <https://doi.org/10.1186/s12909-019-1712-x>
- Young, G. (2008). Little evidence exists on the benefits and harms of screening for and treating gestational diabetes. *Annals of Internal Medicine*, 149(6). <https://doi.org/10.7326/0003-4819-149-6-200809160-02008>

## Chapter 3

# The Health and Wellbeing of Healthcare Workers. Concepts, Theories and Key Work Factors



Stein Knardahl

**Abstract** Human capital consists of knowledge, skills, and abilities of employees. Motivation is essential for translating human capital into effective healthcare. The first part of this chapter reviews general theories of effects of challenges. Appraisal of a challenge, availability of a response at one's discretion (control), feedback from responses, and expectancy to cope, impact outcomes. Studies of management and leadership have produced a plethora of theories of motivation. Theories reviewed here highlight job contents (task-level factors), equity, leadership behaviours, and fit between job- and person-characteristics. Prevailing theories of work and health emphasize balance between demands or effort on the one side, and control or rewards and status control or factors defined as resources on the other. Other theories posit that justice, psychological contracts, or social support influence health. Shortcomings are unspecific dimensions and circular reasoning. Maintaining human capital depends on knowledge of specific factors that contribute to motivation, well-being, and health.

**Keywords** Work · Stress · Motivation · Health · Theory · Healthcare workers

### 3.1 Introduction

The workplace is an arena where individuals face challenges from work tasks and social interactions. Work also provides opportunities for positive achievement, fulfilment, and friendship. For many people the job is a major source of feedback on attitudes and behaviour. Furthermore, a large body of studies have found that several aspects of work contribute to health. Hence, conditions at work may influence emotions, self-esteem, identity, and health.

Healthcare employees face challenges inherent in treating patients: communicating with and helping individuals who present with illness, illness behaviours, and suffering. Moreover, healthcare professionals' work implies no tolerance for treatment that harms the patient. Sustainable healthcare in the face of aging populations in

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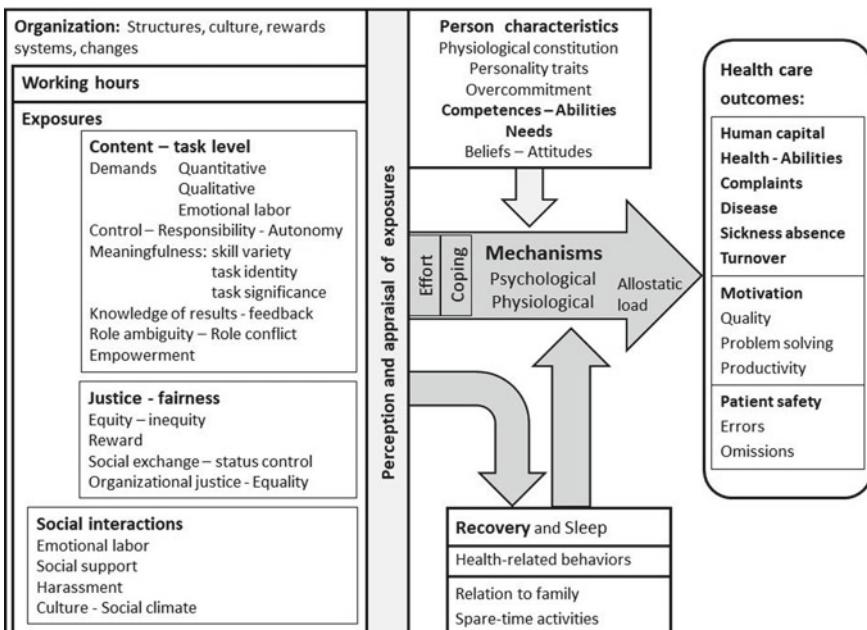
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most developed countries, increasing treatment options and increasing costs, depends on maintaining the human capital, i.e. the knowledge, skills, and work ability of all employees. Hence, sustainable healthcare must be based on jobs that are sustainable for the employees.

The present chapter aims to present an overview of concepts and theories that are relevant to understanding work factors that contribute to the motivation and health of employees. The outline of this chapter relates to relevant research traditions with their different objectives and terminologies.

Section 3.1 addresses basic general concepts and mechanisms purported to explain responding to challenge in general. Section 3.2 presents concepts and theories of organizational psychology and studies of management aiming to explain motivation of employees. Section 3.3 presents theories purporting to explain associations between work and health. Section 3.4 presents specific psychological, social, and organizational concepts and constructs that contribute to health and motivation (according to empirical studies) (Fig. 3.1).



**Fig. 3.1** Relationships between work factors, mechanisms, and outcomes of relevance for healthcare. Several theories combine factors from two or more boxes, e.g. person-environment fit theories

## 3.2 Responding to Challenge: Concepts and Theories Related to ‘stress’

Walter Bradford Cannon revolutionized biology by showing that psychological challenges produce responses in the body and elucidated some of the major mechanism for coping with challenge. He showed that the sympathetic nervous system and the hormone adrenaline acted in concert to enable the individual to respond to physical and psychological challenges. He proposed the term “fight or flight response” to describe responses to threats (Cannon, 1915). Cannon proceeded to investigate psychosomatic disorders (Cannon, 1936).

### 3.2.1 ‘*Stress*’

Hans Selye introduced the term ‘stress’ to the health-science community. As a student he had an idea of a stereotyped response to anything that represents a demanding task. In 1936 he published an article with the title “A syndrome produced by diverse noxious agents”, stating that “more or less pronounced forms of this three-stage reaction represent the usual response of the organism to stimuli such as temperature changes, drugs, muscular exercise, etc., to which habituation or inurement can occur” (Selye, 1936). He called this the “general adaptation syndrome” (GAS), i.e. a response pattern that is not specific to any stimulus, challenge, or trauma. Selye subsequently produced many scientific and popular science articles and books which directed the attention to environmental factors contributing to health. His writings used the word ‘stress’ both for environmental challenges and for the response (= GAS), but later tried to solve the semantic confusion by introducing the term ‘stressor’ to denote stimuli or challenge (exposures). Research reports concluding that psychological challenge may produce stomach ulcers (e.g. Brady, Porter, Conrad, & Mason, 1958) and cardiovascular disease (e.g. Cobb & Rose, 1973; Marmot & Syme, 1976; Rosenman & Friedman, 1963) cemented the belief that very high levels of job demands may produce disease and illness.

‘Stress’ is a derivative of the Latin verb ‘stringere’ meaning “to draw tight” and adjective ‘strictus’ meaning “tight, compressed, drawn together”. ‘Strictus’ may also mean to graze, touch or prune. These words were adopted by Old French as ‘estresse’ meaning “constriction”, “narrowness” and by Middle English as ‘distress’ denoting “force exerted on a person” or “hardship”. By the sixteenth century, the term distress indicated a form of physical injury. At sea a distress signal (“Mayday” or “SOS”) is the call signal for help in a serious, threatening condition. In clinical psychology, mental (or psychological) distress describes symptoms of anxiety, depression, or other negative emotions with no implicit assumption of causation.

The first account of the term stress to describe external and internal responses appeared in William Shaw Mason’s “Statistical Account of Ireland 1814–1819” in which he wrote “particularly females, die in their youth, of what they call stresses,

that is violent heat from hard work". The stress concept was allegedly introduced to physics by Augustin-Louis Cauchy in 1822 to describe forces acting in a body. Previously Robert Hooke described forces acting on elastic bodies in 1678, later named Hooke's law: deformation ("strain") of a body is proportional to forces acting on it ("stress"). Isaac Newton described what is now called shear stress in liquids.

The definition of stress as distribution of forces is consistent in physics and engineering. The response, the deformation, is termed "strain". The Merriam-Webster thesaurus defines stress as "a force exerted when one body or body part presses on, pulls on, pushes against, or tends to compress or twist another body or body part" (<https://www.merriam-webster.com/dictionary/stress>). In English everyday language the verb "to stress" means to exert pressure or emphasize. Therefore, the term usually implies external stimuli, forces, or influences.

When using the term stress, one implicitly assumes that there is an external cause. This is unproblematic in physics and engineering since what is observed by necessity is caused by forces that can be measured. Laboratory experiments allow studies of responses to external stimuli or well-defined challenges. The problem with the concept of stress in medicine and psychology is the implicit assumption that a response or condition is caused by some external stimulus or influence. In medicine and psychology causation is almost always multi factorial and we rarely know which factors contribute to health problems, neither at society-, organizational-, or individual level.

Using the term 'stress' one implicitly concludes that there is an external cause prior to the actual investigation. Examples are "stress-symptoms", "stress-related exhaustion", and "stress-disorders". Roberts (1950) expressed this problem: "Therefore stress, in addition to being itself and the result of itself, is also the cause of itself". Selye was not aware of the classical studies by Hooke. He complained that had his knowledge of English been more precise, he would have gone down in history as the "father of the strain concept". Selye wrote a best-selling popular book, "Stress without distress" (Selye, 1974), to point out the difference between stress (coping responses) and distress.

### 3.2.2 *Life Events Theory*

With the understanding that psychological challenge may contribute to disease, interview studies reported that social or life events seemed to predate several types of illness (see Rahe, Meyer, Smith, Kjaer, & Holmes, 1964). Theories of life events posits that disrupting events producing large physiological responses will increase risk of disease and illness. After several epidemiological studies based the survey instrument "schedule of recent experience", the proponents of this theory produced a list of relative impact of many life exposures (Rahe et al., 1964). The conclusions drawn from these studies were that (i) life events have a small but significant impact on health, (ii) positive events like getting married are also risk factors, and (iii) the

factor determining health consequences seems to be the amount of social readjustment that the individual must go through. Hence, the questionnaire instrument was revised and renamed “the social readjustment scale” (Holmes & Rahe, 1967).

### **3.2.3 *The Daily Hassles Theory***

A competing theory maintains that daily or frequent challenges however small, are of larger importance to health than rare but dramatic life events. A study of effects of “daily hassles and “daily uplifts” found that the frequent or daily annoyances do affect health negatively (Kanner, Coyne, Schaefer, & Lazarus, 1981). Furthermore, the effects of daily small annoying factors on psychological symptoms were larger than those of life events (Kanner et al., 1981). This theory has been followed up recently by findings that reporting unnecessary work tasks prospectively predicts decreased level of mental health (Madsen, Tripathi, Borritz, & Rugulies, 2014). A cross-sectional study of physicians found that reporting unnecessary illegitimate tasks was associated with sickness presenteeism (Thun, Halsteinli, & Løvseth, 2018).

### **3.2.4 *Person-Environment Fit (P-E Fit) Theories***

Parsons proposed his matching model for career decision making in 1909 and since then a plethora of person-environment fit theories cover the themes occupational choice, work adjustment, recruitment and selection, job satisfaction, stress-distress, and culture (for an excellent review, see Edwards, 2008).

A general definition of person-environment fit is the condition when individual and work environment characteristics are well-matched. While several theories have pointed out that environmental factors and person factors interact to influence motivation, coping responses, and health, P-E theories pertaining to well-being or health state that the misfit at the commensurate dimensions produces stress or strain (French, Rodgers, & Cobb, 1974).

P-E theories differentiates between three general types of P-E fit: (I) fit between environmental demands and the commensurate ability of the person (i.e. abilities relevant for these demands), (II) fit between the needs of the person and the supplies in the environment, and (III) similarities between the person and the social environment.

Several P-E fit theories characterize fit according to person-task-, person-group-, and person-organization fit. Most theories describe factors that are subjective. However, P-E fit may also refer to fit between the objective person versus the objective environment (objective P-E fit) and fit between the subjective person and the subjective perceived environment (subjective P-E fit). In addition, correspondence between the subjective and objective environment and the correspondence between the subjective and objective person (accuracy of self-assessment) are aspects of P-E fit theory.

P-E fit theories in general are process theories with few models that pertain to specific contents of person or environment dimensions. Clearly, the importance of a factor the person or to performing the job moderate effects of P-E misfit of this factor on strain. Moreover, different models of associations between P-E misfit and strain are possible: (i) A cumulative difference model proposes that effects of P-E misfit depend on the cumulative sum of misfit of all relevant factors, (ii) a critical difference model proposes that P-E misfit exceeding a threshold results in strain, and (iii) an optimal fit model proposes that small levels of misfit are advantageous by being motivating and that strain is produced by zero misfit or substantial misfit (for review, see Kristof-Brown & Guay, 2011).

P-E fit theories are intuitive. A challenge to testing P-E fit theories is to distinguish the person dimension from outcomes like strain or distress (simultaneity and reverse causation). A person's abilities and needs may be affected by psychological strain or health. Maybe the strengths of these theories lie in studies of behavioural outcomes like sickness absence, job turnover, and disability retirement.

### ***3.2.5 Control, Response Feedback, and Outcome Expectancies***

Basic science has elucidated psychological factors that contribute to motivation and health. A study by Brady and co-workers (1958) received much attention since it seemed to confirm common beliefs that executive jobs are potentially unhealthy. "Executive" monkeys were subjected to a difficult avoidance learning tasks: pressing a lever to postpone an electric shock to the tail base with no cues or feedback. Each executive monkey was tested in parallel with a yoked reference monkey who received shock whenever the executive monkeys did. Hence, both monkeys were exposed simultaneously to the exact same stimuli, except the executive had control by operating the lever while the reference group had no control of the situation. Some executive monkeys learned the task but died from stomach ulcers. Hence, a plausible conclusion was that being in control poses a risk of disease. The authors pointed out that the executive monkeys were selected based on the spontaneous lever-pressing activity in a pre-test situation.

The consequence of control was settled by a series of experiments on rats by Jay Weiss. He showed that having control, i.e. the availability of a response at one's discretion and being able to actively respond, protects against high levels of hormonal response and against stomach ulcer (Weiss, 1968). He also showed that receiving discrete feedback on responding enhanced the protective effect, and that conflict between response alternatives increased the pathogenic effect of the challenge. Finally, he showed that the most active individuals exhibited more ulcers after very difficult tasks, thereby explaining the results of the monkey-experiment. Weiss proposed a theory stating that disease (stomach ulcers) depend on the interaction

of two variables (I) the number of responses made (i.e. effort) and (II) the relevant feedback from responses (Weiss, 1971).

A general conclusion from Weiss' experiments is that the individual's appraisal that one is able to cope with the challenge, i.e. expectancy of a positive outcome when faced with similar challenge, protects against negative effects of challenge. Bandura (1977) later proposed the concepts of 'positive outcome expectancies' and 'efficacy expectancies', often termed 'self-efficacy'.

The theoretical discussions following the stress concepts were basically discussions of stimulus-response relationships: a stimulus (by Selye termed a stressor) produced a response pattern (by Selye termed the general adaptation syndrome or stress). John Mason and co-workers reported studies showing that there was no general response that pertains to all types of stimuli and pointed out that psychological factors play a pivotal role in responding to challenge (e.g. Mason, 1975).

### ***3.2.6 The Transactional Theory of Coping with Challenge***

Richard Lazarus and Susan Folkman proposed a transactional model of coping with challenge which made a huge influence on psychology. Coping was defined as the "cognitive and behavioural efforts made to master, tolerate, or reduce external and internal demands and conflicts among them" (Folkman & Lazarus, 1980). They maintained that when faced with a challenge the individual performs a primary appraisal, deciding whether the information (i) represents a potential threat, (ii) is positive, or (iii) is irrelevant. If the challenge represents a potential threat, the individual performs a secondary appraisal of possibilities, options, and available resources to cope with it (Lazarus & Folkman, 1984). Lazarus and Folkman presented a definition of "stress" which has become popular (and misrepresented): "Psychological stress is a particular relationship between a person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being". If the challenge is appraised as taxing or exceeding the available options and resources, the individual copes with the situation by problem-focused or emotion-focused coping efforts. A central point in this model is the role of subjective perception- and appraisal-processes in determining coping efforts and responding to challenge. Hence, coping with a challenge consists of transactional processes, not simple stimulus-response effects.

Problem-focused coping was defined as active behaviours or efforts to meet a challenge while emotion-focused coping refers to modifying ones' emotional response e.g. by altering the meaning or interpretation of a situation and thereby enhancing the individual's sense of control over his or her distress.

The active problem-focused and the passive emotion-focused coping patterns are paralleled by psychophysiological response patterns. Based on both animal and human experiments on cardiovascular responses linked to coping behaviours, Obrist (1981) proposed the concepts of active and passive coping. There is evidence from several sources for psychophysiological coping response patterns in which

behaviours are paralleled by neural and hormonal responses. Many studies have reported evidence for active and passive coping patterns (e.g. Bandler & Shipley, 1994; Ely & Henry, 1978).

Although some studies have found other typologies based on factor analyses of questionnaire data (e.g. Skinner, Edge, Altman, & Sherwood, 2003), the psychological research literature in general seem to categorize coping strategies into problem-focused coping, which refers to attempts to actively eliminate the problem, and emotion-focused coping, which describes attempts to attenuate discomfort by altering perception or appraisal of the problem (Dewe, 2000). A third strategy, avoidance coping, refers to attempts to deny, minimize, or get away from the situation (Holahan & Moos, 1986). One meta-analytic review concluded that problem-focused coping was associated with good mental health, while emotion-focused strategies were related to poor mental health (Penley, Tomaka, & Wiebe, 2002).

### ***3.2.7 The Conservation of Resources Theory (COR)***

The basic tenet of the COR-model is that “people strive to retain, protect, and build resources and that what is threatening to them is the potential or actual loss of these valued resources” (Hobfoll, 1989).

The theory defines “psychological stress” “a reaction to the environment in which there is (a) the threat of a net loss of resources, (b) the net loss of resources, or (c) a lack of resource gain following the investment of resources” (Hobfoll, 1989). Hence, the theory maintains that “resources, then, are the single unit necessary for understanding stress”. “Resources are defined as those objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects, personal characteristics, conditions, or energies.” Environmental exposures, demands, or challenges are not discrete factors, but rather considered as potential threat or gain of resources.

Hobfoll argued against the pivotal role of perception and appraisal in theories of coping with challenge stating that “Implied in these definitions is that stress is not the product of objective demands and response capacity, but of the perception of these factors”. Hobfoll pointed out that measurements based on perceptions may result in independent and dependent variables that may be measures of a single concept. Hobfoll criticized the transactional model of coping with challenge (Lazarus & Folkman, 1984) for being tautological “because it does not separately define demand or coping capacity”, “clearly this reasoning is circular and evolved from the sole emphasis on perceptions” (1989), and “this circularity … follows from their overemphasis on perception and their lack of emphasis on environmental contingencies”.

Hobfoll seemed to base some of his original ideas on life-event studies and argued for a normative view of stressors and the view that some environmental situations or event “are considered stressful on the basis that of whether they normally lead to stress reactions”. He argued that studies based on stressful event surveys “show

that loss events are consistently stressful". Therefore, the COR-theory posits that (I) resource loss is more salient than resource gain and that (II) people must invest resources in order to protect against resource loss, recover from loss, and to gain resources.

**Discussion:** The COR-theory has adapted concepts from business terminology, e.g. loss, replacement, investing. Indeed, Halbesleben and co-workers (2014) refer to a business management review to explain the model. The COR-theory is built on the resource concept that is extremely vague. Almost anything may be considered a resource if it turns out to constitute some kind of positive value.

Therefore, the COR may be criticized on three grounds: (I) The basic tenet that humans are fundamentally motivated by retaining, protecting, and building resources, a rephrasing of the self-preservation drive of all living organisms. Hence, this theory states the self-evident fact that perturbations of an individual's development trigger adaptive responses. Hence, one may argue that the COR cannot be considered a theory which can be tested. (II) The statement concerning threat of loss of resources implies a factor which is not resources, namely the threat. (III) The defining hypothesis of the COR-theory that "psychological stress" results from either (a) the threat of a net loss of resources, the net loss of resources, or (b) a lack of resource gain following the investment of resources, fails to explain a number of issues: It is not clear what is meant by "stress": does it encompass any arousal or coping response or only distress states? Several types of everyday exposures like hours since the last sleep period, cold, or warm exposure elicit psychobiological response patterns that include motivation. The COR-theory does not consider subconscious processing of cues and environments and effects of classical and operant conditioning on responding to specific stimuli or situations (e.g. Hermans et al., 2002; Pessiglione et al., 2008; Staddon & Cerutti, 2003). Cognitive biases and cognitive dissonance are not accounted for. Strong motivation with concomitant strong effort is often paralleled by rather strong cardiovascular responses (active coping response, "fight-or-flight response"; Gerin, Litt, Deich, & Pickering, 1996).

Dominance behaviours may be associated with gain of resources (power) but is associated with activation of the sympathoadrenal systems and cardiovascular disease (Ely & Henry, 1978; Houston, Babyak, Chesney, Black, & Ragland, 1997). Furthermore, life-event studies found that positive events like entering into marriage, were associated with negative health effects showing that consequences were related to the magnitude of social readjustments imposed by the event rather than loss of resources or lack of gain which determines effects on health (Holmes & Rahe, 1967). Factors related to addictions are not accounted for.

Finally, although the COR-theory states that "even when perception is important, normative tendencies regarding how resources are evaluated and what constitutes loss guide individuals' assessment of their environments and their selves" (Hobfoll, 1989), it is clear that this theory does not circumvent the role of perception and appraisal in determining how individuals cope with challenges.

The COR-theory has been popular in the field of emotional exhaustion and "burnout". It is not uncommon that rather specific factors are reclassified in terms

of COR-terminology, e.g. job tenure labelled a resource-based factor (although self-efficacy was labelled an emotion-based factor; Wang, Liao, Zhan, & Shi, 2011), low social support as loss of resources (Neveu, 2007), emotional exhaustion conceptualized as representing resource deficit (Halbesleben, Neveu, Paustian-Underdahl, & Westman, 2014). It seems that proponents of the theory translate rather well-characterized work factors into COR-terms and explain findings by hypothetical effects of reinvesting resources (e.g. Neveu, 2007).

Although a single-construct model (resources) may seem attractive, the COR-construct may be a common-sense terminology as a substitute for specific mechanisms and processes developed in the fields of psychology and psychobiology. It is hard to see that the COR-theory has produced research questions, insights, or conclusions that are not found by other construct and theories of coping with challenge.

### ***3.2.8 The Allostatic Load Theory***

‘Homeostasis’ refers to the concept that an array of physiological and behavioural responses stabilizes or defend critical physiological parameters when challenged (Cannon, 1936). Most enzymes and biological processes exhibit high efficiency within rather narrow optimal conditions (temperature, pH, ion-concentrations, etc.), often referred to as “milieu intérieur”. Sensors, reflexes, nerves, hormones, and negative feedback circuits maintain optimal environment for physiological processes. The optimal environment is the defended level of a regulated parameter (e.g. 37 °C core body temperature).

However, organisms actively explore new environments, face new challenges, and learn anticipatory responses, e.g. classical and instrumental conditioning. Hence, one needs to account for the tendency for allowing critical physiological parameters to deviate from (resting) optimal levels in order to cope with challenges. For example, allowing (systolic) blood pressure to increase above the set value that is optimal during rest is adaptive during physical activity (e.g. fight or flight). Several studies have reported that homeostatic reflexes are over-ridden during active coping responses (e.g. the baroreceptor reflex is over-ridden during the challenge of mental arithmetic: Anderson, Sinkey, & Mark, 1991).

Sterling and Eyer (1988) proposed the term allostasis defined as achieving stability through change. They pointed out that in order to cope with or adapt to new or changing environments, organisms must alter defended levels of one or more regulated parameters.

For example, in an especially challenging environment an individual might maintain and defend an elevated level of blood pressure relative to the level maintained in a less challenging environment. Sterling and Eyer (1988) argued that a strict interpretation of homeostasis disallowed an organism’s defending a different level, as it went against the necessity of constancy of the internal environment maintained by an invariant set point.

There has been some debate whether the ‘homeostasis’ concept can account for anticipatory responses. The anticipation of a challenge and consequently anticipatory responses that incorporate resetting of a defended level of a regulated parameter (e.g. blood pressure) is compatible with the homeostasis concept. However, there are several types of regulatory responses which seemingly do not exhibit adequate negative feedback regulation due to competing positive feedback effectors or other complex effects.

Ramsay and Woods (2014) proposed that the allostasis concept should be reserved for three aspects of regulation: (1) overcorrection of the defended regulatory level despite the continued presence of the challenge (e.g. sign reversal in pain response), (2) effector response remaining active even after the challenge is no longer present, or (3) concurrent responses which produce competing effects. McEwen and Stellar (1993) suggested the term “allostatic load” to account for the cost to the response system for maintaining a regulated variable at a value different from its resting level for a sustained time-period. At any rate, sustained exposure to challenges may produce sustained high levels of physiological responses.

### ***3.2.9 The Effort—Recovery Theory***

Effort is the amount of work involved in performing an activity. Level of physiological arousal, motivation, and behavioural activity may relate to effort. For non-physical activities, the assessment of effort is elusive. Fatigue is the common non-specific sensation relating to the difficulty of performing voluntary tasks. The term fatigue refers to both physical (muscle) fatigue and to mental fatigue. Fatigue is commonly differentiated from tiredness associated with inadequate sleep. Muscle fatigue can be defined as a physical-exercise-induced reduction in the ability of a muscle or muscle group to generate maximal force, i.e. decreased performance. During a sustained maximal contraction, force will decline steadily, and fatigue will be observed from the onset of the exercise. During submaximal contractions, performance may be maintained at target intensity for some time and fatigue occurs at the time when target force can no longer be generated. Some investigators have defined fatigue as “a loss of maximal force generating capacity” (Vøllestad & Sejersted, 1988). Fatigue should also be differentiated from weakness, which denotes a constantly impaired ability to generate maximal force (even after rest).

Exercise physiologists commonly use the term exhaustion to describe the inability to continue performing the task. There are several mechanisms of muscle fatigue: metabolic alterations in the muscle cells (energy deficit, calcium-ion shifts, etc.), spinal cord-, and motor cortex mechanism. Effort is made possible by physiological and psychological processes: coordinated response patterns involving sympathetic and parasympathetic nerves, hormones, and cytokines that allow behavioural responses and influence response tendencies. When a challenge or task is appraised as terminated, the psychophysiological response pattern is terminated allowing rest and recovery, i.e. restoring resting levels. It is an everyday experience that we need

rest and recovery after intense or prolonged exertion. The effort –recovery theory posits that effort combined with “adequate recovery” will facilitate physiological “toughness” which the model defines as rapid sympathetic responses with small cortisol responses to challenge (Dienstbier, 1989).

The theory also maintains that inadequate recovery produces persisting physiological and psychological responses which in turn may compromise the immune system, attenuate the ability to cope with demands, and produce burnout or depression (Meijman & Mulder, 1998).

The effort-recovery model clearly overlaps with theories of sustained activation which state that activation of psychophysiological systems may be pathogenic if sustained over prolonged time periods (without restitution; e.g. Knardahl & Ursin, 1985). The classic animal studies of Folkow and Rubinstein (1966) and James Henry and co-workers (e.g. Henry, Meehan, & Stephens, 1967) showed that sustained and long-term exposures are necessary for pathology to occur.

**Discussion:** There is widespread acceptance of the general principle that sustained activation of a specific biological effector system over a long period of time can overcome buffer systems and produce pathology. Recent studies have elucidated several mechanisms for positive effects of sleep (see Krueger, Frank, Wisor, & Roy, 2016, for review). Hence, almost all scholars of psychology, biology, and medicine will agree that restitution is important. A problem with the effort-recovery theory as it is employed by psychologists is the over-simplification. An acute high level of effort (with exhaustion) may produce training effects and the outcome of activity seems to be a question of doses of activity and rest as well as timing.

Proponents of the model seem to focus their main interest on “need for recovery”, i.e. fatigue (e.g. Sluiter, Frings-Dresen, van de Beek, & Meijman, 2001). The association between effort at work and fatigue is elusive since both constructs refer to subjective perceptions and appraisals. It is not unlikely that feeling fatigue is associated with perceiving work as more effort-demanding (reverse causality). Furthermore, individual states and traits that influence capacity to work or perceptions of symptoms may confound associations (information bias). Furthermore, the model implicitly maintains that effort is potentially taxing. However, spare-time activities involving psychological or physical effort may require attention and full concentration thereby detracting thinking of problems or worries. Moreover, effort with intrinsically motivated tasks may be positively stimulating and fun, sometimes generating an experience of “flow” (Csíkszentmihályi, 1990). The effects of investing high levels of efforts in jobs that are appraised as positive and highly motivating remains to be determined.

### 3.3 Motivation of Employees: Concepts and Theories

While the health-care professions and the public media were discussing dramatic effects of challenge, pressure at work and ‘stress’, the scientists of organizational psychology and management studied factors that influence job motivation, satisfaction, and productivity.

Basic-science theories addressed biological psychology. The drive reduction theory of Clark Hull and Kenneth Spence (originally proposed by Hull, 1943) proposes that drives motivate behaviour and learning. Drives are either (I) Primary innate biological drives like thirst and hunger, sex) or (II) secondary drives acquired by learning by classical or operant conditioning). At the same time, Maslow (1943) proposed “A theory of human motivation” which also posit that humans are motivated by basic needs. Maslow listed a five-stage structure of priorities: (1) physiological needs, (2) need for safety and predictability, (3) need for love, (4) need for self-esteem, and (5) need for self-actualization.

#### 3.3.1 Leadership Theories

Behavioural theories of leadership focus on the study of specific behaviours of a leader rather than his/her personality traits. The behavioural theories divide leadership in two categories: task-oriented leadership, i.e. attention to tasks that must be completed to reach the goal, and relationship-oriented leadership, i.e. attention to the motivation, satisfaction, and well-being of people.

*Fiedler's contingency theory* (1971) maintains that situational factors determine which leader behaviours are optimal. The theory proposes that optimal leader behavioural style depends on three parameters: (i) respect and trust in the relationship between leader and subordinates, (ii) the nature of the task at hand, namely whether it is well-defined and structured, and (iii) the actual power or control on part of the leader.

*Situational leadership theory* (Hersey & Blanchard, 1969; initially named “life cycle theory of leadership”) proposes that effective leadership is contingent on matching the level of directive leadership (telling, convincing, participating, delegating) to the competence and motivation of the employees.

*Path-goal theory* (House, 1996) proposes that the leader should define and delineate a path to be followed by the employees to reach a goal, and coach the employees, remove obstacles, and reward in order to ensure the path is followed. Hence, this theory encompasses both directive and participatory behaviours, but the basic assumption is that the leader knows what the best way is.

*Transactional leadership theories* are based on rewards and reinforcement to motivate people. It is commonly held that these leadership theories erroneously assume that people behave in a rational way. Equity theory and theories of justice

pertain to employees' perceptions and appraisal of transactions (exchange) without assuming rational psychological processes.

*Transformational leadership theories* propose that leaders can inspire and strengthen motivation of the employees to go beyond their own interests for the benefit of the organization. Hence, transformational leadership theories aim for internal motivation, i.e. that employees may be motivated by the task that must be performed. Transformational leadership theories commonly promote a culture of community, cooperation, positive challenge, symbols of success, and charismatic leader behaviours.

In the 1960s the term human capital became popular and attention to building human resources led to studies of work content per se and of justice.

### **3.3.2 *Equity Theory***

Equity theory proposed by Adams (1963), maintains that equity is the employee's appraisal of (I) what he or she bring to the job (input = competence, amount and quality of work, contribution to work environment) in relation to (II) what he or she receives from the job (outcome = salary, interesting tasks, perks, etc.), compared to inputs and outputs of others. Adams' theory proposes that employees respond to inequity with cognitive dissonance and hence, are motivated to reinstate the balance by altering their effort. Therefore, inequity reduces job motivation.

### **3.3.3 *The Two-Factor Theory of Job Satisfaction—Hertzberg's Motivation-Hygiene Theory***

Based on a series of studies of situations when people felt good or bad about their jobs, Frederick Herzberg, concluded that factors determining job satisfaction are other and distinct from factors determining dissatisfaction (Hertzberg, 1964, 1968). The theory posits that factors determining satisfaction (motivator factors) are intrinsic factors like work itself, achievement, recognition, responsibility, advancement, and growth. Factors determining dissatisfaction (hygiene factors) are company policy and administration, supervision, relationship to supervisor, work conditions, salary, relationship with peers, etc. Hence, factors that contribute to satisfaction are intrinsic factors that employees tend to attribute to themselves, while factors that contribute to dissatisfaction are extrinsic factors. Hertzberg proposed that managers should direct attention to both individual-level and organization-level factors in order to eliminate hygiene factors and promote motivator factors.

The theory that satisfaction and dissatisfaction are two dimensions rather than one, receives some support from findings that positive and negative affect are associated with separate factors (e.g. Clark & Watson, 1988; Watson, Clark, & Tellegen, 1988).

The motivation-hygiene theory has been criticized for not considering situational factors. Furthermore, it is a theory of job satisfaction and dissatisfaction rather than a theory of motivation. On the other hand, Herzberg's theory inspired managers to allow employees more responsibility in planning their work. Hence, the motivation-hygiene theory played a major role in promoting job enrichment and empowering leadership.

### ***3.3.4 The Job Characteristics Model (Hackman & Oldham, 1976)***

As a response to calls for a solution to problems with productivity and employee alienation, organizational psychology turned to studies of redesign of work and of leadership. Hackman and Lawler (1971) proposed that high internal motivation, high work satisfaction, high-quality performance, and low absenteeism and turnover, are determined by three “critical psychological states”: (I) meaningfulness of the work, (II) responsibility for work outcomes, and (III) knowledge of the results of ones work activities. The central paradigm of this theory is that work tasks per se determine job-motivation.

Hackman and Oldham (1975) then posited that (I) meaningfulness of work is determined by (a) skill variety, i.e. “the degree to which the job requires a variety of different activities”, (b) task identity, i.e. “the degree to which the job requires completion of a “whole” and identifiable piece of work”, and task significance, i.e. “the degree to which the job has a substantial impact on the lives or work of other people”. Responsibility for work outcomes (II) is determined by autonomy, i.e. “the degree to which the job provides substantial freedom, independence, and discretion to the employee in scheduling the work and in determining the procedures to be used in carrying it out”. Knowledge of the results (III) is determined by feedback from the work itself, i.e. information of the effectiveness of his or her performance obtained directly from carrying out the tasks, and feedback from agents, i.e. information provided from superiors or co-workers of his or her performance.

Hackman and Oldham (1975) developed the “Job diagnostic survey” instrument (JDS) to guide and monitor work redesign based on these factors. They added measures of internal work motivation, specific satisfactions with job (job security, pay, etc.), and the strength of the employee’s “desire to obtain “growth” satisfaction from his or her work” (‘growth need strength’).

Discussion: The central paradigm that job tasks per se contribute to motivation, well-being, and absenteeism is not controversial, but often forgotten. However, the operationalization of the task factors is problematic making it difficult to develop criteria for objective methods. Many studies have been based on subjective reporting of both task characteristics and motivation/satisfaction with cross-sectional designs, hence confounding effects of bias in perception and appraisal of independent and dependent factors are likely.

The model originally reduced the three factors to a single Motivating Potential Score (MPS) by multiplying meaningfulness with autonomy and feedback, but additive and regression models were also tested. Furthermore, the proposed moderating effect of the individual's 'growth need strength' seems reasonable but complicates the application of the model and introduces issues of personality traits. The model has been criticized for not incorporating situational influences on perceptions of work tasks (Roberts & Glick, 1981). In general, many studies have reported that the five core factors describing job contents are associated with psychological outcomes, but only modestly related to performance and absence (Fried & Ferris, 1987).

### 3.3.5 Attitudes Related to Motivation

Employee attitudes towards the job and the workplace contribute to well-being, turnover intentions (Hom, Lee, Shaw, & Hausknecht, 2017), and to sickness absence (Sagie, 1998; Wegge, Schmidt, Parkes, & van Dick, 2007). Some scholars and practitioners commonly use the terms involvement, commitment, and engagement interchangeably; however, they do define different attitudes and states. Brooke, Russell, and Price (1988) tested the discriminant validity between job involvement and two related constructs of job satisfaction and organizational commitment and found that concepts differ. Job involvement as an attitude refers to the individual employee's identification with the job, i.e. that activities of his/her job are important to his/her identity or self-image. Hence, job involvement means that the job relates to the person's intrinsically motivating goals and that the person is absorbed in his/her job.

Kanungo (1982) distinguished between general and specific forms of the construct. This means job involvement pertains only to an individual's job responsibilities, while work involvement is one's overall identification with and active participation in work in general.

*Organizational commitment* refers to the employee's identification with the organization or workplace. *Calculative commitment* refers to the investments of time and effort in the organization. *Moral commitment* refers to identification with the organization's goals and values. While *job involvement* is the identification with one's work tasks, organizational commitment is the identification with the organization as an entity.

*Engagement* is a state of mind rather than an attitude. Schaufeli and co-workers (2002) defined engagement as "... a positive fulfilling, work-related state of mind that is characterized by vigour, dedication, and absorption." Engagement has become a buzzword of proponents of positive psychology and is commonly used as a general term encompassing involvement, commitment, and motivation.

Engagement is by some scholars considered the antithesis of the burnout syndrome; a syndrome of emotional exhaustion, depersonalization (cynicism or disengagement), and (lower) personal accomplishment (professional efficacy; Maslach, 1982; Schaufeli, Salanova, González-Romá, & Bakker, 2002).

## 3.4 Work and Health: Theories and Concepts

### 3.4.1 *The Demand—Control Theory*

Observing that “two survey research traditions have emerged”, Karasek (1979) pointed out that research on effects of “life stress” and environmental or job stressors on health and illness (e.g. Holmes & Rahe, 1967; Theorell, 1976) developed independently from organizational psychology which studied effects of job decision latitude on job satisfaction and motivation (e.g. Hackman & Lawler, 1971).

Karasek maintained that “many contradictory findings in the literature can be traced to incomplete models derived from these mutually exclusive research traditions” and proposed that “a correct analysis must distinguish between two important elements of the work environment at the individual level: (1) the job demands placed on the worker and (2) the discretion permitted the worker in deciding how to meet these demands” (Karasek, 1979).

Karasek proposed the “job strain model” maintaining that psychological strain results from the joint effects of the demands of the work situation and job control or job decision latitude. Based on two questionnaire survey studies (from Sweden and the United States), Karasek (1979) found that the combination of high level of demands and low level of control prospectively predicted job dissatisfaction and mental strain.

Collaborating with Töres Theorell, Karasek showed that the combination of high levels of demands and low-level control posed a risk not only of subjective states, but even cardiovascular disease (Karasek, Baker, Marxer, Ahlbom, & Theorell, 1981). The model triggered many studies of effects of work on health with several questionnaire instruments. Karasek and collaborators later developed the questionnaire instrument, the Job content questionnaire (JCQ; Karasek et al., 1998) which has been the dominant instrument for assessing psychological and social work dimensions since its publication.

“Job strain” referred to an outcome. However, the model pertains to exposures at work and one of the major impacts of the model on research of work and health was the departure from non-specific ambiguous “work stress” to studies of more specific factors. The demand-control model has dominated studies of work and health; most studies of work and health during the last 30 years pertain to effects of demands and control.

Discussion: The demand-control model played a pivotal role in shifting attention to psychological exposures at work. The paradigmatic change from the circular concept of stress to trying to uncover the role of more specific dimensions at work, generated interest in health effects of work particularly in the field of cardiovascular diseases. However, many scholars criticized aspects of the demand-control model (see de Jonge & Kompier, 1997 for an excellent review).

The theory posits that strain results from the joint effects of job demands and job control. However, the nature of the interaction between the two dimensions is not

specified. Hence, a shortcoming of the model is that it does not specify whether (I) job control is a moderator of demands in the sense that employees with control can cope with higher levels of demands or (II) that demands, and control are two independent dimensions acting synergistically. With no specification of the interaction between the two dimensions, there is no direction for analysis of data. Karasek (1979) operationalized the job demands-control interaction as  $[(\text{demands-control}) + \text{constant}]$ . Wall and co-workers (1996) analysed  $[(\text{demands} \times \text{control})]$  interactions controlling for main effects of demands and control]. Landsbergis and co-workers (1994) tested several formulations of job strain with varying combinations of demands and decision latitude and found that all were associated with blood pressure. Many studies have dichotomized demands and control according to median split of the data and showed that being in the group of employees reporting higher than median demands and lower than median control, is associated with risk of poor health, sickness absence, or disability. This may primarily be a problem with traditions of epidemiology to dichotomize data, but still a major shortcoming of the theory is that it does not specify mechanisms of effects.

Demands and job control are concepts that resonate with constructs of basic science: there are several experimental studies of general effects of control (e.g. Averill, 1973). However, demands and control are very broad and general dimensions and research findings are not easily translated into practical interventions at the workplace. Furthermore, the demands dimension encompasses different types of demands: quantitative demands (amount of work, working hours, time pressure) differ from qualitative demands (complexity, standards for quality, problem solving) and emotional demands (dealing with clients, patients, etc.). Similarly, control may pertain to control of decisions, control of intensity, time, breaks, work procedures, working hours (e.g. flexitime), control of social interactions with clients or colleagues, etc. The original theory posited that the control dimension (labelled “decision latitude”) included “skill discretion” (defined as variety of work and opportunity to use skills) and “decision authority” (control over decisions that influence work). High levels of skill discretion may imply more responsibility which may be related to higher (qualitative) demands. Wall and co-workers (1996) found that while a specific measure of control (i.e. “to what extent do you decide ...”) interacted with demands to predict job strain, a more general measure of decision latitude encompassing task variety and learning opportunities did not.

Most studies of demands, control, and job strain have been based on the Job Content Questionnaire instrument (JCQ; Karasek et al., 1998). Apart from critique and discussions of potential bias introduced by questionnaire methods in general, this instrument has been criticized for assembling specific work factors under the demands and control dimensions. For example, role conflicts that seems to produce effects on health (e.g. Christensen & Knardahl, 2010, 2012) and call for specific intervention measures, is defined as job demands by the JCQ.

Furthermore, the demands-control model may be criticized for disregarding other relevant factors. Although adopting control (or autonomy) as a major factor was well-founded in basic and organizational psychology, other factors like meaningfulness of work (e.g. task variety and significance) and feedback pertaining to one’s work

performance seem highly relevant to employee satisfaction (Hackman & Oldham, 1975).

Several job exposure factors may show curvilinear associations to motivation, well-being, and health. For instance, there may be an optimal level of rate of task execution with boredom and panic at each ends of a subjective appraisal of rate demands. However, the shape of curvilinear effects may depend on third factors (or confounding factors) like task complexity and training. The demands-control model does not account for curvilinear effects and interactions with other factors.

### ***3.4.2 Emotional Labour Theories***

Employees working with patients, clients, customers, or students must cope with the verbal and behavioural communication from them. This means coping with a broad range of challenges pertaining from social interactions: providing information and practical help, interpreting behaviours and emotional displays, receiving criticism on behalf of the workplace, or dealing with angry, aggressive, or depressed persons.

The term ‘emotion’ usually refers to physiological arousal and cognitive appraisal of the situation. Hochschild (1983) defined emotional labour as the suppression of true feelings to create a caring and safe atmosphere for clients. She maintained that the active regulation of one’s emotional expression (“surface acting”) and modifying one’s feelings (“deep acting”) requires effort and that having to regulate feelings according to the organization’s goals may be inherently unpleasant.

Others (e.g. Ashforth & Humphrey, 1993) have downplayed the negative aspects of emotional labour by maintaining that regulating behaviours and emotional displays become effortless routine and are parts of efficacious work.

The expression of facial displays may modify emotions (facial feedback hypothesis; Adelmann & Zajonc, 1989) and performing positive facial displays and postures may promote positive affect in the employee. In addition, showing positive displays may promote positive emotions in the client or customer (positive feedback). Emotional labour may involve effort, but may produce positive affect and consequently, may have equivocal effects on satisfaction and health.

Emotional dissonance is the inconsistency between one’s emotions and what one displays or the conflict between emotions experienced by the employee and those required by the organization. Emotional dissonance may contribute to sickness absence (Indregard, Knardahl, & Nielsen, 2017).

Employees in jobs involving emotional labour are also subjected to challenging events like unwarranted criticism or anger outbursts from customers or patients. In addition to coping with the acute affect, the employee must contain his or her emotional display, refrain from saying what comes to mind, and compose a response that is appropriate for the situation.

Emotional labour encompasses both theories of effects of everyday showing the displays required by the organization and effects of facing hostile or unsympathetic behaviours and events.

### ***3.4.3 Social Support Theories***

Humans are a social species with a built-in repertoire for communicating with and responding to others. Since Durkheim's report of higher suicide rate among less socially integrated people (1951), a plethora of studies have shown that social relationships influence health (e.g. Umberson & Montez, 2010).

There are many dimensions of social relations. Social integration pertains to social ties with primary groups (i.e. persons with intimate, close, and enduring relationships: significant others like family and friends), secondary groups (i.e. persons with more formal and less personal relationships: colleagues at work, members of voluntary organizations). Network analysis of social integration assumes that the structures of networks e.g. the number and frequency of contacts or relationships influence the impacts of social relations on individuals.

Social support pertains to either (A) the receiving of support or behaviours or (B) the perception that social support is available if needed, i.e. the sense of support. It seems that the perception of availability to receive support has the most significant influence on health and well-being (Thoits, 2011).

There are two hypothetical main mechanisms of effects of social support: (i) social relationships exert a direct positive effect on health and/or (ii) social support buffers effects of challenges, negative exposures, and distress. Social support may exert direct effects by social influence or comparison with others thereby promoting positive health-related behaviours (model learning). In addition, social control consisting of monitoring, persuading, reminding, or encouraging and active guidance may promote positive health-related behaviours (Thoits, 2011). The sense of belonging and acceptance may define one's self-image and be of significance for self-esteem. Recent studies indicate that the hormone oxytocin may mediate some effects of touch and intimate relations (for an extensive review, see Jurek & Neumann, 2018). The buffering effects of social support may partly consist of receiving information, help, and feedback that promotes coping with a challenge. Moreover, the perception of available support should influence ones' appraisal of the potential for coping with a challenging situation, render the situation manageable, and consequently attenuate psychological and physiological responses (Lazarus & Folkman, 1984).

Sarason and co-workers (1990) proposed that "The most active ingredient of social support may be individuals' beliefs that they have people who value and care about them" and argued that perceived social support lead to two types of cognitions: (i) the sense of support and (ii) the sense of acceptance by others. They argue that self-reports of availability of social support are stable over time. While social support is generally considered positive, there are reports of negative effects of social support (see Bolger & Amarel, 2007; Deelstra et al., 2003).

Social support at work is commonly categorized into four types of supportive behaviours: (1) emotional support (empathy, caring), (2) instrumental support (aid and assistance), (3) informational support, and (4) evaluating support of feedback (House, 1981). Support from the (relevant) superiors represents leadership

behaviours with different meanings and potential impact than support from co-workers. Hence, support from superiors should be differentiated from support from co-workers.

### **3.4.4 *The Job Demands-Resources Theory (JD-R)***

The job demands-resources theory (JD-R) proposes that all working conditions can be categorized into two dimensions: job demands and job resources. Strain or negative (health effects) results from imbalance between job demands and resources (Bakker & Demerouti, 2007). The theory was originally presented as a model of burnout—a syndrome of emotional exhaustion, depersonalization (cynicism or disengagement), and personal accomplishment (professional efficacy; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Maslach, 1982; Maslach & Jackson, 1981) as a consequence of work. The authors reported a cross-sectional study showing that job demands were associated with emotional exhaustion while lack of resources was associated with disengagement (Demerouti et al., 2001). Hence, the two categories of work factors reportedly exerted differential effects on two aspects of burnout. This was taken to indicate that job demands, and resources contribute to two different psychological processes (see also Two-factor theory of job satisfaction, Hertzberg, 1964, 1968).

The central assumptions of the present versions of JD-R theory state that (a) work factors can be classified in the two general categories: job demands and job resources, (b) job demands promote health-inhibiting processes while job resources promote motivating processes, (c) job resources buffer effects of job demands, (d) job resources have larger effects when job demands are high, (e) personal resources (e.g. optimism and self-efficacy) which influence ones appraisal of control play the same role as job resources, and (f) motivation has positive effects while “job strain” has negative effects on work performance (Bakker & Demerouti, 2016). Hence, irrespective of the specific aspects of demands and resources of specific jobs or work, job strain develops when job demands are high and when job resources are limited. In contrast, work engagement is most likely when job resources are high, even if job demands are high.

Discussion: The JD-R theory posits that job demands are inherently negative to health. This is inconsistent with a significant body of studies showing little or opposite associations between job demands and health. Professions with high levels of responsibility and/or requiring a high level of education are commonly associated with high levels of demands. However, employees in these professions usually exhibit good health and the lowest levels of sickness absence. Furthermore, several studies have reported that associations between quantitative job demands and sickness absence or disability retirement are small or insignificant (e.g.; Niedhammer, Bugel, Goldberg, Leclerc, & Gueguen, 1998; Roelen et al., 2009; systematic reviews: Knardahl, Sterud, Nielsen, & Nordby, 2016; Knardahl et al., 2017), with the notable exception

for absence due to mental disorders or distress (Mather, Bergstrom, Blom, & Svedberg, 2015). North and co-workers (1996) found that low levels of work demands were associated with higher absence.

There is a possibility that there is a specific association between self-reported job demands and fatigue, emotional exhaustion, and depression (Rehkopf, Kuper, & Marmot, 2010). Alternatively, these subjective states and health problems may contribute to the reporting of high job demands (reverse causality). To some extent, the JD-R theory was based on studies with a high risk of confounding since both work factors and burnout, fatigue, and exhaustion are subjective reports measured with questionnaires. Burnout is a controversial label since there is a high correlation with depression (Bianchi, Schonfeld, & Laurent, 2015) and the inherently assumed relation to work has been doubted (Rössler, Hengartner, Ajdacic-Gross, & Angst, 2015).

The proponents of the JD-R-theory have responded to these problems with classifying job demands in two groups: “challenging job demands” which are potentially positive and “hindrance demands” which are negative (Bakker & Demerouti, 2016). Clearly, this classification depends on outcomes. Hence, this explanation is circular. The theory defines job demands as “physical, social, or organizational aspects of the job that require sustained physical or mental effort and therefore associated with certain physiological and psychological costs”. Job resources is defined as “physical, psychological, social, or organizational aspects of the job that may do any of the following: (a) be functional in achieving work goals; (b) reduce job demands at the associated physiological and psychological costs; (c) stimulate personal growth and development” (Demerouti et al., 2001). Hence, the two categories were defined by their consequences or outcomes; “associated with certain physiological and psychological costs” and “be functional”, “reduce job demands”, stimulate personal growth and development”, respectively. This is a major problem with the JD-R theory: with the conclusion being part of the premises, the theory is circular and does not lend itself to testing. The dichotomization inherent in classifying work factors as either demands or resources precludes the understanding of curvilinear associations between work and health (U or inverted U).

The proponents of the JD-R theory have introduced personal resources into their model (Bakker & Demerouti, 2016). Grouping all work factors plus personal resources into two categories is an oversimplification which impede directing attention to specific preventable factors when designing interventions or measures to promote motivation and well-being at work. Furthermore, by communicating that job demands are potentially negative to health and well-being, the JD-R theory implicitly convey the basic belief that demands at work are potentially harmful, e.g. that job demands may lead to “burning out”. There are several studies of the potential contribution of nocebo effects for subjective health complaints like pain (e.g. Benedetti, Durando, & Vighetti, 2014). Hence, indiscriminately labelling all job demands as potential risk factors may contribute to nocebo effects and promote ill-being at work.

### ***3.4.5 The Demand-Induced Strain Compensation (DISC) Theory***

The DISC model is based on the constructs and principles of the JD-R theory. However, the DISC theory posits that demands, resources, and job-related outcomes may be either cognitive, emotional, or physical in nature (De Jonge & Dormann, 2003). The theory maintains that the effects of job demands and resources on a specific outcome depends on the matching of the nature these categories. Hence the nature of demands should be matched by resources of the same nature in order to buffer outcomes that are of the same nature. Hence, the theory maintains that employees who are confronted with high emotional job demands (e.g. anger control) are least likely to experience emotional job strain if adequate emotional job resources are available. Similarly, high levels of cognitive demands should be buffered by cognitive resources in order to prevent cognitive outcomes and physical demands should be buffered by physical resources to prevent physical outcomes.

### ***3.4.6 Theories Pertaining to Justice: Distributive Justice, Social Justice, Procedural Justice, Fairness***

Sensitivity to inequity should be beneficial in social interactions involving cooperation and seems to be an inherent biopsychological trait in many species. Baboons and chimpanzees have been found to reject receiving unequal rewards (Brosnan & de Waal, 2003; Brosnan, Talbot, Ahlgren, Lambeth, & Shapiro, 2010) while the results are equivocal in some other nonhuman primates (see Feller, 2016 for review). Crows and ravens seem to be sensitive to other individuals' efforts and payoffs (Wascher & Bugnyar, 2013).

An experimental study of Americans and Koreans found that individuals tended to apply an equity rule in situations of competition and productivity, whereas an equality rule was applied in situations emphasizing group harmony and solidarity (Leung & Park, 1986). Hence, context and situational factors determine inequity aversion in humans (Skitka, 2012).

#### ***3.4.6.1 Distributive Justice—Equity Theory***

As described previously, inequity at work is the appraisal that the input contributed by the employee is not matched by the output received from the employer (Adams, 1963). Most studies of inequity related to health pertains to a general definition of inequity: any unfairness, injustice, or discrepancy between need and actual use and most studies pertain to inequalities of the availability of healthcare.

To date there are few studies of equity-inequity at work: Taris and co-workers (2001) found that employees reporting inequity exhibited a higher risk of emotional

exhaustion. Greenberg (2006) reported that hospital nurses subjected to “underpayment inequity” (a new compensation system that meant salary reduction) resulted in insomnia. This effect was attenuated when supervisors where trained to treat subordinates in a fair manner (interactional or relational justice).

### 3.4.6.2 Effort-Reward Imbalance Theory

Observing the inverse relation between socio-economic status and incidence of coronary heart disease (CHD), Johannes Siegrist and co-workers proposed that “work-related socio-emotional distress” is produced by a mismatch between high workload and low control over occupational status (e.g. job insecurity, poor promotion prospects, status inconsistency). Furthermore, they assumed that the effect of this condition on CHD risk is substantially increased by the presence of a distinct individual coping pattern which they termed “need for control” (Siegrist, Peter, Junge, Cremer, & Seidel, 1990). They found that status inconsistency, job insecurity, work pressure, and ‘need for control’ independently predicted prospective CHD occurrence.

The theory of effort-reward imbalance at work was further developed to specify components of the effort- and reward-dimensions (Siegrist, 1996). The theory proposes that effort invested in the job originate from extrinsic factors (i.e. job demands) and/or intrinsic factors (i.e. individual coping style). The theory was influenced by research on the Type A behaviour pattern; a tendency for being hard-driving with time urgency and hostility (Friedman et al., 1986; Rosenman et al., 1975). Siegrist proposed that the intrinsic factor which drives effort is a “need for control” which is associated with misjudging demanding stimuli. This individual-level factor is termed “overcommitment”. The reward dimension is based on social exchange (reciprocity) and social role, and included money, esteem or approval, and status control. The latter was operationalized as job security (Siegrist, 1996).

### 3.4.6.3 Organizational Justice

Organizational justice refers to “the extent to which employees are treated with justice at their workplace” (Cropanzano, Byrne, Bobocel, & Rupp, 2001). Organizational justice is commonly operationalized as procedural justice defined as the organization’s procedures for ensuring fair and unbiased decision-making processes with input from all those concerned, and relational justice defined as (the perception of) the immediate leader’s behavioural interactions with his/her subordinates in terms of righteousness and honesty (see Ylipaavalniemi et al., 2005 for a sample questionnaire of organizational justice).

### 3.4.6.4 Psychological Contract Theory

A psychological contract is a perceived exchange of agreement between an individual and another party. Psychological contract theory originated from the assumptions that many aspects of interactions between individuals and between groups imply cost-reward analyses by the individuals involved, i.e. social-exchange theories (e.g. Homans, 1958). In the workplace setting, the notion of a psychological contract has been used to describe the implicit understanding developing between a group of employees and their leader (foreman) or on the organizational level. Psychological contract at the organization level is defined either as expectations of employees and organizations (Schein, 1965: "... implies that the individual has a variety of expectations of the organization and that the organization has expectations of him") or as employees' perceived obligations (Rousseau, 1995: "... the individual beliefs, shaped by the organization, regarding terms of an exchange agreement between individuals and their organization"). Transactional contracts refer to monetary and material aspects while relational contracts refer to job security, career development, and support.

Psychological contracts are challenged when organizations reorganize by implementing new technologies, downsizing, outsourcing, or reorganizing activities. The result may be that employees perceive a breach of the psychological contract, which in turn may result in decreasing commitment to the organization and decreasing motivation. Contract breaches depend on the perception and appraisal of information and events (sense-making; CFR theory of coping with challenge; Lazarus & Folkman, 1984), hence there are large individual variation in reporting of psychological contracts. Psychological contract theory is related to equity theory (Adams, 1963) and theories of organizational justice (Cropanzano et al., 2001).

## 3.5 Work Factors and Concepts of Significance to Sustainable Work

### 3.5.1 Task-Level Factors (Work Contents)

*Demands* are all requirements that the employee faces at work, the things that are called for to perform the job.

*Quantitative demands* are the quantifiable aspects of demands. Typical quantitative demands are amount of work, rate of task execution, and time pressure.

*Qualitative demands* are specific requirements for the execution of tasks. Demands associated with task difficulty is the level of training and practice required to perform tasks and/or the level of challenge faced when performing the tasks.

*Demands for problem solving* is the requirement for tackling new or unexpected obstacles as they appear in order to complete the assigned tasks.

*Demands for quality* is the requirement for meeting certain defined (or undefined) standards of a quality, e.g. faultless execution or operation.

*Demands for safe and secure conduct and performance* is the requirement to follow all defined standards for safe operation and to exhibit vigilance and awareness of threats to safety and to actively prevent unsafe acts.

*Learning demands* is the requirement to learn new things in order to perform the tasks of a job that is changing due to new technology, procedures, or organization.

*Social-interaction demands* are the challenges inherent in interacting with other people (clients, customers, or co-workers): the requirement to cope with other persons' behaviours and displays and the requirement to control one's own emotional displays.

*Illegitimate work tasks* are tasks outside of the employee's professional work role. Job contracts and descriptions specify the competence required and demands to be met. Employees form a professional identity with education, training, and experience. Work tasks are illegitimate if they do not fit with what one considers reasonable for the job or if they conflict with the employee's professional identity. Illegitimate tasks may be categorized according to the two main reasons they are perceived as illegitimate. (I) Unreasonable tasks are unreasonable to expect or demand of a particular person. Examples are tasks that are outside of the person's profession (e.g. a physician spending time on administrative routines) or tasks that are incompatible with the employee's level of competence (e.g. an employee fresh out of school and no job experience is asked to perform tasks that require a high level of specialization). (II) *Unnecessary tasks* are tasks that should not be performed at all either because they are on no value or consequence or because they should be organized away.

*Control* refers to the possibility for the employee to choose between alternatives when conducting his or her work tasks, i.e. the freedom to choose between alternatives. Common synonyms are decision latitude and autonomy. Being observed or monitored or controlling other people are not encompassed in this control concept.

*Control of decisions* is the possibility to make decisions pertaining to one's job and tasks. *Control of work intensity* is the possibility to regulate work pace or scheduling of tasks in order to regulate time pressure (quantitative demands). Other aspects of control are possibility to decide the timing of breaks and the possibility to influence social interactions with colleagues and clients.

The original demand-control theory defined job decision latitude "as the working individual's potential control over his tasks and conduct during the working day" (Karasek, 1979) and operationalized the control dimension by (a) decision authority and (b) "intellectual discretion" (skill discretion, i.e. level of skill required for the job and non-repetitious work).

*Control of working hours* pertains to the possibility to choose when to work. Most common is the possibility to start and end each workday at one's discretion, but with a fixed total number of working hours per year ("flexi-time"). Usually, there is a core period, during which the employee must be present at the workplace. An extreme level of control of working hours is having no obligation to turn up at the workplace and only report results or working hours to the employer. However, if working with deadlines, one may not experience the level of control as high.

*Control of shift scheduling* pertains to being able to influence the schedule and types of shifts in order to cope with personal relationship like childcare and to fit individual preferences (e.g. chronotype).

*Role clarity* refers to the (perceived) existence of clarity of behavioural requirements of the job. Hence, role clarity refers to whether the organization and its managers provide clear unambiguous information of goals, priorities, standards, and procedures that allow the employee to develop expectations of what is required of her/him. Typical examples of sources of role ambiguity are ambiguous goals and objectives, ambiguous line- and functional authority, or ambiguous task descriptions.

*Role conflict* refers to conflict between goals/objectives, conflict between different expectations, conflict between tasks to be performed, and conflict between standards. Common role conflicts are conflicting requirements of two work tasks or projects, conflicting expectations or requirement from two leaders to whom the employee report, conflict between following procedures to meet safety standards versus meeting expected production rate standards, and conflict between ethical standards of the employee versus praxis at the workplace.

### 3.5.2 *Group-Level Factors*

*Social interactions* are relevant for all employees collaborating with colleagues or interacting with clients, customers, or patients.

*Social support* at work refers to functions performed for the employee by significant others: superior(s), co-workers, and/or others. Social support may be defined by expectations of receiving support if needed, i.e. perceived received support, or actual receiving of supporting acts. Social support may be categorized according to types of support: (i) information support, (ii) instrumental support (i.e. providing practical help), (iii) emotional support (i.e. empathy and sympathy), and (iv) feedback support (House, 1981). Social support overlaps with social integration in a group or unit and the availability of satisfying relationships.

*Interpersonal conflicts* are conflicts between two or more individual employees (or leaders) or between groups. The behavioural component consists of overt criticism or sabotaging the other part's work (for instance by hiding information). The cognitive component pertains to disagreements due to differences in interests and objectives between the two parties. The emotional or affective component refers to the irritation, frustration, anger, and sometimes anxiety related to the conflict. Interpersonal conflicts are rarely assessed as part of surveys of work environment and there are few studies of effects on health and well-being.

*Culture* may be defined in many ways. One definition that relates to workplaces and which presents causes for cultures to develop and be resistant to change, was formulated by Schein (1990): "A pattern of basic beliefs developed or discovered by a defined group of people in order to cope with adaptation to the environment and internal integration, that has worked well enough to be considered as valid, and are taught new members as the correct way of perceiving, thinking, and feeling". The

term basic beliefs refer to unconscious assumptions that form the basis of values, norms, attitudes, and behaviours. It is common to use the term climate to denote the observable expressions of culture, e.g. behaviours reflecting standards, attitudes, and priorities. For instance, the extent to which an organization's culture promotes safety is measured by safety-climate surveys and observation systems. Aspects of culture that are commonly assessed by surveys are social climate (e.g. encouraging and supportive, distrustful and suspicious, relaxed and comfortable, competitive) and climate for innovation (e.g. acceptance and encouragement of proposals, support of improvements, rigid and rule-based), climate for equality between genders, age groups, and ethnic groups. However, the culture and climate concepts relate to almost all sides of organizations and several scholars argue that climate should be related to specific facets. As an example, team climate for innovation has been conceptualized by four dimensions: namely vision of a valued outcome, participative safety (feel able to propose new ideas and problem solutions in a non-judgemental climate), task orientation, and support for innovation (expectation of approval and support of proposals; Anderson & West, 1998).

*Leadership* is a complex concept encompassing many diverse dimensions (see Chap. 6). Leadership is commonly used synonymously with management, a term derived from 'manage', 'maneggiare' = to handle (tools) from 'manus' = hand (Latin). "To manage is to forecast and to plan, to organize, to command, to co-ordinate, and to control" (Henri Fayol, 1841–1925). On the other hand, leadership also describes the behavioural process of taking the lead, the process of social influence which leads others towards a goal or to solving a task. This latter meaning of leadership refers to informal processes, taking the lead.

Studies of leadership spans from biological studies of dominance to economic studies of profitable businesses. Leadership factors which contribute to employee motivation, health, and sustained work ability, mainly relates to behaviours of the immediate leader (immediate superior). *Social support from one's immediate superior* may influence health, however, the relative significance on the various types of support remains to be elucidated. The job-characteristics model (Hackman & Oldham, 1975) proposed that feedback is essential for motivation.

*Relational justice*, commonly considered a component of organizational justice, can be defined by the immediate leader's behavioural interactions with his/her subordinates: being truthful, kind, considering others' viewpoints, providing feedback, and able to suppress personal biases (e.g. Ylipaavalniemi et al., 2005).

*Fair leadership* refers to the fairness of the immediate leader's decisions and behaviours, i.e. being unbiased and impartial and treating subordinates equally. Fair leadership is closely related to organizational justice.

*Empowering leadership* refers to the delegation of responsibility and resources by encouraging employees to use and develop their competence and autonomy, to take part in decisions, and to voice their opinions.

### 3.5.3 *Organizational Level Factors*

*Organizational justice* refers to “the extent to which employees are treated with justice at their workplace” (Cropanzano et al., 2001). In contrast to the relational-justice dimension mentioned above, procedural justice refers to the organization’s procedures for ensuring fair and unbiased decision-making processes with input from all those concerned (see Ylipaavalniemi et al., 2005 for a sample questionnaire).

*Working hours* influence health and safety by three pathways: (I) Working-hour schedules may influence sleep, either restricting sleep or disturbing sleep quality. (II) Work schedules which include working at night may disturb or disrupt the biological circadian rhythms. (III) Working at evenings or nights pose challenges from adapting personal and family life.

Sleep is crucial for sustained health, although the relative importance of its functions is not entirely clear. Sleep has several functions: (a) sleep clears extracellular solutes (including “waste”) and fluid from brain, (b) regulates cortical connectivity by strengthening some and pruning other synapses, (c) restores waking-induced reduction in performance, (d) supports immune functions, (e) reduces energy expenditure, and (f) restores brain energy stores.

All cells display circadian rhythms (controlled by CLOCK genes) and cognitive and biological functions display spontaneous circadian variations. Circadian rhythms are modulated or reset by light, ambient temperature, feeding, and by social interactions. Working at night disrupts circadian rhythms with potential effects on cognitive functions. A risk index of occupational injuries based on systematic reviews consists of six working-time schedule factors: (1) shift type (morning, evening, night), (2) number of hours at work, (3) total duration of breaks, (4) shift length, (5) minutes since the last break, and (6) number of consecutive shifts (Fischer, Lombardia, Folkard, Willetts, & Christiani, 2017).

## 3.6 Summary and Conclusions

The human capital of any organization or society consists of the knowledge, skills, and abilities of the employees. For human capital to translate into effective healthcare services, employees must be motivated for their work tasks. There is abundant evidence that environmental challenges may influence health. There are several potential pathogenic mechanism and pathways and sustained high levels of almost any regulating system may overcome buffer systems and produce illness. Individual characteristics differ in terms of genetic constitution, competences, needs, and motives, hence the combinations of mechanisms that affect health vary between individuals.

Theories of effects of responding to challenges are commonly labelled “stress theories”. The problem with the concept of stress in medicine and psychology is the

implicit assumption that a response or a condition are caused by some external stimulus or influence. The present chapter reviews some theories of principles of effects of environmental challenges: rare major life events versus daily moderate hassles, homeostasis versus allostasis, and sustained activation of physiological systems. It is clear from numerous studies that the appraisal of a challenge, the availability of control (the availability of a response at one's discretion), feedback from the response, and one's expectancy to cope with the situation, are pivotal factors in determining health outcomes.

Studies of management practice and leadership have defined and elucidated psychological and social work factors and produced a plethora of theories. The theories reviewed here highlight the important effects of content of the job (i.e. task-level factors), justice and equity, leadership behaviours, and the fit between job characteristics and person characteristics.

Many of the theories of health effects of work propose that some interaction or balance between two rather broad dimensions influence health. The theories that have received the most attention have highlighted effects of combinations of job demands or effort on the one side, and control and autonomy or rewards and status control or factors defined as resources on the other. Other theories posit that justice and psychological contracts and social support influence health.

In general, some theories are rather unspecific, and some are based on circular definitions. It seems that there has been moderate exchange of knowledge from studies of organizational psychology to studies of work and health. The final section defines and describes specific psychological, social, and organizational factors. Ultimately, for actively maintaining and improving human capital one needs knowledge of the specific work factors that contribute to motivation, well-being, and health.

## References

- Adams, J. S. (1963). Toward an understanding of equity. *Journal of Abnormal and Social Psychology*, 67(5), 422–436.
- Adelmann, P. K., & Zajonc, R. B. (1989). Facial efference and the experience of emotion. *Annual Review of Psychology*, 40, 249–280.
- Anderson, E. A., Sinkey, C. A., & Mark, A. L. (1991). Mental stress increases sympathetic nerve activity during sustained baroreceptor stimulation in humans. *Hypertension*, 17(suppl III), III-43–III-49.
- Anderson, N. R., & West, M. A. (1998). Measuring climate for work group innovation: Development and validation of the team climate inventory. *Journal of Organizational Behaviour*, 19, 235–258.
- Ashforth, B. E., & Humphrey, R. H. (1993). Emotional labor in service roles: The influence of identity. *Academy of Management Review*, 18, 88–115.
- Averill, J. R. (1973). Personal control over aversive stimuli and its relationship to stress. *Psychological Bulletin*, 80, 286–303.
- Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, 22, 309–328.
- Bakker, A. B., & Demerouti, E. (2016). Job demands-resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22, 273–285.

- Bandler, R., & Shipley, M. T. (1994). Columnar organization in the midbrain periaqueductal gray: Modules for emotional expression? *Trends in Neuroscience*, 17(9), 379–389.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *Psychological Review*, 84, 191–215.
- Benedetti, F., Durando, J., & Vighetti, S. (2014). Nocebo and placebo modulation of hypobaric hypoxia headache involves the cyclooxygenase prostaglandins pathway. *Pain*, 155, 921–928.
- Bianchi, R., Schonfeld, I. A., & Laurent, E. (2015). Burnout-depression overlap: A review. *Clinical Psychology Review*, 36, 28–41.
- Bolger, N., & Amarel, D. (2007). Effects of support visibility on adjustment to stress: Experimental evidence. *Journal of Personality and Social Psychology*, 92, 458–475.
- Brady, J. V., Porter, R. W., Conrad, D. G., & Mason, J. W. (1958). Avoidance behaviour and the development of duodenal ulcers. *Journal of Experimental Analysis of Behaviour*, 1, 69–72.
- Brooke, P. P., Jr., Russell, D. E., & Price, J. L. (1988). Discriminant validation of measures of job satisfaction, job involvement, and organizational commitment. *Journal of Applied Psychology*, 73, 139–145.
- Brosnan, S. F., & de Waal, F. B. (2003). Monkeys reject unequal pay. *Nature*, 425, 297–299.
- Brosnan, S. F., Talbot, C., Ahlgren, M., Lambeth, S. P., & Shapiro, S. J. (2010). Mechanisms underlying responses to inequitable outcomes in chimpanzees (*Pan troglodytes*). *Animal Behaviour*, 79, 1229–1327.
- Cannon, W. B. (1915). *Bodily changes in pain, hunger, fear and rage*. New York, NY: D. Appleton & Company.
- Cannon, W. B. (1936). The role of emotions in disease. *Annals of Internal Medicine*, 9, 1453–1465.
- Christensen, J. O., & Knardahl, S. (2010). Work and neck pain: A prospective study of psychological, social, and mechanical risk factors. *Pain*, 151(1), 162–173.
- Christensen, J. O., & Knardahl, S. (2012). Work and back pain: A prospective study of psychological, social and mechanical predictors of back pain severity. *European Journal of Pain*, 16(6), 921–933.
- Clark, L. A., & Watson, D. (1988). Mood and the mundane: Relations between daily life events and self-reported mood. *Journal of Personality and Social Psychology*, 54(2), 296–308.
- Cobb, S., & Rose, R. M. (1973). Hypertension, peptic ulcer, and diabetes in air traffic controllers. *JAMA*, 224(4), 489–492. <https://doi.org/10.1001/jama.1973.03220170019004>
- Cropanzano, R., Byrne, Z. S., Bobocel, D. R., & Rupp, D. E. (2001). Moral virtues, fairness heuristics, social entities, and other denizens of organizational justice. *Journal of Vocational Behaviour*, 58(2), 164–209.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience* (1st ed.). New York: Harper & Row. ISBN 9780060162535.
- Deelstra, J. T., Peeters, M. C. W., Schaufeli, W. B., Stroebe, W., Zijlstra, F. R., & van Doornen, L. P. (2003). Receiving instrumental support at work: When help is not welcome. *Journal of Applied Psychology*, 88, 324–331.
- De Jonge, J., & Dormann, C. (2003). *The DISC model: Demand-induced strain compensation mechanisms in job stress*. London: Taylor & Francis.
- De Jonge, J., & Kompier, M. A. J. (1997). A critical examination of the demand-control-support model from a work psychological perspective. *International Journal of Stress Management*, 4, 235–258.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86(3), 499–512.
- Dewe, P. (2000). Measures of coping with stress at work: A review and critique. In P. Dewe, M. Leiter, & T. Cox (Eds.), *Coping, health and organizations*. London/New York: Taylor & Francis.
- Dienstbier, R. A. (1989). Arousal and physiological toughness: Implications for mental and physical health. *Psychological Review*, 96(1), 84–100. <https://doi.org/10.1037/0033-295X.96.1.84>
- Durkheim, E. (1951). *Suicide*. New York: Free Press.
- Edwards, J. R. (2008). Person-environment fit in organizations. An assessment of theoretical progress. *The Academy of Management Annals*, 2, 167–230.

- Ely, D. L., & Henry, J. P. (1978). Neuroendocrine response patterns in dominant and subordinate mice. *Hormones Behaviour*, 10(2), 156–169.
- Feller, J. (2016). *The evolution of inequity aversion: Nonhuman primate responses to unequal reward distributions* (Thesis). Southern Illinois University Carbondale.
- Fiedler, F. E. (1971). Validation and extension of the contingency model of leadership effectiveness: a review of empirical findings. *Psychological Bulletin*, 76, 128–148.
- Fischer, D., Lombardia, D. A., Folkard, S., Willetts, J., & Christiani, D. C. (2017). Updating the “risk index”: A systematic review and meta-analysis of occupational injuries and work schedule characteristics. *Chronobiology International*, 34, 1423–1438. <https://doi.org/10.1080/07420528.2017.1367305>
- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behaviour*, 21(3), 219–239.
- Folkow, B., & Rubinstein, E. H. (1966). Cardiovascular effects of acute and chronic stimulations of the hypothalamic defence area in the rat. *Acta Physiologica Scandinavica*, 28, 48–57.
- French, J. R. P., Rodgers, W. L., & Cobb, S. (1974). Adjustment as person-environment fit. In G. Coelho, D. Hamburg, & J. Adams (Eds.), *Coping and adaptation* (pp. 316–333). New York: Basic Books.
- Fried, Y., & Ferris, G. R. (1987). The validity of the job characteristics model: A review and meta-analysis. *Personnel Psychology*, 40, 287–322.
- Friedman, M., Thoresen, C. E., Gill, J. J., Ulmer, D., Powell, L. H., Price, V. A., et al. (1986). Alteration of type A behaviour and its effect on cardiac recurrences in post myocardial infarction patients: Summary of results of the recurrent coronary prevention project. *American Heart Journal*, 112, 653–665.
- Gerin, W., Litt, M. D., Deich, J., & Pickering, T. G. (1996). Self-efficacy as a component of active coping: Effects on cardiovascular reactivity. *Journal of Psychosomatic Research*, 40, 485–493.
- Greenberg, J. (2006). Losing sleep over organizational justice: Attenuating insomniac reactions to underpayment inequity with supervisory training in interactional justice. *Journal of Applied Psychology*, 91(1), 58–69.
- Hackman, J. R., & Lawler, E. E. (1971). Employee reactions to job characteristics. *Journal of Applied Psychology*, 55(3), 259–286. <https://doi.org/10.1037/h0031152>
- Hackman, J. R., & Oldham, G. R. (1975). Development of the job diagnostic survey. *Journal of Applied Psychology*, 60, 159–170.
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, 16, 250–279.
- Halbesleben, J. R. B., Neveu, J.-P., Paustian-Underdahl, S. C., & Westman, M. (2014). Getting to the “COR”: Understanding the role of resources in conservation of resource theory. *Journal of Management*, 20, 1–31.
- Henry, J., Meehan, J. P., & Stephens, P. M. (1967). The use of psychosocial stimuli to induce prolonged systolic hypertension in mice. *Psychosomatic Medicine*, 29, 408–432.
- Hersey, P., & Blanchard, K. H. (1969). *Management of organizational behaviour—Utilizing human resources*. New Jersey: Prentice Hall.
- Hermans, D., Vansteenkiste, D., Crombez, G., Baeyens, F., & Eelen, P. (2002). Expectancy-learning and evaluative learning in human classical conditioning: affective priming as an indirect and unobtrusive measure of conditioned stimulus valence. *Behaviour Research and Therapy*, 40, 217–234.
- Herzberg, F. (1964). The motivation-hygiene concept and problems of manpower. *Personnel Administration*, 27, 3–7.
- Herzberg, F. (1968). One more time: How do you motivate employees? *Harvard Business Review*, 46(1), 53–62.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513–515.
- Hochschild, A. R. (1983). *The managed heart: Commercialization of human feeling*. Berkeley, CA: University of California Press.

- Holahan, C. J., & Moos, R. H. (1986). Personality, coping, and family resources in stress resistance—A longitudinal analysis. *Journal of Personality and Social Psychology*, 51(2), 389–395.
- Holmes, T. H., & Rahe, R. H. (1967). The social readjustment rating scale. *Journal of Psychosomatic Research*, 11(2), 213–218.
- Hom, P. W., Lee, T. W., Shaw, J. D., & Hausknecht, J. P. (2017). One hundred years of employee turnover theory and research. *Journal of Applied Psychology*, 102, 530–545.
- Homans, G. C. (1958). Social behaviour as exchange. *American Journal of Sociology*, 63, 597–606.
- House, J. S. (1981). *Work stress and social support*. Reading, MA: Addison Wesley.
- House, R. J. (1996). Path-goal theory of leadership: Lessons, legacy, and a reformulated theory. *Leadership Quarterly*, 7(3), 323–352.
- Houston, B. K., Babyak, M. A., Chesney, M. A., Black, G., & Ragland, D. R. (1997). Social dominance and 22-year all-cause mortality in men. *Psychosomatic Medicine*, 59(1), 5–12.
- Hull, C. L. (1943). *Principles of behaviour: An introduction to behaviour theory*. Oxford, England: Appleton-Century.
- Indregard, A.-M.R., Knardahl, S., & Nielsen, M. B. (2017). Emotional dissonance and sickness absence: A prospective study of employees working with clients. *International Archives of Occupational and Environmental Health*, 90, 83–92. <https://doi.org/10.1007/s00420-016-1176-9>
- Jurek, B., & Neumann, I. D. (2018). The oxytocin receptor: From intracellular signaling to behaviour. *Physiological Reviews*, 98, 1805–1908.
- Kanner, A. D., Coyne, J. C., Schaefer, C., & Lazarus, R. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. *Journal of Behavioural Medicine*, 4(1), 1–39.
- Kanungo, R. N. (1982). Measurement of job and work involvement. *Journal of Applied Psychology*, 67(3), 341–349.
- Karasek, R. A. (1979). Job demands, job decision latitude and mental health. Implications for job redesign. *Administrative Science Quarterly*, 24, 285–308.
- Karasek, R. A., Baker, D., Marxer, F., Ahlbom, A., & Theorell, T. (1981). Job decision latitude, job demands, and cardiovascular disease: A prospective study of Swedish men. *American Journal of Public Health*, 71, 694–705.
- Karasek, R. A., Brisson, C., Kawakami, N., Houtman, I., Bongers, P., & Amick, B. (1998). The job content questionnaire (JCQ): An instrument for internationally comparative assessment of psychosocial job characteristics. *Journal of Occupational Health Psychology*, 3, 322–355.
- Knardahl, S., Johannessen, H. A., Sterud, T., Härmä, M., Rugulies, R., Seitsamo, J., & Borg, W. (2017). The contribution from psychological, social, and organizational work factors to risk of disability retirement: A systematic review with meta-analyses. *BMC Public Health*, 17(1), 176. <https://doi.org/10.1186/s12889-017-4059-4>
- Knardahl, S., Sterud, T., Nielsen, M. B., & Nordby, K.-C. (2016). Arbeidsplassen og sykefravær. Arbeidsforhold av betydning for sykefravær. *Tidsskrift for velferdsforskning*, 1(2), 179–199. <https://doi.org/10.18261/issn.2464-3076-2016-02-05>
- Knardahl, S., & Ursin, H. (1985). Sustained activation and the pathophysiology of hypertension and coronary heart disease. In J. F. Orlebeke, G. Mulder, & L. J. P. van Doornen (Eds.), *Psychophysiology of cardiovascular control. Models, methods, and data* (pp. 151–167). New York: Plenum Publishing Corp.
- Kristof-Brown, A., & Guay, R. P. (2011). Person-environment fit. In S. Zedeck (Ed.), *APA handbook of industrial and organizational psychology: Maintaining, expanding, and contracting the organization* (Vol. 3, pp. 3–50). Washington, DC, US: American Psychological Association, viii, 960 pp. <https://doi.org/10.1037/12171-001>
- Krueger, J. M., Frank, M. G., Wisor, J. P., & Roy, S. (2016). Sleep function: Toward elucidating an enigma. *Sleep Medicine Reviews*, 28, 46–54.
- Landsbergis, P. A., Schnall, P. L., Warren, K., Pickering, T. G., & Schwartz, J. E. (1994). Association between ambulatory blood pressure and alternative formulations of job strain. *Scandinavian Journal of Work and Environmental Health*, 20, 349–363.
- Lazarus, R., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

- Leung, K., & Park, H. J. (1986). Effects of interactional goal on choice of allocation rule: A crossnational study. *Organizational Behaviour and Human Decision Process*, 37(1), 111–120.
- Madsen, I. E., Tripathi, M., Borritz, A., & Rugulies, R. (2014). Unnecessary work tasks and mental health: A prospective analysis of Danish human service workers. *Scandinavian Journal of Work, Environment & Health*, 40, 631–638.
- Marmot, M. G., & Syme, S. L. (1976). Acculturation and coronary heart disease in Japanese Americans. *American Journal of Epidemiology*, 104, 225–247.
- Maslach, C. (1982). *Burnout: The cost of caring*. Englewood Cliffs, NJ: Prentice-Hall.
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behaviour*, 2, 99–113.
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370–396.
- Mason, J. W. (1975). A historical view of the stress field. *Journal of Human Stress*, 1(2), 22–36. <https://doi.org/10.1080/0097840X.1975.9940405>
- Mather, L., Bergstrom, G., Blom, V., & Svedberg, P. (2015). High job demands, job strain, and iso-strain are risk factors for sick leave due to mental disorders a prospective Swedish twin study with a 5-year follow-up. *Journal of Occupational and Environmental Medicine*, 57(8), 858–865.
- Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. D. Drenth, H. Thierry, & C. J. de Wolff (Eds.), *Handbook of work and organizational psychology* (2nd ed.). *Handbook of work and organizational: Work psychology* (pp. 5–33). Psychology Press/Erlbaum (UK) Taylor & Francis.
- McEwen, B. S., & Stellar, E. (1993). Stress and the individual. Mechanisms leading to disease. *Archives of Internal Medicine*, 153(18), 2093–2101.
- Neveu, J.-P. (2007). Jailed resources: Conservation of resources theory as applied to burnout among prison guards. *Journal of Organizational Behaviour*, 28, 21–42.
- Niedhammer, I., Bugel, I., Goldberg, M., Leclerc, A., & Gueguen, A. (1998). Psychosocial factors at work and sickness absence in the Gazel cohort: A prospective study. *Occupational & Environmental Medicine*, 55(11), 735–741.
- North, F. M., Syme, S., Feeney, A., Shipley, M., & Marmot, M. (1996). Psychosocial work environment and sickness absence among British civil servants: The Whitehall II study. *American Journal of Public Health*, 86(3), 332–340.
- Obrist, P. A. (1981). *Cardiovascular psychophysiology—A perspective*. New York: Plenum Press.
- Parsons, F. (1909). *Choosing a vocation*. Boston, MA: Houghton Mifflin.
- Penley, J. A., Tomaka, J., & Wiebe, J. S. (2002). The association of coping to physical and psychological health outcomes: A meta-analytic review. *Journal of Behavioral Medicine*, 25(6), 551–603.
- Pessiglione, M., Petrovic, P., Daunizeau, J., Palminteri, S., Dolan, R. J., & Frith, C. D. (2008). Subliminal instrumental conditioning demonstrated in the human brain. *Neuron*, 59, 561–567.
- Rahe, R. H., Meyer, M., Smith, M., Kjaer, G., & Holmes, T. H. (1964). Social stress and illness onset. *Journal of Psychosomatic Research*, 8(1), 35–44. [https://doi.org/10.1016/0022-3999\(64\)90020-0](https://doi.org/10.1016/0022-3999(64)90020-0)
- Ramsay, D. S., & Woods, S. C. (2014). Clarifying the roles of homeostasis and allostasis physiological regulation. *Psychological Reviews*, 121, 225–247.
- Rehkopf, D. H., Kuper, H., & Marmot, M. G. (2010). Discrepancy between objective and subjective measures of job stress and sickness absence. *Scandinavian Journal of Work, Environment & Health*, 36(6), 449–457.
- Roberts, F. (1950). Stress and the general adaptation syndrome. *British Medical Journal*, 2, 104–105.
- Roberts, K. H., & Glick, W. (1981). The job characteristics approach to task design: A critical review. *Journal of Applied Psychology*, 66, 193–217.
- Roelen, C. A. M., Koopmans, P. C., Bültmann, U., Groothoff, J. W., & van der Klink, J. J. L. (2009). Psychological work conditions and registered sickness absence: A 3-year prospective cohort study among office employees. *International Archives of Occupational and Environmental Health*, 82, 1107–1113.

- Rosenman, R. H., Brand, R. J., Jenkins, D., Friedman, M., Straus, R., & Wurm, M. (1975). Coronary heart disease in the western collaborative group study. Final follow-up experience of 8.5 years. *JAMA*, 233(8), 872–877.
- Rosenman, R. H., & Friedman, M. (1963). Behaviour patterns, blood lipids and coronary heart disease. *Journal of the American Medical Association*, 184, 934–938.
- Rousseau, D. M. (1995). *Psychological contracts in organizations. Understanding written and unwritten agreements*. Thousand Oaks, London, New Delhi: Sage. ISBN 0-8039-7104-4.
- Rössler, W., Hengartner, M. P., Ajdacic-Gross, V., & Angst, J. (2015). Predictors of burnout: Results from a prospective community study. *European Archives of Psychiatry and Clinical Neuroscience*, 265, 19–25.
- Sagie, A. (1998). Employee absenteeism, organizational commitment, and job satisfaction: Another look. *Journal of Vocational Behaviour*, 52, 156–171.
- Sarason, I. G., Sarason, B. R., & Pierce, G. R. (1990). Social support: The search for theory. *Journal of Social and Clinical Psychology*, 9, 133–147.
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A confirmative analytic approach. *Journal of Happiness Studies*, 3, 71–92.
- Schein, E. (1990). Organizational culture. *American Psychologist*, 45, 109–119.
- Schein, E. (1965). *Organizational psychology*. Englewood Cliffs, NJ: Prentice Hall.
- Selye, H. (1936). A syndrome produced by diverse noxious agents. *Nature*, 138, 32–35.
- Selye, H. (1974). *Stress without distress*. Philadelphia: J. B. Lippincott Co.
- Siegrist, J. (1996). Adverse health effects of high effort-low reward conditions. *Journal of Occupational Health Psychology*, 1, 27–37.
- Siegrist, J., Peter, R., Junge, A., Cremer, P., & Seidel, D. (1990). Low status control, high effort at work and ischemic heart disease: Prospective evidence from blue-collar men. *Social Science & Medicine*, 31, 1127–1134.
- Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique systems for classifying ways of coping. *Psychological Bulletin*, 129, 216–269.
- Skitka, L. J. (2012). Cross-disciplinary conversations: A psychological perspective on justice research with non-human animals. *Social Justice Research*, 25(3), 327–335.
- Sluiter, J. K., Frings-Dresen, M. H. W., van de Beek, A. J., & Meijman, T. F. (2001). The relation between work-induced neuroendocrine reactivity and recovery, subjective need for recovery, and health status. *Journal of Psychosomatic Research*, 50, 29–37.
- Staddon, J. E. R., & Cerutti, D. T. (2003). Operant conditioning. *Annual Review of Psychology*, 54, 115–144.
- Sterling, P., & Eyer, J. (1988). Allostasis: A new paradigm to explain arousal pathology. In S. Fisher & J. T. Reason (Eds.), *Handbook of life stress, cognition, and health* (pp. 629–649). Chichester; New York: Wiley.
- Taris, T. W., Peeters, C. W., Le Blanc, P. M., Shreus, P. J. G., & Schaufeli, W. B. (2001). From inequity to burnout. The role of job stress. *Journal of Occupational Health Psychology*, 6, 303–323.
- Theorell, T. (1976). Selected illnesses and somatic factors in relation to two psychosocial stress indices—A prospective study of middle-aged construction building workers. *Journal of Psychosomatic Research*, 20, 7–20.
- Thoits, P. A. (2011). Mechanisms linking social ties and support to physical and mental health. *Journal of Health and Social Behaviour*, 52, 145–161.
- Thun, S., Halsteinli, V., & Løvseth, L. (2018). A study of unreasonable illegitimate tasks, administrative tasks, and sickness presenteeism amongst Norwegian physicians: An everyday struggle? *BMC Health Services Research*, 18, 407. <https://doi.org/10.1186/s12913-018-3229-0>
- Umberson, D., & Montez, J. K. (2010). Social relationships and health: A flashpoint for health policy. *Journal of Health and Social Behaviour*, 51(suppl 1), S54–S66.
- Vøllestad, N. K., & Sejersted, O. M. (1988). Biochemical correlates of fatigue. *European Journal of Applied Physiology and Occupational Physiology*, 57, 336–347.

- Wall, T. D., Jackson, P. R., Mullarkey, S., & Parker, S. K. (1996). The demands-control model of job strain: A more specific test. *Journal of Occupational and Organizational Psychology*, 69, 153–166.
- Wang, M., Liao, H., Zhan, Y., & Shi, J. (2011). Daily customer mistreatment and employee sabotage against customers: Examining emotion and resource perspectives. *Academy of Management Journal*, 54, 312–334.
- Wascher, C. A. F., & Bugnyar, T. (2013). Behavioural responses to inequity in reward distribution and working effort in crows and ravens. *PLoS ONE*, 8, 1–9.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070.
- Wegge, J., Schmidt, K.-H., Parkes, C., & van Dick, R. (2007). ‘Taking a sickie’: Job satisfaction and job involvement as interactive predictors of absenteeism in a public organization. *Journal of Occupational and Organizational Psychology*, 80, 77–89.
- Weiss, J. M. (1968). Effects of coping responses on stress. *Journal of Comparative and Physiological Psychology*, 65, 252–260.
- Weiss, J. M. (1971). Effects of coping behaviour in different warning signal conditions on stress pathology. *Journal of Comparative and Physiological Psychology*, 77, 1–13.
- Ylipaavalniemi, J., Kivimäki, M., Elovainio, M., Virtanen, M., Keltikangas-Järvinen, L., & Vahtera, J. (2005). Psychosocial work characteristics and incidence of newly diagnosed depression. A prospective cohort study of three different models. *Social Science & Medicine*, 61, 111–122.

# Chapter 4

## The Organisation of Healthcare Services



Valentina Vodopivec and Hubertus J. M. Vrijhoef

**Abstract** This chapter describes that organised health systems have existed for less than a century and are in an urgent need to transform from the delivery of disease centred services to people centred, integrated health services. In doing so, different models and frameworks exist. Notwithstanding the growing number of integrated initiatives, it has been difficult to consistently demonstrate improved outcomes in research settings, and even harder to achieve larger scale implementation in practice. The reasons for this situation are multi-faceted. A promising approach for the evaluation of systems transforming toward the delivery of integrated health services is realist research. Applying the art and science of complexity may prove helpful to better understand the heterogeneity in effects for all stakeholders involved, including patients and healthcare providers.

**Keywords** Health systems · Integrated care · Chronic care · Realist research · Complexity

### 4.1 Introduction

Health systems and organisations of some sort have existed ever since people have attempted to use various interventions against health issues and threats. However, organised health systems have existed for less than a century (Institute of Medicine, et al., 1988). Two main factors are believed to have progressively shaped the notion and organisation of contemporary healthcare services: the developments in the scientific understanding of sources of ill health, disease treatment and control, and the shift towards the perception of disease control as a possibility and public responsibility.

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While the scientific progress provided the foundation for healthcare, the changes in public expectations, views and values shaped the system around it.

The notion of healthcare as a public good was strongly emphasised in the World Health Organisation's (WHO) Declaration of Alma-Ata in 1978 (World Health Organization, 1978). The Declaration states that the citizens have the right and duty to participate individually and collectively in the planning and implementation of their healthcare, which should also include the social sector. It further proposes that all governments should develop national policies and strategies to launch and sustain a comprehensive national health system in coordination with other sectors (World Health Organization, 1978). If we would have managed to realise this vision, our health systems would now be strongly person-centred, addressing individual's need, adaptive and responsive to the ever-changing context, and able to provide appropriate, timely and high-quality care. Health systems would facilitate and sustain a broader health-promoting environment, which encompasses the connection with local communities, social sector, occupational and natural environments (Sturmburg, O'Halloran, & Martin, 2013; World Health Organization, 1978). However, disease-centred medicine currently still represents the status quo, and health systems worldwide are struggling to appropriately and sustainably fulfil the healthcare needs of the population undergoing demographic and epidemiological changes.

Forty year after the Declaration of Alma-Ata, delegates from numerous countries once again committed to achieving the goal of comprehensive, people-centered primary healthcare with the Astana Declaration (World Health Organization, 2018). Confirming the values, principles and long-term objectives of its predecessor, the Astana Declaration seems to also carry forward the missed opportunity to actively challenge contemporary health systems' issues. Committing to the delivering of comprehensive preventive, promotive, curative, rehabilitative and palliative care throughout the course of people's lives is undoubtedly a noble and necessary goal. However, specific actionable strategies have not been defined. Translating this vision into actionable initiatives is crucial for achieving it (Walraven, 2019). Yet, the set of strategies and actions needed between different health systems and populations vary significantly. And because of this context dependency of the pathway towards "Healthy Healthcare", the responsibility for achieving it lies on national and local initiatives.

This chapter provides a brief overview of different health systems, explores the contemporary public health challenges from a systems perspective, and introduces a promising strategy for solving them, namely, integrated care. Moreover, the importance of appropriate workforce planning and training in light of healthcare coordination will be discussed, as it represents one of the key ingredients towards achieving individuals' and public health goals.

## 4.2 Health Systems

Common definitions of health systems generally attempt to cover all the components of providing healthcare. Following the definition of the WHO, a health system “consists of all organizations, people and actions whose primary intent is to promote, restore or maintain health” (World Health Organization, 2007). Its goals are “improving health and health equity in ways that are responsive, financially fair, and make the best, or most efficient, use of available resources (World Health Organization, 2007). A health system is therefore “more than the pyramid of publicly owned facilities that deliver personal health services” and integrate actions carried outside professional health sector (World Health Organization, 2007).

### 4.2.1 *Typologies and Classifications*

Establishing a shared typology and classifications is important for distinguishing between different systems and it allows for comparison of characteristics as well as performance, which in turn enables policy assessments and improvements. Early evaluations and classifications of health systems distinguished between the pluralistic health system, the health insurance system, the health service system, and the socialized health system (Field, 1973). This typology was primarily based on ownership and practitioners’ autonomy and dimensions such as the main organisational unit, state of control over the delivery of care, functionalities, structure, have been debated ever since (Beckfield, Olafsdottir, & Sosnaud, 2013; Wendt, Frisina, & Rothgang, 2009).

Other well-known typologies differentiate between health systems based on the role of the three main stakeholders: the healthcare professional, the government, and the payers/insurers. This in turn reflects in the dimensions of coverage, funding and the involvement of the state. In Table 4.1, a simplified health system typology is described. These four models differ in the understanding of healthcare as a commodity that can be bought on the free market (noninterventionism of the state), and healthcare as a right and public good (state interventionism, centralisation, cost control) (Stevens & Van Der Zee, 2008). The four models represent “pure” types, and it is important to note that, while placed under the same typology umbrella, the systems of individual countries named as examples differ in the organisation of certain health system domains. Interested readers can consult a number of other publications offering a more comprehensive overview and differentiations between health systems (see for example Hassenteufel & Palier, 2007; Judge, 1988; Stevens & Van Der Zee, 2008; Toth, 2016; Wendt, Frisina, & Rothgang, 2009).

**Table 4.1** Simplified health system typology (derived from Stevens & Van Der Zee, 2008)

System	Brief description
Bismarckian social insurance systems	Most middle and western Europe health systems originate from the German <i>social insurance model</i> , also known as the <i>Bismarck model</i> , or <i>health insurance system</i> . The healthcare system is financed through health insurance funds and partially social contributions. The supply of healthcare can be public and partially private (primary, ambulatory health, some clinics). The system is managed by private organisations which, together with the care providers make agreements about the provision of care and the payment thereof. The government oversees the system of contracts between insurers, providers and healthcare consumers. Modern variations of the Bismarckian health insurance systems can be found in, for example, Germany, France, Austria, Belgium, Luxembourg, and to a certain extent the Netherlands, Switzerland, and most of the countries in central and eastern Europe (Hassenteufel & Palier, 2007).
National health services model	The national health service model, derived from the Beveridge model, is based on the principle that the state is responsible for financing of healthcare, which should be available to all citizens (almost) free of charge. Financial resources are collected through taxes. The healthcare infrastructure is owned by the state, which is, however, not required to have complete control. The medical profession has relatively high levels of autonomy. General practitioners are often self-employed and have a gatekeeper function in primary healthcare (Stevens & Van Der Zee, 2008). Health systems that fit this description are in place in Italy, New Zealand, Spain, Sweden, and the United Kingdom (Beckfield, Olafsdottir, & Sosnaud, 2013; Lassey & Jinks, 1997). A Beveridgean national health service system can be highly centralised in its organisation and management, for example the Great Britain, or not, as in the Nordic countries (Hassenteufel & Palier, 2007).
Free market model	The free market health system model is characterised by minimal or no government intervention and regulation. Healthcare provision and funding is in the hands of private organisations. Health insurance is voluntary (privatised reimbursement model), and there is generally not much interaction between the providers and insurers, mostly patients with both of private and public parties. A major challenge within such a system, currently in place in the United States, is that it does not have mechanisms in place to prevent corporate profit maximisation tactics, inequity, and excessive and raising healthcare costs. Furthermore, the voluntary and private reimbursement model results in lack of health-coverage for people who are not able to pay the insurance premiums, or do not see the point of being insured. Such cases sometimes result in to called medical debt or even bankruptcies in the event of sudden illness or even childbirth (Himmelstein, Thorne, & Warren, 2009; Reis et al., 2017).

(continued)

**Table 4.1** (continued)

System	Brief description
Socialist model	The socialist or Shemashko model is the most centralised health system, providing universal and free healthcare for all citizens. The state owns the healthcare facilities which are funded through taxes. The organisation of healthcare services is fully hierachal, care is delivered by state employed healthcare professionals. Since the introduction of such a system in the 1920 in the (at the time) Soviet Union, the healthcare status of the population significantly improved. However, major issues with providing sufficient healthcare funding resulted in the many former Soviet Republics transitioning to a social insurance-based system (Sheiman, Shishkin, & Shevsky, 2018; Stevens & Van Der Zee, 2008).

### 4.3 Contemporary Health System Challenges

The demographic and epidemiologic characteristics of the population are importantly changing. People are generally living longer, and instead of acute health conditions being the main health threat, there is an increased prevalence of chronic illnesses, often coupled with multimorbidity (Barnett, Mercer, & Norbury, 2012; Divo, Martinez, & Mannino, 2014; Marengoni, Angleman, & Melis, 2011). These trends contributed to escalating complexity and heterogeneity of healthcare needs and provision (Barnett et al., 2012; Nolte & McKee, 2009).

The structure and functionality of the health system reflects in the effectiveness and efficiency of all its building blocks, including the actual delivery of healthcare services from healthcare professionals to patients. The currently still dominant orientation of medical practice and research is looking at one specific condition at a time and in isolation, or so called “disease-centredness”, which often excludes sufficient and proper consideration of multimorbidity (Sturmberg, O’Halloran, & Martin, 2013).

This fragmentation is based in the specialisation of medical research, education and healthcare professions, which, in case of chronic conditions and multimorbidity, seems to lead to duplications in supervision, repeated assessments, incomplete or conflicting information about the patient’s health status, and multiple transaction costs (Barnett et al., 2012; Nolte & McKee, 2009). In order for the health systems to generate its expected outcomes, it has to be able to adapt to the needs of the population and to the context, along with corresponding priorities, values and principles (Van Olmen et al., 2010).

Since health and illness reside within the individual and their wholesome experience of health, healthcare should correspond to the circumstances and needs of the patients, which implies their consideration above the narrow focus on discrete disease entities and body parts (Sturmberg, O’Halloran, & Martin, 2013). Moreover, pursuing objectives that address the needs of people beyond the level of individual

patient experience is crucial for improving the sustainability of health systems (World Health Organization, 2007).

If a health system is the sum of all public and private organizations, and their resources that are aimed at improving, maintaining and restoring health, this also includes strategies and actions that address social, political, environmental, and economic determinants of health (World Health Organization, 2013). Therefore, health system elements, dynamics and relationships should not be reduced to a triangular sub-set of coverage, funding and ownership. If health systems are viewed as a monolithic macro system, the interactions and dynamics between its parts do not receive enough attention, where in fact, these interconnected parts create effects that have repercussions on the whole system (De Savigny & Taghreed, 2009).

If we observe the dynamics of health systems, we see that changes in one area cannot be achieved without implications for the others. Like other complex systems, health systems have various interacting, often tightly linked components, are self-organising (i.e. the dynamics of the system spontaneously arise from internal structure) and produce a variety of intended and unintended outcomes. They are governed by internal and external feedback-loops, history dependant and continuously changing, while simultaneously, due to the complexity of components, actors and dynamics, being resistant to planned changes (De Savigny & Taghreed, 2009; Lipsitz, 2012; Sturmberg, O'Halloran, & Martin, 2013). The WHO's Framework for Action (World Health Organization, 2007) on health systems defines six health system building blocks, all of which have interactions and effects on one another. These building blocks are service delivery, health workforce, health information, medical technologies, health financing, leadership and governance (World Health Organization, 2007). These building blocks together form the health system, within which they further form an array of "nested" sub-systems (Golden & Martin, 2004; Lanham, 2013).

This understanding of health and healthcare challenges the single-disease focused frame through which most care, research and medical education and training is configured (Barnett et al., 2012), and calls for a strategy that acknowledges the complexity and intersectoral nature of health system transformation and care integration. It entails taking a systems perspective through which timely, appropriate and high-quality healthcare should not be seen as the end goal, but a continuous process striving to optimise the way the health system addresses the needs of the patients, as well as all the other relevant stakeholders and society as a whole (World Health Organization, 2015). A health system that will correspond to the nature of what it is, a complex adaptive system, will most likely be decentralised, allowing different but mutually agreeable solutions to the needs of patients and communities. Such a system would also continually learn from local feedback, allowing co-evolution of different sub-domains (Sturmberg, O'Halloran, & Martin, 2013).

## 4.4 Integrated People-Centred Care. Definition and Objectives of Integrated Care

The concept of “integrated care” is of polymorphous nature, and its interpretations vary depending on the disciplinary and professional perspectives. Several terms have been used synonymously: managed care, shared care, transmural care, continuity of care, case management, patient-centred care, transitional care (Bautista, Nurjono, Lim, Dessers, & Vrijhoef, 2016).

The (health) system’s interconnected components are meant to work in a complementary manner to achieve its aims. From this perspective, integration is a set of methods, models and tools designed to bond the system entities together, thus enabling connectivity, coordination and collaboration between them (Kodner & Spreeuwenberg, 2002). In the context of healthcare, methods and models for integration can be directed at any of the health system building blocks. The objective behind integration efforts is to align the cure and the care sectors, to enhance quality of care, patient satisfaction, quality of life and overall health system efficiency in addressing the needs of patients with complex health and social care needs (Kodner & Spreeuwenberg, 2002). The cumulation of integration efforts and processes results in integrated care.

The WHO defines integrated care as the delivery and management of healthcare services in a way that results in patients receiving a continuum of care, including health promotion, disease prevention, diagnosis, treatment, disease management, rehabilitation and palliative care services. The care models should be coordinated across the different levels and sites of care within and beyond the health sector, and according to peoples’ needs throughout their life course (World Health Organization, 2015). This definition emphasises qualities of care coordination, as a continuous support process over time, and takes a step further from care considerations primarily being bound within the scope of healthcare. Care provision should be seen as a set of interconnecting processes rather than a specific outcome experienced by service users. The vision of integrated care is to place people and their communities at the centre of service provision.

The objective of people-centred integrated care is to optimise health system performance on various levels and for various stakeholders. This objective corresponds well with the characteristics of the Triple Aim of healthcare, a framework based on the idea of achieving high-value care by simultaneously pursuing three overarching goals: improving the individual experience of care; improving the health of populations; and reducing the per capita cost of healthcare (Berwick, Nolan, & Whittington, 2008). Several authors have proposed adding a fourth objective of improving the experience of providing care or provider wellbeing to the original framework, resulting in the Quadruple Aim (Bodenheimer & Sinsky, 2014; Sikka, Morath, & Leape, 2015). Despite the diversity of profiles of integrated care, many integrated care initiatives build off such principles and goals, thus attempting to create sustainable and harmonised interventions on all three pillars of Healthy Healthcare.

## 4.5 Theoretical Conceptualisation of Integrated Care

### 4.5.1 Dimensions of Integration

Integrated care can be realised through a variety of organisational principles and health interventions. Integrated healthcare provision is characterised by multidimensional nature and context dependency. It is therefore useful to examine some theoretical conceptualisations and typologies of integrated care in order to better understand the multiplicity and diversity of its models.

When considering the range of integrated healthcare services or the breadth of integration, horizontal integration refers to strategies that connect similar levels of care, and vertical integration represents strategies that link care from different hierarchical levels of delivering care, such as primary and secondary care or integrating a general practice and community care (Nolte & McKee, 2009).

Furthermore, various degrees of integration can be implemented. Spanning from a full integration, in which a complete range of services is provided by a sole, integrated organization throughout the duration of care, to collaboration between multiple separate healthcare structures, each retaining individual responsibility for quality of service and variation in funding criteria (Baxter et al., 2018a; Nolte & McKee, 2009). In terms of the process of integration, distinctions are made between structural integration (distribution of activities, functions and tasks between healthcare providers), cultural integration (values, norms, working methods) and social integration (formation and strengthening of social relationships between various stakeholders) (Fabbriotti, 2007). Temporal aspects of integration can vary as well, as it can take a more episodic form (e.g. treatment of an acute health issue and integrated follow up care), or a longitudinal, life-course approach, suitable for patients with chronic diseases and multimorbidity (World Health Organization, 2007).

A synthesis of several integrated care frameworks resulted in the, so called, Rainbow Model of Integrated Care (Valentijn, Schepman, Opheij, & Bruijnzeels, 2013), creating a conceptual framework, which is briefly summarised in Table 4.2, as it offers some insight into the multidimensionality of integration and integrated care. Different perspectives can be taken: a person-focused view, representing a bio-psychosocial consideration of individual's health, or a population health focused view, attempting to cover health related needs in a defined population. Health interventions can be coordinated at clinical (e.g., self-management, case management), professional (e.g., multidisciplinary care, continuity of care), organisational level (e.g., disease management, managed care programs), and at the system's level of integration.

The levels of integration, as described in Table 4.2, are further characterised and connected by different mechanisms of integration. While the Rainbow Model of Integrated Care informatively combines other frameworks helpful for the understanding of integrated care, it is aimed at primary care and thus does not seem to offer a

**Table 4.2** Conceptual framework of care integration (derived from Valentijn et al., 2013)

Level of integration	Brief description
System integration (macro level)	At a macro level, system integration aims towards a holistic approach to addressing healthcare needs throughout the care continuum, in order to improve the efficiency and quality of care, quality of life and patient satisfaction. The framework distinguishes between vertical integration, reflecting in specialisation of health services and a disease-focused approach, and horizontal integration, representing a holistic, cross-sectional collaboration, such as primary care and public health. Both vertical and horizontal system integration are needed to improve healthcare delivery for different population and patient needs.
Organisational integration (meso level)	Organisational integration at the meso level refers to the form and extent in which healthcare services are coordinated. Achieving integration on an organisational level as well as strengthening inter-organisational connections plays a crucial role in the delivery of population-based healthcare. The process of integration calls for a collective involvement of multiple organizations across the entire healthcare spectrum, combining both horizontal and vertical mechanisms to provide care at the level of an entire defined population. However, such implementation is seldom fully achieved, as a vast range of organizations is needed to provide adequate healthcare services to a population and individual differences in structure and funding of different organizations further complicate integration. Integration strategies can be based on different governance mechanisms, such as hierarchical governance structures, market-based governance structures, or voluntary collaboration between organisations through network-like governance mechanisms.
Professional integration (meso level)	Professional integration on the meso level of a healthcare system regards to partnerships between healthcare professionals, both inter- and intra-organisationally, which can serve as examples of vertical and/or horizontal integration. Professionals from different sectors and disciplines collectively work towards providing care to a defined population, using well-coordinated healthcare services and sharing the responsibility for their integration. The formation and maintenance of professional integration arrangements can be motivated by regulatory and financial incentives. Difficulties in integration efforts can be resolved through clarity in terms of roles and responsibilities, mutual respect and communication.

(continued)

**Table 4.2** (continued)

Level of integration	Brief description
Clinical integration (micro level)	Clinical integration is the coordination of person-focused care in a single process across time, place and discipline. Clinical integration in healthcare practice requires a patient-oriented perspective with the intent of improving overall wellbeing, considering the specific needs of individuals and matching them with a compatible service provider. Another important aspect of clinical integration asserts the importance of patient's own involvement in the process of their care, assuming their share of responsibility in care coordination at an individual level.

comprehensive whole systems perspective. Moreover, despite its conceptual attractiveness, no robust evidence yet exists how to interrelate its dimensions to achieve improved outcomes.

#### **4.5.2 Elements and Models of Integrated Care**

Many different models of integrated care and integration are seen in theory and practice. It is important to note that not all parts of the health system have to be integrated or fully coordinated, especially not in the initial stages of integrated care interventions. Such a pragmatic and adaptive approach is much more in line with the mechanisms of complex systems, than an ideological or idealistic one (Kodner & Spreeuwenberg, 2002). Integration initiatives can range from an introduction of individual elements of integration to highly complex, multicomponent models of care (Baxter et al., 2018a).

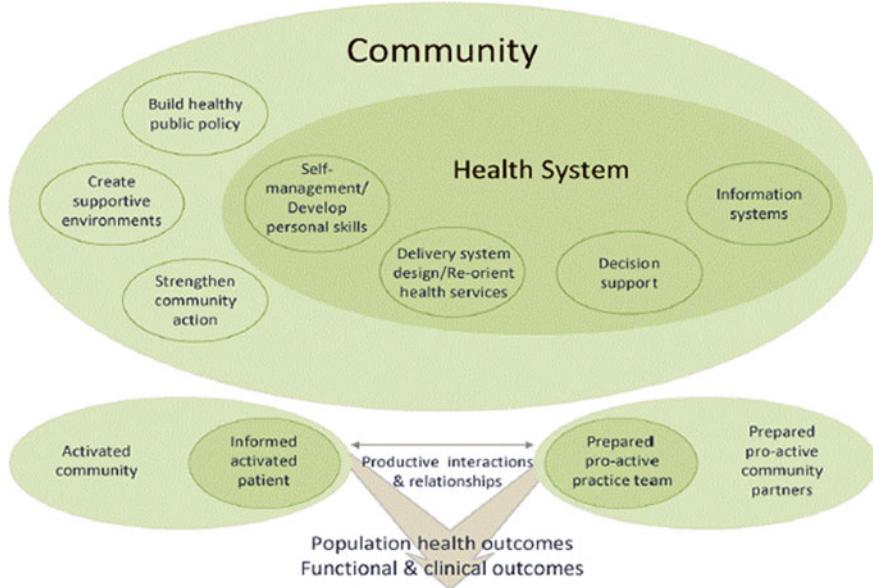
Elements of integrated care interventions can directly target patient care, focus on care organisation, healthcare workforce, reconfigure financing, commissioning or governance aspects (Baxter et al., 2018a; World Health Organization, 2016a). A recent systematic review of integrated care models in developed countries showed that the most prevalent elements include joint assessment, integrated care pathways, agreed referral criteria, case co-ordination, joint review/discharge, integrated information technology systems, care groupings or units, transferring services from hospitals to the community, multidisciplinary teams, different employment conditions, financial and organisational integration (Baxter et al., 2018a). Such elements can be combined in different ways to align with the needs of the target population. In the case of one of the largest integrated care models applied in practice, Kaiser Permanente, the population is stratified; most chronically ill patients receive support for self-management, while high-risk patients receive treatment and case management.

Several models of integrated care for different patient and population groups have been designed to guide the design and the implementation of interventions (see for

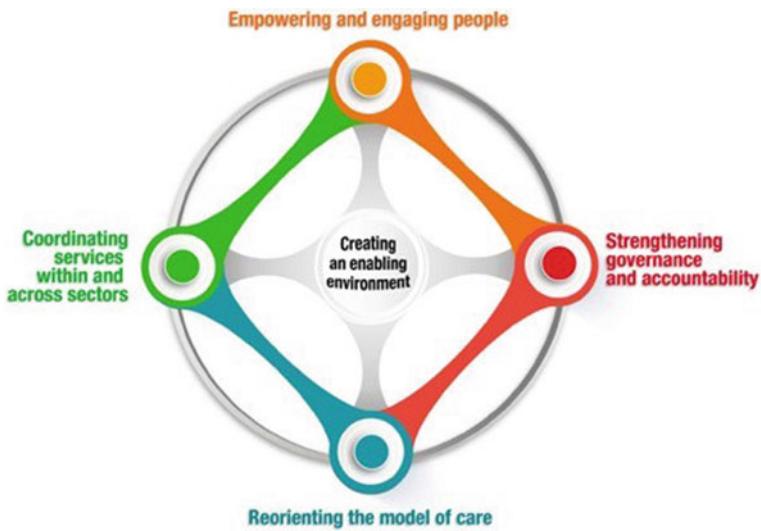
example Baxter et al., 2018a; World Health Organization, 2016b). The Chronic Care Model (CCM) represents one of the most established and widely applied models of integrated healthcare. It was developed in 1998 as a response to healthcare system inadequacies regarding patients with chronic illnesses, aiming to provide a comprehensive framework for organization of health services required for treatment of chronic conditions, thus improving healthcare outcomes of such patients (Wagner, 1998). The CCM primarily suggests shifting focus from acute, episodic and reactive care towards a model that employs a more longitudinal, preventive, community-based and integrated treatment approach. The design structure of the model is comprised using evidence-based factors, widely documented to have positive impact on quality of care, treatment outcomes and cost-effectiveness. Main domains of CCM are six fundamental areas that form a health system that delivers high-quality chronic disease care: self-management support, decision support, delivery system design, clinical information systems, healthcare organization, and community resources and policies (Wagner, 1998).

This model highlights the role of community support in the treatment process, providing patients with adequate information about their chronic illness, further establishing shared responsibility for patient care and management of treatment, which has proven to be the most optimal, (cost-)effective solution in providing healthcare services to chronically ill people. The CCM relies on consistent collaboration between healthcare providers and patients, easing self-management of disease and establishing the role of the patient in the decision-making process whilst also making sure potentially urgent signs get recognized on time. The CCM can be used to design or describe interventions for various chronic diseases, care settings, and target populations (Boehmer et al., 2018; Davy et al., 2015). Furthermore, to integrate aspects of prevention and health promotion into the CCM, it was enhanced in 2003. The Expanded CCM (Fig. 4.1) includes elements of the population health promotion field so that broadly based prevention efforts, recognition of the social determinants of health, and enhanced community participation can also be part of the work of health systems as they work towards sustainable health for all (Barr et al., 2003).

The CCM and the expanded CCM have been fundamental for the WHO framework on integrated people-centred health services. This framework is “a call for a fundamental shift in the way of health services are funded, managed and delivered. It supports countries progress towards universal health coverage by shifting away from health systems designed around diseases and health institutions towards health systems designed for people” (World Health Organization, 2016a). The WHO recommends five interwoven strategies that need to be implemented in order for all people to have access to quality health services that are co-produces in a way that meets their life course needs and respects their preferences, are coordinated across the continuum of care and are comprehensive, safe, effective, timely, and acceptable with all carers being motivated, skilled and operating in a supportive environment. These five strategies and their interconnectivity are illustrated in Fig. 4.2.



**Fig. 4.1** Expended chronic care model (Barr et al., 2003)



**Fig. 4.2** Framework on integrated people-centred health services (World Health Organization, 2016a)

## 4.6 Evaluation, Monitoring and Quality Improvement

### 4.6.1 *Quality Improvement and Assessing Impact*

If there really is such a pressing need to reform our healthcare to enable a more integrated care provision that better corresponds to the contemporary patients' needs, integrated care interventions should be able to demonstrate superiority over less coordinated approaches. However, given the insight regarding the complexity and dynamics of healthcare described in the previous sections, this presumed superiority might be hard to demonstrate empirically, when applying traditional research methods. And the current evidence base shows exactly that. The literature on integrated care and its measurement tends to use a wide variety of definitions, concepts, methods and frameworks (Peterson et al., 2019; Strandberg-Larsen & Krasnik, 2009). There is no standardise approach to describing care delivery and organisation that captures the wide scope of its elements (Piña et al., 2015). This seems to hinder the potential to extract generalisable findings from studies evaluating innovations introduced in a certain healthcare setting. That is, unless the complexity and contextual dependency are integrated into the approach for describing, studying and improving of the health system (Nurjono, Yoong, Yap, Wee, & Vrijhoef, 2018).

Benefits of implementing a more integrated and coordinated healthcare approach have been documented for various chronic diseases such as diabetes (Pimouguet, Le Goff, Thiébaut, Dartigues, & Helmer, 2011), heart failure (Roccaforte, Demers, Baldassarre, Teo, & Yusuf, 2005), depression (Neumeyer-Gromen et al., 2004), and chronic obstructive pulmonary disease (Kruis et al., 2013). Particularly in the case of chronic conditions and multimorbidity, integrated care has also been found to improve the patients' experience of care (Foglino et al., 2016). Some studies demonstrated the potential of integrated care to reduce the utilisation of healthcare services, such as emergency visits, (re-)hospitalizations and long-term care placements (Liljas, Brattström, Burström, Schön, & Agerholm, 2019). Such effects can further result in reducing costs and improved cost-effectiveness.

However, several other studies did not demonstrate superiority of the evaluated integrated care interventions (Drewes et al., 2012; Elissen, Lemmens, Meeuwissen, & Vrijhoef, 2013; Schöttle, Karow, Schimmelmann, & Lambert, 2013). The increasing number of systematic literature reviews on the effectiveness of integrated care models for different patient populations could offer some generalisable insights, however, some researchers justly highlight the fact that most evidence comes from small pilots, controlled research settings, or otherwise heavily contextually influenced circumstances. Authors of such systematic literature reviews also often encounter difficulties in evaluating the (cost-)effectiveness and other outcomes of the interventions, due to lack of sufficient reporting on the intervention mechanisms and contexts means within the primary studies (Baxter et al., 2018b; Ouwens, Wollersheim, Hermens, Hulscher, & Grol, 2005; Vodopivec & Vrijhoef, 2019).

To complicate the matter even further, simply limiting our view to a narrow set of often disease specific outcomes hinders if not contradicts the aims of initiatives

striving towards a paradigm shift of integrated healthcare provision. The objective of the people-centred integrated care (and the Quadruple aim) is to optimise health system performance on various levels and for various stakeholders. If we wish to explore whether integrated care provides improvements for all dimensions of the Quadruple aim, evaluations would require collecting data on all these fronts. However, this is not only unrealistic because of the resource requirement of such comprehensive studies, it also raises questions of appropriate methods of exploring the key mechanisms behind the measured outcomes.

#### ***4.6.2 “What Works, for Whom, in What Respects, to What Extent, in What Contexts, and How?”: Evaluating Integrated Care***

The main logic of integrated care is sound: due to the increase in chronic diseases, multimorbidity and other epidemiologic and demographic changes, there is a need to shift from acute, fragmented care, to a more collaborative practices across the care continuum, which can better cater to the needs of the patient population and the health system. Then why has it been so difficult to consistently demonstrate improved outcomes in research settings, and even harder to achieve larger scale implementation in practice (Grooten & Vrijhoef, 2018)? The reasons are multi-faceted.

Traditional experiments or evaluations of healthcare interventions aim to demonstrate whether the evaluated programme worked or to determine what works. Such an approach contains the underlying assumption that it is possible to clearly determine the causality of the observed/measured effects, and thus “prove” that the intervention is, or is not, effective. Any integrated care model is, per definition, a complex, multi-component program. Therefore, attempting to demonstrate narrow, linear cause and effect relationships inherently holds significant limitations for extracting useful insights for improving healthcare.

A promising alternative approach is realist research (Pawson & Tilley, 1997). Realist research builds on the assumptions that the impact and causal potential of the (healthcare) intervention depend on the conditions in which it is introduced. In other words, a realist approach does not separate the mechanisms and outcomes of the intervention from the context to which it was applied. Health systems and interventions are embedded in social reality, and are influence by numerous, often invisible causal mechanisms. Accounting for this contextual dependence, realist research aims to determine “What works, for whom, in what respects, to what extent, in what contexts, and how?”. The goal of the research is to identify intervention’s mechanisms (i.e. the often intangible elements of the intervention that are believed to lead to a certain outcome in a certain context), contextual factors (i.e. conditions that influence the outcome pattern), and outcomes (practical effects of the mechanisms in the given context). Realist evaluation (primary study) and realist review (secondary

study) has been used to evaluate an increasing number of integrated care interventions and patient populations and is gaining recognition as an important pivot towards a better way of informing decision making in healthcare and policy (Kirst, Im et al., 2017; Mewes, Ahmed & Vrijhoef 2018; Middleton, Rea, Pledger, & Cumming, 2019; Nurjono, Shrestha, et al., 2018; Turner et al., 2018).

The Context–Mechanism–Outcome approach has been further advanced and operationalised for the evaluations of integrated care, resulting in the COMIC model, looking into the Contexts, Outcomes, Mechanisms of Integrated Care interventions (Busetto, Luijkx, & Vrijhoef, 2016). The mechanisms of integrated care interventions are operationalised using the CCM domains (health system, self-management support, delivery system design, decision support, clinical information system, and community), the context differentiates between different levels of care at which the intervention can be influenced, and the outcomes get evaluated according to the dimensions of quality of care, namely effectiveness, efficiency, accessibility, patient-centeredness, equity and safety (Busetto, Luijkx, & Vrijhoef, 2016). This comprehensive and flexible framework, and realist research in general, are likely to provide rich and valuable insights needed to advance the study and the implementation innovation in how care is organised and delivered.

## 4.7 Workforce: Key for Enabling Integration

The necessary organisational adaptations through integrated care introduce significant changes to care providers. Working at the front-line of care delivery, care providers experience any systemic or local organisational and operational flaws and improvements first-hand (Barbazza, Langins, Kluge, & Tello, 2015). Clarifying the skill sets that enable and support integrated care is tied to the understanding of the abilities that the workforce possesses or lacks, which can be achieved through skill assessments.

Interpersonal skills, teamwork, self-awareness, analytical thinking and the ability to use information technologies are the transversal skills that are seen as important across different healthcare professions and even health systems (OECD Health Division Team, 2018).

Changes that are often needed to enable integrated care tends to target the composition of the team, staff mix and workflows. Multidisciplinary teams and relational coordination between healthcare providers from different disciplines are important and effective ways for addressing fragmentation and contribute to quality of care (Hartgerink et al., 2014). However, it can be challenging to develop and maintain such arrangements because of different priorities, ways of working or power dynamics that arise when professionals with different expertise and responsibilities are asked to work together. Thus, it can be helpful to learn competencies needed for multidisciplinary and collaborative work early on, during training and education (Busetto, Luijkx, Calciolari, González Ortiz, & Vrijhoef, 2017). Learning how to work in multidisciplinary teams requires practical experience, interdisciplinary

teaching, shadowing and mentoring (Burger, Hay, Casanas i Comabella, Poots, & Perris, 2018). Several studies and reports noted that education and training curricula need to be revised and updated to correspond to the needs of the population. Fragmented, outdated and static curricula produce equally unsuitable and insufficient capabilities (Frenk et al., 2010).

In the case of chronic illness care, most common adaptations include: (1) increased involvement of nurses and nurse-led care; (2) multidisciplinary teams and multi-disciplinary protocols, (3) provider training; (4) introduction of a care coordinator/manager; (5) treatment team meetings; and (6) role enhancement or introduction of new positions designed to enable the delivery of the integrated chronic care intervention (Busetto et al., 2017).

The effect of integrated care on meaning in work, the aim that was added to Triple aim to make it Quadruple Aim (Sikka, Morath, & Leape, 2015), seems inconsistent at least between different health systems and integrated care models. Working as a care coordinator in integrated care settings in the US is stressful and associated with high levels of job satisfaction and low levels of burnout (Au, Kehn, Ireys, Blyler, & Brown, 2018). Bridging medical and behavioural healthcare and providing linkages to social services was perceived rewarding as care coordinators believed their work helped patients and other staff members.

Appropriate training, particularly on coordinator roles and patients' complex conditions and needs, supportive supervisors and managers, and support from care team members and other coordinators may have contributed to these results. However, among primary care and home care professionals in a Dutch integrated care model targeting frail elderly, integrated working was found to increase objective burden due to additional activities that are largely unrelated to actual patient care and leave job satisfaction unaffected (Janse, Huijsman, de Kuyper, & Fabbricotti, 2016). Future research in this area is needed and could benefit from applying a realist research approach to better understand the heterogeneity in effects for health professionals (Busetto, Luijkx, Elissen, & Vrijhoef, 2016). Depending on the developmental phase of the integrated care model, one should also consider assessing implementation fidelity i.e. the degree to which the model is delivered as intended (Nurjono et al., 2019).

## 4.8 Discussion

Notwithstanding the existence of different types of health systems, they share a modus operandi that can best be characterised as “disease centred”. This may not have been much of a problem when acute health conditions were the main health threat. Nowadays, chronic illnesses, often coupled with multi-morbidity, challenge health systems. The key to deal with this complexity is to think ‘manage, not solve’ or to understand that the new, complex situation is not completely manageable. In this situation, one should change along with the evolving environment rather than trying to get the environment to change (Nason, 2017). It is the art and science of

complexity that will help person-centred integrated care thrive and transform health systems in well-functioning systems.

Key to the success of a complex system are the non-linear interactions of its components, such that its output is greater than the sum of its parts (Lipsitz, 2012). The WHO framework on integrated, people-centred health services does not propose a single model but instead proposes five interdependent strategies that need to be adopted by health systems to build more effective health services. Moreover, the appropriate mix of policies and interventions to be used at the country level will need to be designed and developed according to the local context, values and preferences (World Health Organization, 2016a).

In complex systems, certain behaviours emerge somewhat spontaneously and are referred to as “emergent, self-organised behaviours”. A continuous process of experiment, measurement, learning and encouragement is instrumental for such behaviour (Lipsitz, 2012). Realist research can support informed decision making about the design and implementation of integration of health services.

Complex systems follow rules that can guide them toward a common set of goals (Lipsitz, 2012). The Quadruple Aim is increasingly being adopted by different initiatives moving away from a disease management system toward a system actually providing care for health. Integrated healthcare service delivery requires the right people with the right competencies and behaviours to be in place. Research of integration of health services needs to include data from care providers to assess when, how and who benefits from it.

## 4.9 Concluding Remarks

This chapter describes that organised health systems have existed for less than a century and are in an urgent need to transform from the delivery of disease centred services to people centred, integrated health services. In doing so, different models exist. The WHO framework recommends the application of five interwoven strategies when aiming for the Quadruple Aim. A promising approach for the evaluation of systems transforming toward the delivery of integrated health services is realist research. This approach allows a systems perspective in understanding how complex systems work. For patients, healthcare providers, insurers or payers, and health policy makers to interact and achieve improved health outcomes, integration has much to offer if the reasons for fragmentation are understood well and acted upon adequately.

## References

- Au, M., Kehn, M., Ireys, H., Blyler, C., & Brown, J. (2018). Care coordinators in integrated care: Burnout risk, perceived supports, and job satisfaction. *American Journal of Preventive Medicine*, 54(6 Suppl 3), S250–S257. <https://doi.org/10.1016/j.amepre.2018.01.044>

- Barbazza, E., Langins, M., Kluge, H., & Tello, J. (2015). Health workforce governance: Processes, tools and actors towards a competent workforce for integrated health services delivery. *Health Policy (Amsterdam, Netherlands)*, 119(12), 1645–1654. <https://doi.org/10.1016/j.healthpol.2015.09.009>
- Barnett, K., Mercer, S. W., Norbury, M., Watt, G., Wyke, S., & Guthrie, B. (2012). Epidemiology of multimorbidity and implications for health care, research, and medical education: A cross-sectional study. *Lancet (London, England)*, 380(9836), 37–43. [https://doi.org/10.1016/S0140-6736\(12\)60240-2](https://doi.org/10.1016/S0140-6736(12)60240-2)
- Barr, V. J., Robinson, S., Marin-Link, B., Underhill, L., Dotts, A., Ravensdale, D., & Salivaras, S. (2003). The expanded chronic care model: An integration of concepts and strategies from population health promotion and the chronic care model. *Hospital Quarterly*, 7(1), 73–82. <https://doi.org/10.12927/hcq.2003.16763>
- Bautista, M. A., Nurjono, M., Lim, Y. W., Dessers, E., & Vrijhoef, H. J. (2016). Instruments measuring integrated care: A systematic review of measurement properties. *The Milbank Quarterly*, 94(4), 862–917. <https://doi.org/10.1111/1468-0009.12233>
- Baxter, S., Johnson, M., Chambers, D., Sutton, A., Goyder, E., & Booth, A. (2018a). The effects of integrated care: A systematic review of UK and international evidence. *BMC Health Services Research*, 18(1), 350. <https://doi.org/10.1186/s12913-018-3161-3>
- Baxter, S., Johnson, M., Chambers, D., Sutton, A., Goyder, E., & Booth, A. (2018b). Understanding new models of integrated care in developed countries: A systematic review. *NIHR Journals Library*.
- Beckfield, J., Olafsdottir, S., & Sosnaud, B. (2013). Healthcare systems in comparative perspective: Classification, convergence, institutions, inequalities, and five missed turns. *Annual Review of Sociology*, 39, 127–146. <https://doi.org/10.1146/annurev-soc-071312-145609>
- Berwick, D. M., Nolan, T. W., & Whittington, J. (2008). The triple aim: Care, health, and cost. *Health Affairs (Project Hope)*, 27(3), 759–769. <https://doi.org/10.1377/hlthaff.27.3.759>
- Bodenheimer, T., & Sinsky, C. (2014). From triple to quadruple aim: Care of the patient requires care of the provider. *Annals of Family Medicine*, 12(6), 573–576. <https://doi.org/10.1370/afm.1713>
- Boehmer, K. R., Abu Dabrh, A. M., Gionfriddo, M. R., Erwin, P., & Montori, V. M. (2018). Does the chronic care model meet the emerging needs of people living with multimorbidity? A systematic review and thematic synthesis. *PLoS ONE*, 13(2), e0190852. <https://doi.org/10.1371/journal.pone.0190852>
- Burger, S. A., Hay, H., Casanas i Comabella, C., Poots, A., & Perris, A. (2018). *Exploring education and training in relation to older people's health and social care*. Oxford, UK: Dunhill Medical Trust.
- Busetto, L., Luijkx, K., Calciolari, S., González Ortiz, L. G., & Vrijhoef, H. (2017). Exploration of workforce changes in integrated chronic care: Findings from an interactive and emergent research design. *PLoS ONE*, 12(12), e0187468. <https://doi.org/10.1371/journal.pone.0187468>
- Busetto, L., Luijkx, K. G., Elissen, A., & Vrijhoef, H. (2016). Context, mechanisms and outcomes of integrated care for diabetes mellitus type 2: A systematic review. *BMC Health Services Research*, 16, 18. <https://doi.org/10.1186/s12913-015-1231-3>
- Busetto, L., Luijkx, K., & Vrijhoef, H. J. M. (2016). Development of the COMIC model for the comprehensive evaluation of integrated care interventions. *International Journal of Care Coordination*, 19(1–2), 47–58. <https://doi.org/10.1177/2053434516661700>
- Davy, C., Bleasel, J., Liu, H., Tchan, M., Ponniah, S., & Brown, A. (2015). Effectiveness of chronic care models: Opportunities for improving healthcare practice and health outcomes: A systematic review. *BMC Health Services Research*, 15, 194. <https://doi.org/10.1186/s12913-015-0854-8>
- De Savigny, D., Taghreed, A., Alliance for Health Policy and Systems Research, & World Health Organization. (2009). Systems thinking for health systems strengthening. <https://doi.org/10.1155/2010/268925>

- Divo, M. J., Martinez, C. H., & Mannino, D. M. (2014). Ageing and the epidemiology of multimorbidity. *The European Respiratory Journal*, 44(4), 1055–1068. <https://doi.org/10.1183/09031936.00059814>
- Drewes, H. W., Steuten, L. M., Lemmens, L. C., Baan, C. A., Boshuizen, H. C., Elissen, A. M., et al. (2012). The effectiveness of chronic care management for heart failure: Meta-regression analyses to explain the heterogeneity in outcomes. *Health Services Research*, 47(5), 1926–1959. <https://doi.org/10.1111/j.1475-6773.2012.01396.x>
- Elissen, A. M., Steuten, L. M., Lemmens, L. C., Drewes, H. W., Lemmens, K. M., Meeuwissen, J. A., et al. (2013). Meta-analysis of the effectiveness of chronic care management for diabetes: Investigating heterogeneity in outcomes. *Journal of Evaluation in Clinical Practice*, 19(5), 753–762. <https://doi.org/10.1111/j.1365-2753.2012.01817.x>
- Fabbriotti, I. (2007). Taking care of integrated care: Integration and fragmentation in the development of integrated care arrangements. *International Journal of Integrated Care*, 7, e09. <https://doi.org/10.5334/ijic.179>
- Field, M. G. (1973). The concept of the “health system” at the macrosociological level. *Social Science & Medicine*, 7(10), 763–785. [https://doi.org/10.1016/0037-7856\(73\)90118-2](https://doi.org/10.1016/0037-7856(73)90118-2)
- Foglino, S., Bravi, F., Carretta, E., Fantini, M. P., Dobrow, M. J., & Brown, A. D. (2016). The relationship between integrated care and cancer patient experience: A scoping review of the evidence. *Health Policy (Amsterdam, Netherlands)*, 120(1), 55–63. <https://doi.org/10.1016/j.healthpol.2015.12.004>
- Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., et al. (2010). Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *Lancet (London, England)*, 376(9756), 1923–1958. [https://doi.org/10.1016/S0140-6736\(10\)61854-5](https://doi.org/10.1016/S0140-6736(10)61854-5)
- Golden, B. R., & Martin, R. L. (2004). Aligning the stars: Using systems thinking to (re)design Canadian healthcare. *Healthcare Quarterly (Toronto, Ontario)*, 7(4), 34–42. <https://doi.org/10.12927/hcq.16803>
- Grootenhuis, L., & Vrijhoef, H. J. M. (2018). Scaling-up strategies of integrated care initiatives: A systematic literature review. *International Journal of Integrated Care*, 18(s2), 252. <https://doi.org/10.5334/ijic.s2252>
- Hartgerink, J. M., Cramm, J. M., Bakker, T. J. E. M., van Eijsden, A. M., Mackenbach, J. P., & Nieboer, A. P. (2014). The importance of multidisciplinary teamwork and team climate for relational coordination among teams delivering care to older patients. *International Journal of Integrated Care*, 13(5). <https://doi.org/10.5334/ijic.1279>
- Hassenteufel, P., & Palier, B. (2007). Towards neo-Bismarckian health care states? Comparing health insurance reforms in Bismarckian welfare systems. *Social Policy & Administration*, 41, 574–596. <https://doi.org/10.1111/j.1467-9515.2007.00573.x>
- Himmelstein, D. U., Thorne, D., Warren, E., et al. (2009). Medical bankruptcy in the United States, 2007: Results of a national study. *American Journal of Medicine*, 122(8), 741–746. <https://doi.org/10.1016/j.amjmed.2009.04.012>
- Institute of Medicine (US) Committee for the Study of the Future of Public Health. The Future of Public Health. Washington (DC): National Academies Press (US). (1988). *A history of the public health system* (pp. 56–72). Washington, DC: National Academies Press (US). Available from <https://www.ncbi.nlm.nih.gov/books/NBK218224/>
- Janse, B., Huijsman, R., de Kuyper, R., & Fabbriotti, I. N. (2016). Delivering integrated care to the frail elderly: The impact on professionals’ objective burden and job satisfaction. *International Journal of Integrated Care*, 16(3), 7. <https://doi.org/10.5334/ijic.2014>
- Judge, K. (1988). Organisation for Economic Co-operation and Development (OECD), financing and delivering health care: A comparative analysis of OECD countries, social policy studies no. 4, OECD, Paris, 1987. 101 pp. *Journal of Social Policy*, 17(4), 547–548. <https://doi.org/10.1017/S0047279400017050>
- Kirst, M., Im, J., Burns, T., Baker, G. R., Goldhar, J., O’Campo, P., et al. (2017). What works in implementation of integrated care programs for older adults with complex needs? A realist

- review. *International Journal for Quality in Health Care: Journal of the International Society for Quality in Health Care*, 29(5), 612–624. <https://doi.org/10.1093/intqhc/mzx095>
- Kodner, D. L., & Spreeuwenberg, C. (2002). Integrated care: Meaning, logic, applications, and implications—A discussion paper. *International Journal of Integrated Care*, 2, e12. <https://doi.org/10.5334/ijic.67>
- Kruis, A. L., Smidt, N., Assendelft, W. J., Gussekloo, J., Boland, M. R., Rutten-van Mölken, M., & Chavannes, N. H. (2013). Integrated disease management interventions for patients with chronic obstructive pulmonary disease. *The Cochrane Database of Systematic Reviews* (10), CD009437. <https://doi.org/10.1002/14651858.CD009437.pub2>
- Lanham, H. J. (2013). A complexity science perspective of organizational behavior in clinical microsystems. In J. Sturmberg & C. Martin (Eds.), *Handbook of systems and complexity in health*. New York, NY: Springer.
- Lassey, M. L., & Jinks, M. J. (1997). *Healthcare systems around the world: Characteristics, issues, reforms*. Pearson.
- Liljas, A., Brattström, F., Burström, B., Schön, P., & Agerholm, J. (2019). Impact of integrated care on patient-related outcomes among older people—A systematic review. *International Journal of Integrated Care*, 19(3), 6. <https://doi.org/10.5334/ijic.4632>
- Lipsitz, L. A. (2012). Understanding health care as a complex system: The foundation for unintended consequences. *JAMA*, 308(3), 243–244. <https://doi.org/10.1001/jama.2012.7551>
- Marengoni, A., Angleman, S., Melis, R., Mangialasche, F., Karp, A., Garmen, A., et al. (2011). Aging with multimorbidity: A systematic review of the literature. *Ageing Research Reviews*, 10(4), 430–439. <https://doi.org/10.1016/j.arr.2011.03.003>
- Mewes, J., Ahmed, S., & Vrijhoef, H. (2018). How do integrated care programmes work for patients with cardiovascular disease, chronic obstructive pulmonary disease, depression, diabetes and multi-morbidity? A rapid realist review. *International Journal of Care Coordination*, 21(3), 87–97. <https://doi.org/10.1177/2053434518788593>
- Middleton, L., Rea, H., Pledger, M., & Cumming, J. (2019). A realist evaluation of local networks designed to achieve more integrated care. *International Journal of Integrated Care*, 19(2), 4. <https://doi.org/10.5334/ijic.4183>
- Nason, R. (2017). *It's not complicated: The art and science of complexity in business*. Toronto: University of Toronto Press.
- Neumeyer-Gromen, A., Lampert, T., Stark, K., & Kallischnigg, G. (2004). Disease management programs for depression: A systematic review and meta-analysis of randomized controlled trials. *Medical Care*, 42(12), 1211–1221. <https://doi.org/10.1097/00005650-200412000-00008>
- Nolte, E., & McKee, M. (2009). Caring for people with chronic conditions—A health systems perspective. *Das Gesundheitswesen*, 71, A127. <https://doi.org/10.1055/s-0029-1239177>
- Nurjono, M., Shrestha, P., Ang, I., Shiraz, F., Yoong, J. S., Toh, S., & Vrijhoef, H. (2019). Implementation fidelity of a strategy to integrate service delivery: Learnings from a transitional care program for individuals with complex needs in Singapore. *BMC Health Services Research*, 19(1), 177. <https://doi.org/10.1186/s12913-019-3980-x>
- Nurjono, M., Shrestha, P., Lee, A., et al. (2018). Realist evaluation of a complex integrated care programme: Protocol for a mixed methods study. *British Medical Journal Open*, 8, e017111.
- Nurjono, M., Yoong, J., Yap, P., Wee, S. L., & Vrijhoef, H. (2018). Implementation of integrated care in Singapore: A complex adaptive system perspective. *International Journal of Integrated Care*, 18(4), 4. <https://doi.org/10.5334/ijic.4174>
- OECD Health Division Team. (2018). *Feasibility study on health workforce skills assessment. Supporting health workers achieve person-centred care*. Directorate for Employment, Labour and Social Affairs, OECD.
- Ouwens, M., Wollersheim, H., Hermens, R., Hulscher, M., & Grol, R. (2005). Integrated care programmes for chronically ill patients: A review of systematic reviews. *International Journal for Quality in Health Care: Journal of the International Society for Quality in Health Care*, 17(2), 141–146. <https://doi.org/10.1093/intqhc/mzi016>

- Pawson, R., & Tilley, N. (1997). *Realistic evaluation*. London: Sage. <https://doi.org/10.4135/9781412950596.n474>
- Peterson, K., Anderson, J., Bourne, D., Charns, M. P., Gorin, S. S., Hynes, D. M., et al. (2019). Health care coordination theoretical frameworks: A systematic scoping review to increase their understanding and use in practice. *Journal of General Internal Medicine*, 34(Suppl 1), 90–98. <https://doi.org/10.1007/s11606-019-04966-z>
- Pimouguet, C., Le Goff, M., Thiébaut, R., Dartigues, J. F., & Helmer, C. (2011). Effectiveness of disease-management programs for improving diabetes care: A meta-analysis. *CMAJ: Canadian Medical Association Journal = Journal de l'Association Medicale Canadienne*, 183(2), E115–E127. <https://doi.org/10.1503/cmaj.091786>
- Piña, I. L., Cohen, P. D., Larson, D. B., Marion, L. N., Sills, M. R., Solberg, L. I., & Zerzan, J. (2015). A framework for describing health care delivery organizations and systems. *American Journal of Public Health*, 105(4), 670–679. <https://doi.org/10.2105/AJPH.2014.301926>
- Reis, Z., Maia, T. A., Marcolino, M. S., Becerra-Posada, F., Novillo-Ortiz, D., & Ribeiro, A. (2017). Is there evidence of cost benefits of electronic medical records, standards, or interoperability in hospital information systems? Overview of systematic reviews. *JMIR Medical Informatics*, 5(3), e26. <https://doi.org/10.2196/medinform.7400>
- Roccaforte, R., Demers, C., Baldassarre, F., Teo, K. K., & Yusuf, S. (2005). Effectiveness of comprehensive disease management programmes in improving clinical outcomes in heart failure patients. A meta-analysis. *European Journal of Heart Failure*, 7(7), 1133–1144. <https://doi.org/10.1016/j.ejheart.2005.08.005>
- Schöttle, D., Karow, A., Schimmelmann, B. G., & Lambert, M. (2013). Integrated care in patients with schizophrenia: Results of trials published between 2011 and 2013 focusing on effectiveness and efficiency. *Current Opinion in Psychiatry*, 26(4), 384–408. <https://doi.org/10.1097/YCO.0b013e328361ec3b>
- Sheiman, I., Shishkin, S., & Shevsky, V. (2018). The evolving Semashko model of primary health care: The case of the Russian Federation. *Risk Management and Healthcare Policy*, 11, 209–220. <https://doi.org/10.2147/RMHP.S168399>
- Sikka, R., Morath, J. M., & Leape, L. (2015). The quadruple aim: Care, health, cost and meaning in work. *BMJ Quality & Safety*, 24(10), 608–610. <https://doi.org/10.1136/bmjqqs-2015-004160>
- Stevens, F. C. J., & Van Der Zee, J. (2008). Health system organization models (including targets and goals for health systems). In *International Encyclopedia of Public Health* (pp. 247–256). Academic Press. <https://doi.org/10.1016/B978-012373960-5.00309-9>
- Strandberg-Larsen, M., & Krasnik, A. (2009). Measurement of integrated healthcare delivery: A systematic review of methods and future research directions. *International Journal of Integrated Care*, 9, e01. <https://doi.org/10.5334/ijic.305>
- Sturmberg, J. P., O'Halloran, D. M., & Martin, C. M. (2013). Healthcare reform: The need for a complex adaptive systems approach. In J. Sturmberg & C. Martin (Eds.), *Handbook of systems and complexity in health*. New York, NY: Springer.
- Toth, F. (2016). Classification of healthcare systems: Can we go further? *Health Policy*, 120(5), 535–543. <https://doi.org/10.1016/j.healthpol.2016.03.011>
- Turner, A., Mulla, A., Booth, A., Aldridge, S., Stevens, S., Begum, M., & Malik, A. (2018). The international knowledge base for new care models relevant to primary care-led integrated models: A realist synthesis. *NIHR Journals Library*, 6, 1–176.
- Valentijn, P. P., Schepman, S. M., Opheij, W., & Bruijnzeels, M. A. (2013). Understanding integrated care: A comprehensive conceptual framework based on the integrative functions of primary care. *International Journal of Integrated Care*, 13, e010. <https://doi.org/10.5334/ijic.886>
- Olmen, J. V., Criel, B., Damme, W. V., Marchal, B., Belle, S. V., Dormael, M. V., Hoerée, T., Pirard, M., & Kegels, G. (2010). Analysing health systems to make them stronger. *Studies in Health Services Organisation & Policy*, (27). Retrieved from <http://bit.ly/b3KoQR>
- Vodopivec, V., & Vrijhoef, H. J. (2019). Integrated healthcare models for rheumatoid arthritis: A descriptive systematic review. *International Journal of Care Coordination*, 22(1), 10–18. <https://doi.org/10.1177/2053434519836425>

- Wagner, E. H. (1998). Chronic disease management: What will it take to improve care for chronic illness? *Effective Clinical Practice: ECP*, 1(1), 2–4.
- Walraven, G. (2019). The 2018 Astana Declaration on primary health care, is it useful? *Journal of Global Health*, 9(1), 010313. <https://doi.org/10.7189/jogh.09.010313>
- Wendt, C., Frisina, L., & Rothgang, H. (2009). Healthcare system types: A conceptual framework for comparison. *Social Policy & Administration*, 43, 70–90. <https://doi.org/10.1111/j.1467-9515.2008.00647.x>
- World Health Organization. (1978). Declaration of Alma-Ata. In *International Conference on Primary Healthcare*, Kazakhstan.
- World Health Organization. (2007). *Everybody's business—Strengthening health systems to improve health outcomes: WHO's framework for action*. World Health Organization. <https://apps.who.int/iris/handle/10665/43918>
- World Health Organization. (2013). *Health 2020, a European policy framework and strategy for the 21st century*. Geneva: WHO Regional Office for Europe.
- World Health Organization. (2015). *WHO global strategy on people-centred and integrated health services: Interim report*. World Health Organization. <https://apps.who.int/iris/handle/10665/155002>
- World Health Organization. (2016a). *Framework on integrated, people-centred health services*. Interim report. Geneva, Switzerland.
- World Health Organization. (2016b). *Integrated care models: an overview*. Working document. Geneva, Switzerland: World Health Organization, Health Services Delivery Programme, Division of Health Systems and Public Health.
- World Health Organization. (2018). Declaration of Astana. In *Global Conference on Primary Health Care from Alma-Ata Towards Universal Health Coverage and the Sustainable Development Goals*, Astana, Kazakhstan, October 25–26, 2018.

**Part II**

**Interdisciplinary Perspectives on Healthy  
Healthcare**

## Chapter 5

# Human Resource Management's Contribution to Healthy Healthcare



David E. Guest and Annet H. de Lange

**Abstract** The aim of this chapter is to outline and evaluate the role of human resource management (HRM) in contributing to healthcare provision and to the well-being of those working in healthcare. To achieve this, the chapter is divided into three main sections. The first section describes the nature and importance of HRM, highlighting some of the main theoretical and conceptual debates and some of the research evidence. The second section reviews and evaluates research on HRM in healthcare, illustrating how it has been associated with positive outcomes such as lower mortality rates, better continuity of care and higher patient satisfaction. The third section presents an outline of a distinctive employee-centred approach to HRM that focuses more explicitly on employee well-being and sets out a future research agenda.

**Keywords** Human resource management · Employee well-being · Performance · Ageing · Burnout · Bullying

## 5.1 What is Human Resource Management and Why does it Matter?

This first section describes the nature of HRM, outlines some of the core research findings and highlights some of the challenges in implementing HRM in context. We start

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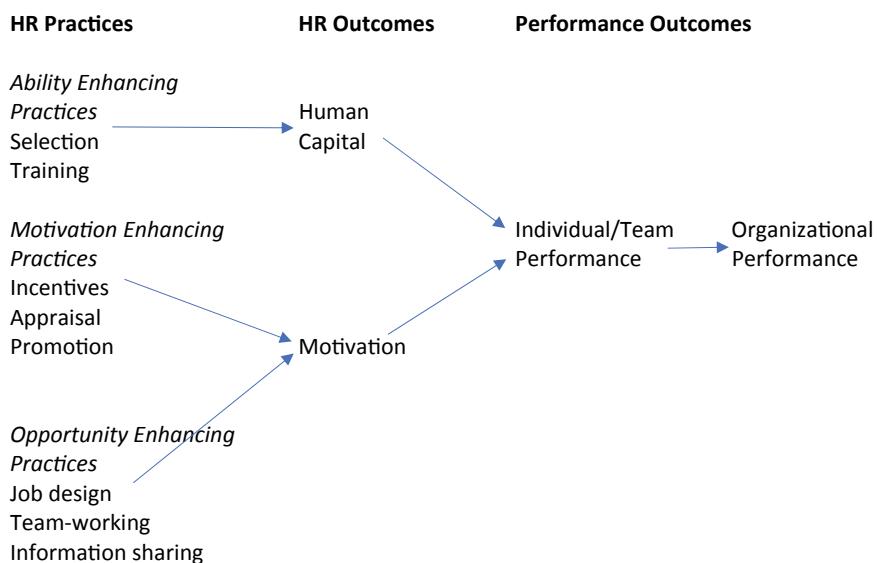
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by defining the nature and content of HRM. In simple terms, human resource management (HRM) is concerned with the management of people in organizations. Boxall and Purcell (2013) suggest it is “All those activities associated with the management of work and people in organizations”. Since effective healthcare provision depends on the performance of its staff, HRM has a potentially valuable contribution to make to effective healthcare provision.

HRM addresses the development and implementation of a wide range of policies and practices affecting the management of people. An influential analysis by Appelbaum, Bailey, Berg, and Kalleberg (2000) proposed that the core role of HRM is to ensure the ability and motivation of employees and to provide them with opportunities to contribute to organizational goals.

Ability depends on careful recruitment and selection and training and development. Motivation depends on providing appropriate goals and incentives. In healthcare, financial incentives are unlikely to be appropriate so the focus needs to be on intrinsic motivation through the nature and challenge of the work. Motivation will also be enhanced through careful goal-setting, ideally in the context of performance management where developmental appraisals can include jointly agreed goals and priorities. Opportunity to contribute can be achieved by providing sufficient autonomy and responsibility to ensure that a contribution is possible, complemented by effective two-way communication, including an opportunity to suggest improvements, as well as voice mechanisms to express concerns. This approach, sometimes simply described as the AMO model, has provided a popular basis for research since it points to a range of HR practices that should be measured. Figure 5.1 provides an illustration of the content and assumptions of this model.



**Fig. 5.1** The AMO model of HRM and performance

The content and focus of the HR practices outlined above will depend in part on the strategic goals of the organization. In the private sector, this may be a function of the competitive environment and therefore involve judgements about how to compete in a challenging market. One of the influential perspectives on strategy is what is termed the resource-based view of the firm (Barney, 1991). This makes the point that many resources that matter to organizations such as finance and technology can be quickly copied but this is more difficult to achieve with human resources and organizational culture. Therefore, one way to gain competitive advantage is to focus on investing in human resources. This give greater prominence to HRM as a strategic priority (Barney & Wright, 1998), although it may be a message that falls on deaf ears in many organizations. In healthcare, and particularly in public sector healthcare organizations, the strategic challenges can be rather different to those of the private sector. They may reflect choices about healthcare priorities, about expansion or contraction of specific services and specialties or about finance. These in turn will affect the HRM priorities.

Schuler and Jackson (1987) suggest that the choice of strategic priorities facing an organization about how to compete, for example through high quality or cost control, will help to determine the kind of people who need to be in key positions in the organization and how employees need to be managed to achieve the strategic goals. This in turn shapes the HR policies and practices required to manage the workforce to achieve these goals. This suggests a form of strategic determinism, in effect a contingency approach. It implies that there will be a variety of ways of managing human resources.

In considering the broad strategic choice about how to manage the workforce, a distinction has been drawn between a high commitment and a high control approach (Walton, 1985). High commitment implies a trusting environment where staff are given autonomy to undertake their work. In contrast, a control environment implies lower trust and tight monitoring of performance by the organizational hierarchy. The temptation for management in challenging times is to seek to exercise tighter control. This may not be compatible with the traditions of professional autonomy or with a healthy organization as experienced by the workforce. This implies that there can be conflicting priorities so that even with the best of wills it is difficult to implement the kind of HRM that might be associated with healthy organizations and with ensuring employee well-being.

One way of beginning to address some of the challenges in creating healthy organizations is to adopt a stakeholder perspective to HRM (Beer, Spector, Lawrence, Quinn Mills, & Walton, 1985). Indeed, one definition of a healthy organization is that it is able to satisfy the goals and concerns of the relevant stakeholders. In the context of healthcare, these stakeholders can include patients and their families, management, staff, trade unions, the government and the local community. Professional bodies might also claim to be legitimate stakeholders. Nevertheless, in the specific context of HRM, the main stakeholders are likely to be management and staff; but in shaping HR policies and practices it is important to take account of other stakeholders, most notably patients.

In addition to the challenge of developing a sound HR strategy, there is a further hurdle to overcome with the need to ensure its effective implementation. One reason why this can be a problem is the limited commitment to HR priorities among many managerial and professional staff allied to the potentially limited power and influence of the HR function. A second is the difficulty of developing and implementing HR strategy when it competes with other priorities. Production managers in industry may prioritise production while hospital consultants may prioritise patient care over the well-being of their staff. Addressing the first issue, the HR function has a largely advisory role. Therefore, while HR staff may act as people champions in the organization and develop policies and practices that reflect this, it is the line managers who have to implement these policies on a day-to-day basis. The HR function can develop a sophisticated appraisal system but it is line managers who have to carry out the appraisals and if they do this in a half-hearted way, then the quality of the appraisals will suffer. HR professionals need to exercise sufficient influence to ensure that HR concerns are treated seriously and given sufficient priority in the face of competing priorities which may be considered more important by line managers.

As interest in HRM has grown over recent decades, there has been a vast amount of research, much of it exploring the link between HRM and organizational performance. Initial reviews after the first major decade of research (see, for example, Boselie, Dietz, & Boon, 2005; Combs, Liu, Hall, & Ketchen, 2006) revealed an association between the presence of more HR practices and higher organizational performance, typically indicated by productivity or more usually financial results. The authors also highlighted a number of problems including the large variety of measures of HR practices and of performance as well as the cross-sectional nature of almost all the studies, making it difficult to establish any causal relationship. There was also quite considerable variation in the effect sizes. However, one possible explanation soon became apparent. Khilji and Wang (2006) and Wright and Nishii (2013) highlighted a gap between intended and implemented HR practices. This was reflected, for example, in a persistent finding that employees reports of their experience or perceptions of HR practices were lower than the management accounts of the practices they claimed were in place (Liao, Toya, Lepak, & Hong, 2009). This has led to studies exploring the implementation process (Guest & Bos-Nehles, 2013; Purcell & Hutchinson, 2007). One major consequence of this has been to place employees at the centre of analysis on the grounds that the process whereby HRM is intended to have its impact is largely through its effect on the attitudes and behaviour of employees.

One stream of research has built on the AMO model to explore the extent to which HR practices associated with ability, motivation and opportunity to contribute have their intended impact on employee competence and on their attitudes and behaviour. Once again, there have been many studies exploring this question and these have been brought together in meta-analyses (see for example, Jiang, Lepak, Hu, & Baer, 2012; Subramony, 2009). Using the Jiang et al. paper as an example, the authors show that adoption of careful selection and extensive training is associated with greater competence among the workforce, providing the organizations with more valuable human capital. Secondly, careful use of rewards, particularly financial rewards, is

associated with higher motivation. Less attention is paid to opportunity to contribute, partly because it is less frequently covered in the papers that were reviewed for the meta-analysis and partly because it is sometimes seen as less central. The evidence indicated that competent, motivated staff are associated with higher unit or organization performance. This has led to an increased focus on human capital and incentive systems in much of the contemporary research on HRM.

A second stream of research seeking to understand the challenge of effective HRM implementation has explored the processes whereby HRM might have an impact. A significant amount of research has considered the role of line management in the HRM implementation process. Research by Purcell and Hutchinson (2007) and by Townsend, Wilkinson, and Allen (2012) confirms the important role of front-line managers in HRM implementation. However, Townsend et al. found that ward managers in healthcare were not trained for managing human resources and in the UK, McGovern, Gratton, Hope Hailey, Stiles, and Truss (1997) found that line managers were neither willing nor able to manage human resources effectively. Studies confirm that more effective HR implementation by line managers, usually reflecting practices within the AMO model, is associated with positive outcomes including engagement and individual performance (see, for example, Alfes, Truss, Soane, Rees, & Gatenby, 2013; Bos-Nehles, van Riemsdijk, & Kees Looise, 2013; Fu, Flood, Rousseau, & Morris, 2020). Sikora, Ferris, and Van Iddekinge (2015) explored perceptions of the effectiveness of line management implementation of HRM and showed that this mediated the relationship between HRM and outcomes reflected in their performance, participation in decision-making and lower intention to quit. In summary, line managers have an important role to play in HRM implementation but for various reasons they have not always risen to this challenge.

One way of addressing this challenge has been presented by Bowen and Ostroff (2004). They utilise attribution theory (Kelley, 1973) to advocate the case for what they term a strong HR system. Attribution theory is primarily concerned with how people explain past events. They suggest that a strong HR system should send signals that are consistent over time, there should be consensus about its application and it should be distinctive in so far as it recurs across different contexts. These signals are intended to send a clear message throughout the organization about what is expected. Bowen and Ostroff outline nine ways in which this can be achieved. Subsequent research shows that there is an association between the presence of more characteristics of a strong HR system and a range of positive employee attitudes (Hewett, Shantz, Mundy, & Alfes, 2018). To take one element of the model, Fu et al. (2020) have shown that consistency of implementation by line managers is associated with superior employee performance. As a process theory, Bowen and Ostroffs concept of a "strong" HR system has little to say about the content of the HR practices. They may be intended to enhance control or commitment, depending on management priorities. However, the research indicating an association between indicators of a strong HR system and positive employee attitudes and behaviour suggests that it is likely to enhance rather than detract from employee well-being.

A different dimension of attribution theory (Kelley, 1973; Weiner, 1985) has been utilised by Nishii, Lepak, and Schneider (2008) to explore what they term HR

attributions. They argue that the way in which employees respond to HR practices depends to an important extent on their beliefs about why they have been introduced by management. They hypothesise that if employees perceive that practices have been introduced to facilitate higher quality performance or to enhance employee well-being, the response will be positive. On the other hand, if they view them as being introduced to enhance control over employees or to cut costs, then they are likely to be poorly received. A growing body of research confirms that positive HR attributions are associated with positive attitudes on the part of employees while negative attributions have either little effect on attitudes or, more likely, a negative effect (Hewett et al., 2018).

Both of these approaches utilising attribution theory to explore the process whereby HRM and various outcomes may be linked reveal that much of the responsibility for effective HRM implementation depends on line management and the signals they provide. Nishii and Paluch (2018) identify four ways in which line managers can influence subordinate performance with respect to HR practice as well as more generally. These are articulating the intended HR practices, role modelling, reinforcing expectations about the kind of behaviour required and checking employees understanding of the HR messages. One integrating feature of all these approaches to understanding the role of line management in effective implementation is the role of signalling theory. At a straightforward level, signalling theory focuses on the role of the signaller, the message and medium and the receivers, as well as providing a feedback loop.

However, it can also be considered at higher levels of complexity (Connelly, Certo, Ireland, & Reutzel, 2011). In the present context, the critical factor is the content of the messages sent by the management hierarchy about people and HR management and how these filters down to front line managers. Importantly, as Nishii and Paluch (2018) note, the signals may not always be conscious or intended but they are nevertheless likely to influence the response from employees as the receivers.

Drawing this review together, there are two further important issues that need to be addressed. The first reflects the concern outlined by Beer, Boselie, and Brewster (2015) that most of the research on HRM has focused on organizational performance as a main dependent variable. This leaves open the question of whether high organizational performance and high well-being go hand-in-hand or whether one squeezes out the other. The concern about the ability of HRM, particularly when it is labelled high performance management to achieve both high organizational performance and high employee well-being lies in the concern that extracting high performance may come at a cost of stress and burnout. Over the years there have been relatively few publications that have explicitly explored this question. They have been brought together in a recent review by Peccei and Van De Voorde (2019). Across 46 studies, they found strong evidence for mutual gains. However, more-27-assessed individual performance outcomes while only 20 included organizational outcomes. These results look very encouraging. But the authors are careful to refer to “happiness well-being” as opposed to health well-being because most of the studies measured either job satisfaction, organizational commitment or engagement while only eight

studies included any measure of health-related outcomes such as stress and anxiety. We return to this issue in Sect. 5.3 of this chapter.

The second issue that needs to be addressed concerns the role of individual differences. Lepak and Snell (1999) advocated selective HRM investment based on an assessment of the value to the organization of various types of work. A rather different perspective recognises the wider range of differences within the workforce and the need to take account of these. Organizations in general and healthcare organizations in particular employ a diverse range of staff and good HRM practice will recognise this. For example, there are likely to be differences based on permanent versus temporary employment, on disability, on ethnicity and on age. Each of these topics has generated a considerable amount of research and to illustrate this, we turn now to a review some relevant work on HRM and aging.

A growing body of research pays attention to the role of HR practices in sustaining aging workers at work (De Lange, Kooij, & Van der Heijden, 2015; Pak, Kooij, De Lange, & Van Veldhoven, 2019). For example, Kooij, Jansen, Dikkers, & De Lange (2014) formulated four bundles of HR practices (e.g. developmental, maintenance, utilization and accommodative practices; see Table 5.1) based on the Selection Optimization and Compensation (SOC) model (Baltes, Staudinger, & Lindenberger, 1999). The SOC model suggests that employees allocate their resources in line with four major life goals namely; growth, maintenance, recovery, and the regulation of loss. HR practices can be bundled according to these goals. Employees of different ages and at different stages in their careers are likely to welcome and utilise HR practices that fit their goals. First, developmental practices aim to aid workers in improving their performance (e.g. training and promotion). These practices are mainly related to advancement and satisfy the need for growth and development (Pak et al., 2019). As such they are important job resources which can in turn help employees generate additional person and job resources. For example, De Lange, De Witte, and Notelaers (2008) showed that employees gained autonomy and departmental resources after receiving a promotion. As developmental practices are

**Table 5.1** Overview of the HR practices included in the questionnaire (cf. De Lange et al., 2015; Kooij et al., 2014)

Accommodative practices	Utilization practices	Maintenance practices	Developmental practices
Long career break	Participation	Flexible benefits	Career planning
Early retirement	Task enrichment	Performance pay	Promotion
Reduction of tasks and/or responsibilities	(knowledge transfer)	Compressed workweek	Continuous training or instruction on the job
Additional leave	(Partial) change in tasks or responsibilities	Health promotion	
Demotion		Ergonomic adjustments to the workplace	
Early retirement		Adjustments to work tasks due to illness	
Exemption from working overtime/night shifts			
Reduced workload			

classified as job resources and can help workers generate additional job resources, we argue that they will be beneficial for successful aging at work. In line with this expectation, the review of Pak et al. (2019) revealed significant relations between developmental practices and work outcomes like employability and work motivation.

Second, maintenance practices facilitate workers to sustain their performance in spite of (age-related) loss of resources (e.g. declines in physical capabilities). These practices are mainly focused on security and protection of personal resources (e.g. health) (Kooij et al., 2014; Veth, Korzilius, Van der Heijden, Emans, & De Lange, 2017; Veth, Van der Heijden, Korzilius, De Lange, & Emans, 2018). Examples of maintenance practices are health checks and performance appraisals (Kooij et al., 2014). Maintenance practices can help individuals increase their job and personal resources. For example, Robertson and O'Neill (2003) showed that ergonomic adjustments made to the workplace can reduce the number of work-related disorders (and thus increase health). Moreover, Pak et al. (2019) showed in their review of 110 empirical studies that maintenance practices (especially health promotion) was significantly positively associated with work ability.

Third, utilization practices make use of the experience, knowledge, and competencies of older workers (e.g. mentoring roles and participation in decision-making) thus optimising these personal resources. These practices can be used to assist workers in regaining performance after having experienced a drop in performance. They usually make use of lateral development in which job demands that do not fit the coping resources of the employee are replaced by other demands that fit better with the existing personal resources of the individual (Zaleska & de Menezes, 2007). For example, through mentoring an older worker may be better able to use his or her resources (e.g. knowledge and skills of the company and the profession). Nonetheless, the current evidence on relations between utilisation practices and work outcomes like work ability, employability and motivation to work is still inconclusive (Pak et al., 2019) and requires more research attention.

Fourth, accommodative practices (e.g. demotions and receiving an exemption from overtime) are used when an employee can no longer regain previous levels of performance and needs to be assisted in functioning at a lower level. According to Kooij et al. (2014) this type of practice helps to regulate the loss of resources; by reducing demands there is less strain on the available resources of the employee. To illustrate, a worker who has experienced burnout can be offered a demotion to a less challenging position which reduces the strain on the resources that the individual has available allowing this worker to continue working until the retirement age. Indeed, Josten and Schalk (2010) found that demotions can reduce exhaustion among older workers when they start working in less physically challenging positions. Earlier research has found that accommodative practices like workplace rehabilitation, reducing the number of working hours, and getting exemptions from evening and night work were found to have a positive effect on work ability (Pak et al., 2019; Van der Meer et al., 2016). An overview of all HR practices that are included in the different bundles can be found in Table 5.1.

Drawing this section together, what we have argued is that HRM is a major organizational responsibility that can have a considerable bearing on the performance

of organizations and on the well-being of their employees. It has been a topic of extensive research and one of the important contemporary debates is about whether it is possible to identify HR practices and specific contexts that achieve both high performance and high well-being. The risk is that there may be pay-offs between the two. Much depends on the type of HRM that is applied, as well as the way in which well-being is defined in the research, limiting the scope for generalisations. However, there is evidence that while high performance and both job satisfaction and organizational commitment may go hand in hand when HRM is applied (Peccei & Van De Voorde, 2019), the association between performance and health-related indicators of well-being such as stress and burnout is less clear. One explanation for this may be the impact of work intensification and work demands associated with the pressure for higher performance. Since many healthcare organizations are high demand environments, this is something to bear in mind as we turn to the next section which reviews the evidence about HRM in healthcare.

## 5.2 Research on HRM in Healthcare

Our analysis of research on HRM in healthcare will be divided into two broad categories. First, there is research that emulates the research in other sectors exploring the link between HRM and performance. Secondly, there is research that is mainly concerned with the role of HRM in relation to its impact on specific aspects of employee well-being which have been particularly associated with the healthcare context. We will look at each in turn and outline illustrative research.

### 5.2.1 *HRM and Performance in Healthcare*

As noted in the previous section, research exploring the relationship between HRM and performance has burgeoned and findings generally confirm an association between the presence of more HR practices and various indicators of organizational performance (Boselie et al., 2005; Combs et al., 2006; Jiang et al., 2012; Paauwe, Guest, & Wright, 2013). The amount of variance in outcomes explained by HRM varies and is generally fairly small but is nevertheless significant. This raises the question of whether this general finding will be replicated in the public sector and in particular in healthcare.

One of the first studies to explore the role of HRM on healthcare outcomes was reported by West and colleagues (West et al., 2002; West, Guthrie, Dawson, Borrill, & Carter, 2006). Both papers are based on the same data except that the second has a fuller set of HR practices and performance data, in this case mortality indices, spread over a greater time. The 2002 study is based on 61 acute hospitals in England. Information on HR practices was collected from HR directors and addressed five practices, namely, appraisals, training, team-working, centralization and possession

of a kite mark, Investors in People, which mainly assesses training and communication. The choice of variables was based on “theory and statistical robustness” (2002, p. 1303). The analysis reported a negative association between appraisal, training and team-working, considered as individual practices, and patient mortality rates. However, these results have to be treated with considerable caution since the measures of the HR practices were weak, there was a lack of control variables and the data are cross-sectional.

The follow-up study (West et al., 2006) remedied some of these deficiencies. The sample was reduced to 51 of the hospitals, the HR practices were combined into a single index and a number of relevant controls were introduced such as the ratio of doctors to beds. Prior mortality rates were also controlled for. The analysis confirmed that there was an association between greater use of HR practices and lower mortality rates. These results appear encouraging but still need to be viewed with caution due to the limited measure of HR practices.

A more comprehensive study has been reported by Givan, Argar, and Liu (2010). They adopted a stakeholder approach, recognising that relevant actors include staff and patients and that a broader range of outcomes beyond mortality are important for most patients. The research was again conducted in England with a sample of 173 acute and teaching hospitals. The wider set of hospital performance indicators included incidence of MRSA and hospital acquired infections, errors and near misses and readmissions. Data was also collected on patient and staff satisfaction as well as staff intention to quit. HR practices were grouped into broad categories; one addressed high involvement HRM and included employee participation and voice, communication and teamworking; the other was described as employee development and consisted of training and appraisal. It was hypothesised that some HR practices would be associated with some but not all of the stakeholder-related outcomes. This is, indeed, what was found, but not always in the expected way. For example, high involvement practices were associated with higher employee-reported errors and near misses but also with higher staff satisfaction and lower intention to quit. Higher use of participation and voice practices was associated with more reported errors and near misses, higher surgery deaths and lower patient satisfaction. More use of communication practices was associated with more emergency readmissions but also less MRSA and fewer errors and near misses. In summary, the results present a mixed bag implying that different stakeholder outcomes are related in rather unpredictable ways to various HR practices. In doing so, they highlight the challenges in seeking to satisfy the different stakeholders with their often different interests and priorities. Once again, we must exercise caution in interpreting the results since they were cross-sectional and some of the HR measures are not strong.

Further evidence of the complexity of the link between HRM and outcomes in healthcare is provided in a study by Ogbonnaya and Valizade (2018), again using the British national survey data. They report an association between HRM and both job satisfaction and engagement as reported by staff. Both of these are associated in turn with aggregated hospital level evidence of lower absenteeism. However only job satisfaction and not engagement is associated with patient satisfaction. The rationale behind these differing findings is not clear.

A final study based on English data is reported by Piening, Baluch, and Salge (2013) utilising national survey data across 167 acute hospitals. They reported an association between employee perceptions of HR practices and patient satisfaction. The authors argue that it is implemented HR practices, as perceived by employees that provide the most relevant measure of HRM and that patient satisfaction, covering a sample of all types of patient, is a particularly useful outcome measure. The analysis identified a path from employee perceptions of implemented HR practices, integrated into an HR system, to lower intention to quit and then to higher levels of employee civility to patients which in turn was linked to patient satisfaction. Despite the sophisticated analysis, this study shares with others the problems of a limited measure of HRM and use of cross-sectional data. However, like the other studies using this large annually collected English data set, the results confirm an association between HRM and various outcomes and suggest that staff attitudes and behaviour are important intervening variables. In these respects, the evidence from these studies, although seemingly somewhat inconsistent, largely reflect the findings from the private sector in revealing an association between HRM and performance.

Townsend, Lawrence, and Wilkinson (2013) report a study that used data from the Australian Healthcare Standards Authority to explore the role of HRM within a systems context. All the data were based on the judgements of teams of experts who inspected the hospitals using a standard set of indicators for each variable. In a sample of 465 acute hospitals, including fairly equal proportions of both public and private hospitals, they found that high quality HRM was associated with better continuity of patient care. However, this outcome was also associated with higher quality strategic and operations management, information management and quality of health and safety. They also noted interactions between HRM and some of the other management activities showing that HRM could either complement or compensate for them. This supports the view that HRM should not be viewed in isolation and that its impact can depend, at least in part, on the quality of, and relation to other systems within healthcare. Another interpretation might be that organizations blessed with competent management across the various functions will display more positive results.

Ang, Bartram, McNeil, Leggat, and Stanton (2013) have addressed the question of HR implementation in healthcare. Based on a survey of 193 staff and 58 matched managers in a single Australian hospital, they found that HRM was only associated with positive employee outcomes such as job satisfaction, engagement and lower intention to quit, when the HR practices reported as implemented by their manager matched their own accounts of implementation. This confirms the importance of implementation and also of consensus on implementation.

The studies reported above all address HRM as a set of practices but have little to say about the role of the HR department. This omission is addressed in a paper by McBride and Mustchin (2013) who studied the role of the HR function in introducing a specific change, namely the introduction of what was termed a skills escalator in the English healthcare system. The aim was to provide staff with opportunities for advancement by gaining greater skills. The government, through a paper "HR in the NHS Plan" had anticipated a major role for the HR function in driving through

the changes. Through a series of case studies, McBride and Mustchin (2013) found that in most cases the role of the HR function was very limited. As they summarise, “the inactivity of HR can be explained by a failure of actor capacity or insufficient resources” (2013, p. 3141). Using the concept of regulatory space, the research found that many of the required changes were operational and required technical expertise which resided with clinical staff or local management and professionals. HR had a role in dealing with pay and union negotiations and in resourcing some of the training. But it was generally a support role. Essentially, the HR function in these healthcare organizations lacked the expertise to manage change, lacked influence to demand a greater say, and lacked the time and resources to act as change agents. These findings are similar to those reported by Guest and Peccei (1994) who also noted the limited impact of the HR function in healthcare in England in influencing HR effectiveness. There are echoes in this of research by Buyens and De Vos (2001) who showed that in the context of strategic change, the HR function was typically involved at the later stages of implementation rather than in shaping the changes.

Research on the role of the HR function raises the important and under-researched question of who initiates and implements significant change in HR practices in healthcare. It seems likely that we have to look beyond the HR function to the role of the top management team or to external pressures from government and other institutional forces. The research outlined above reveals considerable differences in the application of HRM. We also need to know more about what determines these differences in a context such as healthcare where the strategic challenges appear to be similar across organizations.

As well as general studies exploring the relation between HRM and outcomes in healthcare, there are also many studies that explore the role of HRM in relation to specific topics directly affecting staff. These include studies of selection, socialization, team-working and labour turnover as just some examples. Here we will explore two topics, selected because of their links to employee well-being and therefore of direct relevance to Healthy Healthcare. They are burnout/engagement and bullying at work.

### **5.2.2 HRM, Burnout and Engagement**

Burnout is a chronic state of disaffection with work characterised by emotional exhaustion, depersonalisation and a sense that work an individual does is not worthwhile. Schaufeli, Leiter, and Maslach (2009) trace the history of the concept of burnout highlighting its role as a public service phenomenon partly resulting from a challenge to professional autonomy and also arising from the increasing demands placed on public sector employees, especially those in healthcare. Since 1997 in Sweden, it has been an accepted clinically diagnosable illness. With the growth of positive psychology there has also been considerable interest in engagement as the other end of a continuum from burnout (Schaufeli, Taris, & Van Rhenen, 2008). Since

burnout seems to be more a feature of the organizational context than determined by individual factors, it should be something that can be addressed by HRM.

A typical study is presented by Bartram, Casimir, Djurkovic, Leggat, and Stanton (2012) who explored the proposition that HRM buffers the relationship between job demands—in this case emotional labour—and burnout. Their research, with a sample of 183 Australian nurses confirms this proposition. They find, in a cross-sectional study, that burnout fully mediates the relationship between emotional labour and intention to quit while HRM reduces burnout. While the Bartram et al. study explores an integrated set of HR practices, another study by Holland, Allen, and Cooper (2013), based on a sample of 762 Australian nurses, looks at two more specific practices, namely voice and management responsiveness to employee concerns. Voice was measured on three characteristics, firstly whether there were regular meetings between management and all staff, secondly, the presence of a formal employee involvement programme, reflected, for example in quality circles; and thirdly the presence of semi-autonomous work groups. Responsiveness was measured through staff perceptions of management on eight dimensions including showing concern for staff, providing support for them and valuing their contribution. The results revealed that greater voice was associated with lower burnout and that management responsiveness mediated this relationship and, by implication, reduced burnout further.

Both the studies described above are cross-sectional and as such are typical of many that are reported. This makes it difficult to be confident about causal relationships. A study by Kilroy, Flood, Bosak, and Chenervert (2017) adopted a cross-lagged methodology and gives us greater confidence about causality. With a sample of 185 healthcare staff in a Canadian hospital, at Time 1 they collected staff data on perceptions of high involvement HRM and a measure of person—environment fit. Their logic was that HRM can help to align staff and their working environment by providing signals about what is offered and what is expected. This can occur, for example, through selection, socialization and communication of values. In the event they found that staff reporting the presence of more HR practices also reported better fit with the organization. A follow-up three years later linked these responses to burnout. As expected, they found that those reporting more HR practices at Time 1 reported lower burnout at Time 2 and this relationship was mediated by person—environment fit.

The three studies briefly described above are typical of a number of studies in healthcare exploring the relationship between HRM and burnout, sometimes extending to include the link between burnout and intention to quit. Most report samples of nurses and most are cross-sectional. The analytic framework is invariably the job demands—resources model (Bakker & Demerouti, 2007). The Kilroy et al. study is a welcome exception to this on all these counts. The studies confirm the pattern of research in a range of settings. When employees report the presence of more HR practices, burnout is lower and this feeds through to lower intention to quit. Because the data are invariably cross-sectional, the link between intention to quit and actual labour turnover cannot be established. But other research (Hom, Mitchell, Lee, & Griffeth, 2012) confirms this association in most research settings.

The explanation for the positive effect of HRM is usually explained through its role in either reducing demand or increasing resources although the study by Kilroy et al. also points to a role for person—environment fit.

As noted above, employee engagement has been presented as the positive alternative to burnout and it has attracted a considerable amount of research attention. There are different approaches to, and definitions of engagement but the most popular is associated with Schaufeli and colleagues. They define engagement as consisting of vigour, dedication and absorption (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002). Most research utilises the job demands—resources model (Bakker & Demerouti, 2007) and explores either the causes or the consequences of engagement. For example, Laschinger and Leiter (2006) found that higher employee engagement among a sample of 8597 hospital nurses was associated with safer patient outcomes. A typical healthcare example is provided by Shantz, Alfes, and Arevshatian (2016). Based on the English National Health Service survey of 2011 they utilise a sample of 69,081 nurses and administration workers. They explored the relationship between four HR practices that are relevant to job resources, namely, training, participation in decision-making, opportunities for development and communication and quality of care and safety. They find an association that is mediated by engagement.

Reflecting the job demands—resources model, studies of engagement often explore a few selected HR practices as antecedents rather than considering an HR system and most of the research is cross-sectional. However, there have been a number of interventions attempting to enhance engagement. Reviewing these studies, Knight, Patterson, and Dawson (2017a) identify four types of intervention targeted at personal resource building, job resource building, leadership training and health promotion. They find that the results are very mixed but, on balance, are positive rather than negative. More recently they have reported their own intervention (Knight, Patterson, Dawson, & Brown, 2017b) involving teams of nurses working in the acute care of the elderly. Their study was longitudinal and utilised experimental and control groups. The intervention consisted of five participative workshops. The results showed no change in engagement and a deterioration in some work-related needs in the experimental group. The authors attribute these results to the major difficulties in seeking to introduce change in the highly pressured context of acute care, especially when there is a lack of top management support. More generally, the findings indicate that while research tells us quite a lot about the antecedents and consequences of employee engagement, we still have a lot to learn about how to improve engagement levels, particularly in the challenging context of healthcare organizations.

### **5.2.3 HRM, Bullying and Harassment**

There is extensive evidence that workplace bullying has harmful effects on the well-being of those exposed to it (Nielsen & Einarsen, 2012). Healthcare organizations with their high-pressure work environments and strong professional hierarchies have long been associated with bullying and harassment which in turn has been associated

with reduced levels of employee well-being. One indication of its severity comes from a study by Woodrow and Guest (2012), based on a national sample of nurses in England who found that the experience of bullying and harassment had a more severe and longer-lasting effect on well-being than the experience of violence from patients or patients' family and friends. One reason for this is that violence is often visible and therefore can be dealt with whereas bullying can be invisible to all except the perpetrator and victim and, by its standard definition, persists over time. As a result of concern about the causes and consequences of bullying and harassment (described in some countries as mobbing) HR policies have been advocated to seek to limit its occurrence.

There have been several reviews of the literature to identify relevant policy and practice designed to minimise bullying. For example, Fox and Cowan (2015) have outlined policies that might be applied in the USA while Rayner and Lewis (2010) have provided a comprehensive list in the UK. There is therefore no shortage of guidelines for HR departments to follow. To explore the effectiveness of recommended HR practices, Woodrow and Guest (2014) examined levels of bullying and harassment in a number of large London-based hospitals in a period following pressure from the government's Department of Health to take action to reduce levels of bullying. They found that all the recommended HR practices to minimise bullying were in place; but they also found that they had made no difference to levels of bullying as reported in annual staff surveys. In exploring the reasons for this, they found that the policies and practices had not filtered down to the local level where much of the bullying seemed to be occurring. Furthermore, those who tried to use the HR system to complain about being bullied often found the process to be cumbersome and ineffective and the surveys identified a general lack of faith in the effectiveness of the system. Reflecting the research cited earlier by Khilji and Wang (2006) and Wright and Nishii (2013), there was a gap between intended and implemented practices.

A somewhat similar picture emerges in a study by Timo, Fulop, and Ruthjerson (2004) among staff responsible for care of the aged in Australia. They found that bullying was associated with poorly articulated HR policy and practice, lack of effective follow-up and poor communication. A major international study by Salin et al. (2018) may help to explain why policy and practice to address bullying and harassment does not always lead to improved well-being among staff. Across 14 countries, they found that the main motivation among managers to address bullying was to improve productivity and minimise costs. To achieve this, the preferred practice was to provide more training.

Some studies offer insights into ways in which HR policy and practice might help to reduce bullying. One example is the study by Cooper-Thomas et al. (2013) conducted in New Zealand. In a sample of 727 staff in nine healthcare organizations, 133 reported bullying, defined as two negative events per week over six months. Comparing those who had and had not experienced bullying, they found, based on correlations, that bullying was negatively associated with constructive leadership, perceived organizational support and the presence of organizational anti-bullying initiatives. Perceived organizational support buffered the relationship between bullying and self-rated performance while anti-bullying initiatives

buffered the relationship between bullying and employee well-being and organizational commitment. Despite this, those who had been bullied gave lower ratings of the effectiveness of the anti-bullying initiatives than those who had not experienced bullying and, perhaps not surprisingly, the bullied reported poorer support and lower well-being. It seems important that leadership and organizational support result in direct action to prevent or deal with bullying rather than serving as mainly as palliatives to aid coping with the experience of being bullied.

The question of leadership was addressed in a paper by Woodrow and Guest (2017) who explored a number of critical incidents of bullying, based on either the accounts of those who had been bullied, those who had observed bullying or those who had sought to address it. Their specific focus was on the role of leadership which had played a small part in the study reported by Cooper-Thomas et al. (2013). What they found was a continuum of leader roles in relation to bullying. At the negative end were those leaders who were the perpetrators of bullying. Next in line were those who decided that addressing bullying was not their problem, and by those who buried their head in the sand and did their best to ignore the problem. They were followed by those who made a formal attempt within the system to respond to bullying but it was often a ritualised attempt and they were happy to pass the problem up the line or to HR. Towards the more positive end were those who made a genuine attempt to address the problem but often only when it had become a serious problem while the best managers were those who kept an eye out for any evidence of bullying and sought to nip it in the bud. This study suggests that for many managers, bullying is a problem that they do not want to deal with so they either try to ignore it or to pass the problem on to others as quickly as possible. Reflecting the analysis of Bowen and Ostroff (2004) described earlier, this indicates a weak HR system where line managers can evade their responsibilities on issues about which they feel uncomfortable or refuse to recognise as their responsibility. This raises questions about the management of the HR system within hospitals where this occurs.

Several of the papers exploring HR policy and practice relating to bullying identify the failure to implement them effectively as a major limitation explaining their lack of impact. This issue is addressed in a study of Irish nurses and midwives reported by Sheehan, McCabe, and Garavan (2020). Their study surveyed 1507 staff in 47 hospitals, 53% of whom had experienced bullying in the previous six months and interviewed matched HR directors. As in almost all studies, experience of bullying is associated with lower job satisfaction and higher intention to quit. However, they found that this association is partly mediated by the perceived effectiveness of the implementation of the anti-bullying policies. Furthermore, the impact of bullying is moderated by line management anti-bullying training. This suggests that anti-bullying policies can have some effect if they are carefully implemented.

There is general agreement that pervasive bullying is incompatible with a Healthy Healthcare organization, as demonstrated by its association with lower well-being. Yet the evidence suggests that the experience of bullying remains worryingly high, even in organizations that appear to have good, evidence-based policies and practices in place to address the problem. Drawing these illustrative studies of research on HRM and bullying together, it seems that the HR function is often failing to address

the problem effectively because of poor implementation. As Woodrow and Guest (2014) note, it is not enough to have impressive policies and practices in place if staff are largely unaware of them and little serious attempt is made to implement them. The study by Salin et al. (2018) is also of concern in indicating that in addressing bullying, senior management's priority is to improve productivity and minimise costs. We might expect the well-being of the workforce to be a higher priority. This implies that we need to rethink the HR priorities and the role of HRM in seeking to ensure that healthcare organizations minimise problems such as burnout and bullying which will otherwise continue to be endemic features of contemporary healthcare. A potential approach that seeks to achieve this goal is set out in the final section of this chapter.

### 5.3 Designing HRM for a Healthy Healthcare

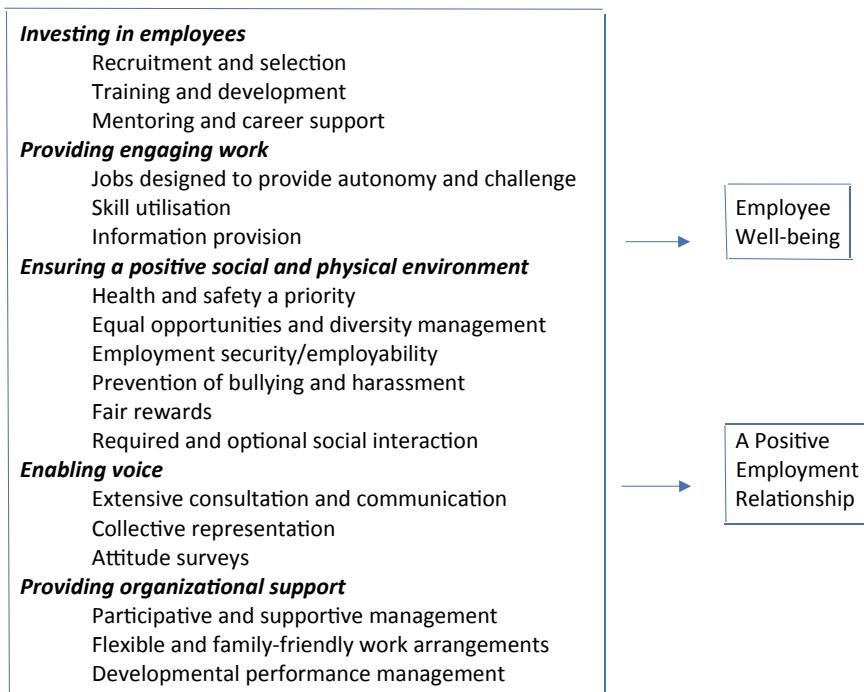
The challenges of designing a system of HRM that gives greater emphasis to the well-being of staff in healthcare organizations has elements which are similar to those in any organization. However, there are some additional factors that need to be taken into account. The first is the number of important stakeholders including not only staff, management and patients but also the public, government and local authorities as well as powerful professional bodies and trade unions. A second is the size of many healthcare units. Hospitals can employ up to 15,000 staff or more, sometimes on a single site. While many private sector organizations outside healthcare may employ more staff, they often work in much smaller units. In healthcare, it is feasible to subdivide into units of, for example, types of clinical practice; but account then must be taken of a third factor, namely the interdependence of sub-units such as radiology or pharmacology that operate across the clinical units. A further important factor in healthcare is the power of the professions who seek to guard their professional autonomy. These factors combined with the pressures of financial constraints that place a focus on costs and can result in heavy workloads create pressures that present a major challenge in providing an effective HRM system. With all this in mind, what can we say about the characteristics of a healthy HRM system?

The early section of this chapter outlined how HRM has been analysed and applied across organizations. As Beer, Boselie, and Brewster (2015) observed, the dominant approach, reflecting in particular the views of scholars in the USA, has prioritised the kind of HRM viewed as most likely to improve financial performance. While employee attitudes and behaviour are sometimes treated as mediators, relatively few studies pay serious attention to employee well-being. The review by Peccei and van de Voorde (2019), cited earlier, is encouraging in showing that HRM can simultaneously be associated with both performance and happiness well-being. As the authors note, only a few studies explore health-related well-being. Furthermore, most of the studies use a narrow set of HR practices sometimes drawing on the AMO model and often captured in the popular concept of the high-performance work system. There have been attempts to go beyond this rather narrow view of HRM. For example, Walton (1985) offered the idea of high commitment HRM while Lawler (1986) and Boxall

and Macky (2009) have advocated high involvement HRM. Both of these approaches give much greater priority to staff concerns and in particular to greater staff autonomy and involvement in local decisions that affect them. This is helpful but may not go far enough; for example, they have little to say about HR practices to minimise bullying and harassment or about flexible work arrangements. What is needed is a broader view of HRM that takes account of the diverse workforce found in healthcare and which also prioritises well-being the major outcome.

An approach to HRM that explicitly seeks to promote employee well-being has been proposed by Guest (2017). Drawing on evidence about the antecedents of well-being at work and utilising both social exchange theory (Blau, 1964) and job demands—resources theory (Bakker & Demerouti, 2007), it places the employment relationship at the centre of the analysis. In this context, a positive employment relationship is characterised by fairness, trust, a positive and fulfilled psychological contract, a sense of security and a high quality of working life.

To achieve this, and simultaneously to promote high work-related well-being, five broad categories of HRM are identified, as illustrated in Fig. 5.2. The first is investing in employees through careful selection, training, developmental performance management and provision of mentoring and career support to maintain



(Adapted from Guest 2017)

**Fig. 5.2** HR practices to promote employee well-being. Adapted from Guest (2017)

employability. The second is provision of engaging work, reflected in the design of jobs to provide autonomy and challenge, in enabling full use of skills and in providing sufficient information provision and scope for feedback. The third component is a positive social and physical environment. This is a feature that is often neglected in other models of HRM. It includes a safe and healthy working environment, including zero tolerance for bullying and harassment, opportunities for social interaction, equal opportunities and a concern for diversity, ensuring a sense of employment security, perhaps reflected in employability, fair collective rewards and high basic pay. The fourth component is voice. This implies extensive two-way communication, use of surveys to seek representative staff views and also collective representation. Finally, there is a need for organizational support. This will be reflected in supportive management, a climate of involvement and debate and flexible family-friendly work arrangements. These HR practices are set out in Fig. 5.2.

The assumption behind the kind of HRM outlined above is that it will promote high employee well-being and a positive employment relationship. Employee well-being is an important end in its own right and should be an ethical priority, particularly in healthcare organizations to reflect their primary mission. However, to be taken seriously by an often-financially pressured top management, it greatly helps if it can demonstrate its cost-effectiveness. This can be achieved in two ways. First, there is evidence, drawing on social exchange theory, that employees will respond to well-being-oriented HR policies and practices by being more highly motivated and committed (Tsui, Pearce, Porter, & Tripoli, 1997). Secondly, it is important to draw on evidence that higher well-being is associated with higher performance (Bockerman, Bryson & Ilmakunnas, 2012; Bryson, Forth and Stokes et al., 2014; Daniel & Harris, 2000). To achieve positive outcomes for all stakeholders from well-being-oriented HRM, greater emphasis needs to be placed on the quality of management in healthcare. As the research cited previously has revealed, it is possible to have impressive HR practices in place to address topics such as bullying, yet they often have little impact. To address this, Bowen and Ostroff (2004) have advocated a strong HR system. This requires that HRM is owned by top management who signal to their managerial staff that HR policy and practice needs to be taken seriously and implemented properly. This can be a tall order when faced at the same time with the competing challenges of prioritising patient care and minimising costs. One way in which HR departments can begin to address this is through improved data analytics. For example, labour turnover and sickness absence are persistent problems in healthcare organizations. Implemented well-being policies should help to reduce these, thereby reducing the costs of staff replacements and employment of temporary staff. Good analytics may first be able to highlight the problems and secondly show that the effective implementation of a well-being-oriented form of HRM brings multiple benefits.

## 5.4 Discussion and Conclusions

This chapter has outlined the nature of HRM and illustrated some of the main streams of research, many of which are focused on the relationship between HRM and organizational performance. It has also placed emphasis on the challenges of HRM implementation and the actors involved in this process, since this has a major bearing on outcomes including both performance and employee well-being.

Turning specifically to the healthcare environment, we have reported a number of studies, many based on the large data sets collected in England, which consistently show an association between HRM and positive patient outcomes. In doing so, these studies are mirroring the bulk of the wider research on HRM which explores the link to organizational performance. The constraints of the data mean that these studies use a limited number of HR practices and also tend to focus on a variety of patient-related outcomes. While some included information on staff attitudes and behaviour, this was rarely central to the study. Better information about staff concerns can be found in studies looking at specific well-being-related problems such as burnout and bullying. Although they tend to use a piecemeal set of HR practices, they do confirm that HR practices can affect employees well-being if they are properly implemented. Set against this, most of the reported studies are cross-sectional making it difficult to demonstrate causation.

A distinctive feature of HRM is that it is viewed as a system in which there are synergies between the various practices. To take a simple example, there is no point in enhancing competence if staff are not motivated; nor is there value in offering an opportunity to contribute if staff lack the ability or motivation to contribute. Within the AMO model, it is therefore necessary to ensure that the bundle of HR practices address ability, motivation and opportunity to contribute rather than focusing on one or the other. The Guest (2017) model indicates that if the goal is employee well-being then it is necessary to extend the coverage to include a positive physical and social working environment, voice and organizational support. Neglecting any of the sets of HR practices could be costly for employee well-being. It is ironic that in many healthcare organizations, most of the practices outlined in the Guest model are in place. However, it is not enough to have an impressive set of HR practices. They have to be effectively implemented.

The challenge of HR implementation seems to be particularly acute in healthcare for reasons already outlined including size, professional autonomy and competing stakeholder interests. Furthermore, healthcare often employs highly diverse workforces with a range of sub-groups who may be particularly responsive to specific HR practices, as illustrated in the case of aging. This places emphasis on the role of top management and the goal of developing a strong HR system. Here, signalling theory has an important role to play. The importance of taking HRM seriously needs to be conveyed down the organizational hierarchy. Using findings from HR attribution research, care needs to be taken to explain, initially to line managers and senior professional workers, why HR practices are being applied and do so in a convincing way. One of the lessons of this review of HRM in healthcare is that implementation

is perhaps the greatest challenge. This challenge is reinforced by the recognition that the HRM system must fit with other systems operating alongside it.

The challenge of implementation raises questions about the role of HR specialists. The study by McBride and Mustchin (2013) implies that they can get squeezed out of organizational and HR change initiatives. There has been much debate about the appropriate structure of the HR function (Ulrich, 1997) and its relation to line management. Guest and Bos-Nehles (2013) set out areas of responsibility and demarcation between the HR department and line management, though in practice the boundaries are unlikely to be clear-cut. One role for HR specialists is to develop high quality HR policies and practices. A second is to support implementation by working closely with line managers. This requires change management and consultancy skills as well as considerable personal credibility and capacity to exert influence. These roles are very different from the more administrative activities such as management of selection and training, ensuring appraisals are completed and dealing with grievances; they require a different skill set. Indeed, they may need behavioural science skills more commonly associated with Organizational Development (OD). An alternative might be to recruit into the HR function from other roles in healthcare. Senior clinical consultants might become excellent HR champions!

Finally, we need much better-quality research on the impact of HRM in seeking to create Healthy Healthcare. In this chapter, Healthy Healthcare has been defined from a stakeholder perspective but has given primacy to the health and well-being of the workforce. Neither the studies of HRM and patient outcomes, nor the narrower focus on specific topics such as burnout and bullying, provide the kind of coherent programme of longitudinal research that will provide a more convincing evidence base for policy and practice. We also need case studies of changes in HRM that attempt to enhance employee well-being and Healthy Healthcare. There is a rich and important research agenda to be pursued.

## References

- Alfes, K., Truss, C., Soane, E., Rees, C., & Gatenby, M. (2013). The relationship between line management behaviour, perceived HRM practices, and individual performance: Examining the mediating role of engagement. *Human Resource Management*, 52, 839–859.
- Ang, S., Bartram, T., McNeil, N., Leggat, S., & Stanton, P. (2013). The effects of high-performance work systems on hospital employees work attitudes and intention to leave: A multi-level and occupational analysis. *International Journal of Human Resource Management*, 24(16), 3086–3114.
- Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. (2000). *Manufacturing advantage: Why high-performance work systems pay off*. Ithaca, NY: ILR Press.
- Bakker, A., & Demerouti, E. (2007). The job demands—resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309–328.
- Baltes, P. B., Staudinger, U. M., & Lindenberger, U. (1999). Lifespan psychology: Theory and application to intellectual functioning. *Annual Review of Psychology*, 50, 471–507. <https://doi.org/10.1146/annurev.psych.50.1.471>

- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
- Barney, J., & Wright, P. (1998). On becoming a strategic advantage: Examining the role of human resources in gaining competitive advantage. *Human Resource Management Journal*, 37(1), 31–46.
- Bartram, T., Casimir, G., Djurkovic, N., Leggat, S., & Stanton, P. (2012). Do perceived high performance work systems influence the relationship between emotional labour, burnout and intention to leave? A study of Australian nurses. *Journal of Advanced Nursing*, 68(7), 1567–1578.
- Beer, M., Boselie, P., & Brewster, C. (2015). Back to the future: Implications for the field of HRM of the multi-stakeholder perspective proposed 30 years ago. *Human Resource Management*, 54(3), 427–438.
- Beer, M., Spector, B., Lawrence, P., Quinn Mills, D., & Walton, R. (1985). *Human resource management: A general managers perspective*. New York: Free Press.
- Blau, P. (1964). *Exchange and power in social life*. New York: Wiley.
- Bockerman, P., Bryson, A., & Ilmakunnas, P. (2012). Does high involvement management improve worker well-being? *Journal of Economic Behavior and Organization*, 84, 660–680.
- Boselie, P., Dietz, G., & Boon, C. (2005). Commonalities and contradictions in HRM and performance research. *Human Resource Management Journal*, 15(3), 67–94.
- Bos-Nehles, A., Van Riemsdijk, M., & Kees Looise, J. (2013). Employee perceptions of line management performance: Applying the AMO theory to explain the effectiveness of line managers HRM implementation. *Human Resource Management*, 52, 861–877.
- Bowen, D., & Ostroff, C. (2004). Understanding HRM-performance linkages: The role of the “strength” of the HRM system. *Academy of Management Review*, 29(2), 203–221.
- Boxall, P., & Macky, K. (2009). Research and theory on high-performance work systems: Progressing the high-involvement stream. *Human Resource Management Journal*, 19(1), 3–23.
- Boxall, P., & Purcell, J. (2013). *Strategy and human resource management* (3rd ed.). Basingstoke: Palgrave Macmillan.
- Bryson, A., Forth, J., & Stokes, L. (2014). Does wellbeing affect workplace performance? London: Department of Business, Innovation and Skills.
- Buyens, D., & De Vos, A. (2001). Perceptions of the value of the HR function. *Human Resource Management Journal*, 11(3), 70–89.
- Combs, J., Liu, Y., Hall, A., & Ketchen, D. (2006). How much do high-performance work systems matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology*, 59(3), 501–528.
- Connelly, B., Certo, T., Ireland, D., & Reutzel, C. (2011). Signalling theory: A review and assessment. *Journal of Management*, 37(1), 39–67.
- Cooper-Thomas, H., Gardner, D., O'Driscoll, M., Catley, B., Bentley, T., & Trenberth, L. (2013). Neutralizing workplace bullying: The buffering effect of contextual factors. *Journal of Managerial Psychology*, 28(4), 384–407.
- Daniel, K., & Harris, C. (2000). Work, psychological well-being and performance. *Organizational Medicine*, 50, 304–309.
- De Lange, A. H., Kooij, D., & van der Heijden, B. I. J. M. (2015). Human resource management and sustainability at work across the lifespan: An integrative perspective. In L. M. Finkelstein, D. Truxillo, F. Fraccaroli, & R. Kanfer (Eds.), *Facing the challenges of a multi-age workforce: A use-inspired approach* (pp. 50–79). London: Routledge.
- De Lange, A. H., De Witte, H., & Notelaers, G. (2008). Should I stay or should I go? Examining longitudinal relations among job resources and work engagement for stayers versus movers. *Work & Stress*, 22(3), 201–223.
- Fox, S., & Cowan, R. (2015). Revision of the workplace bullying list: The importance of human resource managements' role in defining and addressing workplace bullying. *Human Resource Management Journal*, 25(1), 116–130.
- Fu, N., Flood, P., Rousseau, D., & Morris, T. (2020). Line managers as paradox navigators in HRM implementation: Balancing consistency and individual responsiveness. *Journal of Management*, 46(2), 203–233. <https://doi.org/10.1177/0149206318785241>

- Givan, R., Avgar, A., & Liu, M. (2010). Having your cake and eating it too? Relationship between HR and organizational performance in healthcare. *Advances in Industrial and Labor Relations*, 17, 31–67.
- Guest, D. (2017). Human resource management and employee well-being: Towards a new analytic framework. *Human Resource Management Journal*, 27, 22–38.
- Guest, D., & Bos-Nehles, A. (2013). HRM and performance: The role of effective implementation. In J. Paauwe, D. Guest, & P. Wright (Eds.), *Human resource management and performance: Achievements and challenges* (pp. 79–96). Chichester: Wiley.
- Guest, D., & Peccei, R. (2004). The nature and causes of effective human resource management. *British Journal of Industrial Relations*, 32(2), 219–242.
- Hewett, R., Shantz, A., Mundy, J., & Alfes, K. (2018). Attribution theories in human resource management research: A review and research agenda. *International Journal of Human Resource Management*, 29(1), 87–126.
- Holland, P., Allen, B., & Cooper, B. (2013). Reducing burnout in Australian nurses: The role of employee voice and managerial responsiveness. *International Journal of Human Resource Management*, 24(16), 3146–3162.
- Hom, P., Mitchell, T., Lee, T., & Griffeth, R. (2012). Reviewing employee turnover: Focusing on proximal withdrawal states and an expanded criterion. *Psychological Bulletin*, 138, 831–858.
- Jiang, K., Lepak, D., Hu, J., & Baer, J. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, 55(6), 1264–1294.
- Josten, E., & Schalk, R. (2010). The effects of demotion on older and younger employees. *Personnel Review*, 39(2), 195–209.
- Kelley, H. (1973). The process of causal attribution. *American Psychologist*, 28(2), 107–128.
- Khilji, S., & Wang, X. (2006). Intended and implemented HRM: The missing linchpin in strategic human resource management. *International Journal of Human Resource Management*, 17(7), 1171–1189.
- Kilroy, S., Flood, P., Bosak, J., & Chenevert, D. (2017). Perceptions of high involvement work practices, person-environment fit and burnout: A time-lagged study of healthcare employees. *Human Resource Management*, 56(5), 821–835.
- Knight, C., Patterson, M., & Dawson, J. (2017a). Building work engagement: A systematic review and meta-analysis investigating the effectiveness of work engagement interventions. *Journal of Organizational Behavior*, 38, 792–812.
- Knight, C., Patterson, M., Dawson, J., & Brown, J. (2017b). Building and sustaining work engagement: A participatory action intervention to increase work engagement in nursing staff. *European Journal of Work and Organizational Psychology*, 26, 634–649.
- Kooij, D. T., Jansen, P. G., Dikkers, J. S., & De Lange, A. H. (2014). Managing aging workers: A mixed methods study on bundles of HR practices for aging workers. *The International Journal of Human Resource Management*, 25(15), 2192–2212. <https://doi.org/10.1080/09585192.2013.872169>
- Laschinger, H., & Leiter, M. (2006). The impact of nursing work environments on patient safety outcomes: The mediating role of burnout/engagement. *Journal of Nursing Administration*, 36, 259–267.
- Lawler, E. (1986). *High-involvement management*. San Francisco, CA: Jossey-Bass.
- Lepak, D., & Snell, S. (1999). The human resource architecture: Toward a theory of human capital allocation and development. *Academy of Management Review*, 24, 31–48.
- Liao, H., Toya, K., Lepak, D., & Hong, Y. (2009). Do they see eye to eye? Management and employee perspectives of high-performance work systems and influence processes on service quality. *Journal of Applied Psychology*, 94, 371–391.
- McBride, A., & Mustchin, S. (2013). Crowded out: The capacity of HR to change healthcare work practices. *International Journal of Human Resource Management*, 24(16), 3131–3145.
- McGovern, P., Gratton, L., Hope Hailey, V., Stiles, P., & Truss, C. (1997). Human resource management on the line? *Human Resource Management Journal*, 7(4), 12–29.

- Nielsen, M., & Einarsen, S. (2012). Outcomes of exposure to workplace bullying: A meta-analytic review. *Work and Stress*, 26(4), 309–332.
- Nishii, L., Lepak, D., & Schneider, B. (2008). Employee attributions of the “why” of HR practices: Their effects on employee attitudes and behaviours, and customer satisfaction. *Personnel Psychology*, 61(3), 503–545.
- Nishii, L., & Paluch, R. (2018). Leaders as sense givers: Four HR implementation behaviors that create strong HR systems. *Human Resource Management Reviews*, 28(3), 319–323.
- Ogbonnaya, C., & Valizade, D. (2018). High-performance work practices, employee outcomes and organizational performance: A 2-1-2 multi-level mediation analysis. *International Journal of Human Resource Management*, 29(2), 239–259.
- Paauwe, J., Guest, D., & Wright, P. (eds) (2013). *HRM and performance: Achievements and challenges*. Chichester, UK: Wiley.
- Pak, K., Kooij, D. T. A. M., De Lange, A. H., & Van Veldhoven, M. J. P. M. (2019). Human resource management and the ability, motivation and opportunity to continue working: A review of quantitative studies. *Human Resource Management Review*, 29(3), 336–352. <https://doi.org/10.1016/j.hrmr.2018.07.002>
- Peccei, R., & Van De Voorde, K. (2019). Human resource management–well-being–performance research revisited: Past, present, and future. *Human Resource Management Journal*, 29, 539–563. <https://doi.org/10.1111/1748-8583.12254>
- Piening, E. P., Baluch, A. M., & Salge, T. O. (2013). The relationship between employees’ perceptions of human resource systems and organizational performance: Examining mediating mechanisms and temporal dynamics. *The Journal of Applied Psychology*, 98(6), 926–947. <https://doi.org/10.1037/a0033925>
- Purcell, J., & Hutchinson, S. (2007). Front-line managers as agents in the HRM—Performance causal chain: Theory, analysis and evidence. *Human Resource Management Journal*, 17(1), 3–20.
- Rayner, C., & Lewis, D. (2010). Managing workplace bullying: The role of policies. In S. Einarsen, H. Hoel, D. Zapf, & C Cooper (Eds.), *Bullying and emotional abuse in the workplace: International perspectives in research and practice*. London: Taylor & Francis.
- Robertson, M. M., & O'Neill, M. J. (2003). Reducing musculoskeletal discomfort: Effects of an office ergonomics workplace and training intervention. *International Journal of Occupational Safety and Ergonomics*, 9(4), 491–502.
- Salin, D., Cowan, R. L., Adewumi, O., Apospori, E., Bochantin, J., D'Cruz, P., et al. (2018). Prevention of and interventions in workplace bullying: A global study of human resource professionals' reflections on preferred action. *The International Journal of Human Resource Management*. <https://doi.org/10.1080/09585192.2018.1460857>
- Schaufeli, W., Salanova, M., Gonzalez-Roma, U., & Bakker, A. (2002). The measurement of engagement and burnout: A confirmative analytic approach. *Journal of Happiness Studies*, 3, 71–92.
- Schaufeli, W., Leiter, M., & Maslach, C. (2009). Burnout: 35 years of research and practice. *Career Development International*, 14(3), 204–220.
- Schaufeli, W., Taris, T., & Van Rhenen, W. (2008). Workaholism, burnout and engagement: Three of a kind or three different kinds of employee well-being? *Applied Psychology: An International Review*, 57(2), 173–203.
- Schuler, R., & Jackson, S. (1987). Linking competitive strategies with human resource practices. *Academy of Management Executive*, 1(3), 207–219.
- Shantz, A., Alfes, K., & Arevshatian, L. (2016). HRM in healthcare: The role of work engagement. *Personnel Review*, 45, 274–295.
- Sheehan, M., McCabe, T. J., & Garavan, T. N. (2020). Workplace bullying and employee outcomes: A moderated mediated model. *The International Journal of Human Resource Management*, 31(11), 1379–1416. <https://doi.org/10.1080/09585192.2017.1406390>
- Sikora, D., Ferris, G., & Van Iddekinge, C. (2015). Line managers implementation perceptions as a mediator of relations between high-performance work systems and employee outcomes. *Journal of Applied Psychology*, 100, 1908–1918.

- Subramony, M. (2009). A meta-analytic investigation of the relationship between HRM bundles and firm performance. *Human Resource Management*, 48(5), 745–768.
- Timo, N., Fulop, L., & Ruthjerson, A. (2004). Crisis? What crisis? Management practices and internal violence and workplace bullying in aged care in Australia. *Research and Practice in Human Resource Management*, 12(2), 57–89.
- Townsend, K., Lawrence, S., & Wilkinson, A. (2013). The role of hospitals HRM in shaping clinical performance: A holistic approach. *International Journal of Human Resource Management*, 24(16), 3062–3085.
- Townsend, K., Wilkinson, A., & Allan, C. (2012). Mixed signals in HRM: The role of hospital line managers. *Human Resource Management Journal*, 22(3), 267–282.
- Tsui, A., Pearce, J., Porter, L., & Tripoli, A. (1997). Alternative approaches to the employer–employee relationship: Does investment in employees pay off? *Academy of Management Journal*, 40(5), 1089–1121.
- Ulrich, D. (1997). *Human resource champions*. Boston, MA: Harvard University Press.
- Van der Meer, L., Leijten, F. R. M., Heuvel, S. G., Ybema, J. F., de Wind, A., Burdorf, A., & Geuskens, G. A. (2016). Company policies on working hours and night work in relation to older workers work ability and work engagement: Results from a Dutch longitudinal study with 2 year follow-up. *Journal of Occupational Rehabilitation*, 26(2), 173–181. <https://doi.org/10.1007/s10926-015-9599-9>
- Veth, K. N., Van der Heijden, B., Korzilius, H., De Lange, A. H., & Emans, B. J. M. (2018). Bridge over an aging population: Examining longitudinal relations among human resource management, social support, and employee outcomes among bridge workers. *Frontiers of Psychology*, 9, 574. <https://doi.org/10.3389/fpsyg.2018.00574>
- Veth, K. N., Korzilius, H. P., Van der Heijden, B. I., Emans, B. J., & De Lange, A. H. (2017). Which HRM practices enhance employee outcomes at work across the life-span? *The International Journal of Human Resource Management*, 1–32.
- Walton, R. (1985). From control to commitment in the workplace. *Harvard Business Review*, 65(2), 77–84.
- Weiner, B. (1985). An attributional theory of motivation and emotion. *Psychological Bulletin*, 92(4), 548–573.
- West, M., Borrill, C., Dawson, J., Scully, J., Carter, M., Anelay, S., et al. (2002). The link between the management of employees and patient mortality in acute hospitals. *International Journal of Human Resource Management*, 13(8), 1299–1310.
- West, M., Guthrie, J., Dawson, J., Borrill, C., & Carter, M. (2006). Reducing patient mortality in hospitals: The role of human resource management. *Journal of Organizational Behavior*, 27, 983–1002.
- Woodrow, C., & Guest, D. (2012). Public violence, staff harassment and the well-being of nursing staff: An analysis of national survey data. *Health Service Management Research*, 24, 24–30.
- Woodrow, C., & Guest, D. (2014). When good HR gets bad results: The challenge of HR implementation in the case of workplace bullying. *Human Resource Management Journal*, 24, 38–56.
- Woodrow, C., & Guest, D. (2017). Leadership approaches to the management of workplace bullying. *European Journal of Work and Organizational Psychology*, 26(2), 221–233.
- Wright, P., & Nishii, L. (2013). Strategic HRM and organizational behaviour: Integrating multiple levels of analysis. In J. Paauwe, D. Guest, & P. Wright (Eds.), *HRM and performance: Achievements and challenges* (pp. 97–110).
- Zaleska, K. J., & de Menezes, L. M. (2007). Human resources development practices and their association with employee attitudes: Between traditional and new careers. *Human Relations*, 60(7), 987–1018.

# Chapter 6

## Leadership in Healthcare



Trude Furunes

**Abstract** Effective leadership of healthcare professionals is critical for creating supportive work environments but also for strengthening quality of care. Based on current evidence, the aim of this chapter is to synthesize how different approaches to leadership are associated with healthy and unhealthy employee and patient outcomes. Further the chapter points to promising Healthy Healthcare approaches and discusses potential strengths and weaknesses. The increasing research interest in the links between leadership and quality of care is also outlined.

**Keywords** Leadership · Health promotion · Healthy healthcare · Management · Health promoting leadership

### 6.1 Introduction

Leadership in Healthy Healthcare, across all pillars, is the engine of the healthcare system. Understanding the role and potential of leadership and management in healthcare organizations are thus imperative in creating supportive and health-promoting work environments to ensure workforce productivity and sustainable caring cultures (Kirwan, Matthews, & Scott, 2013; Laschinger, Wong, & Grau, 2013; Salmela, Koskinen, & Eriksson, 2017). Some leadership approaches (i.e., transformational, relation-oriented, and task oriented) are associated with positive mental health outcomes among employees. Destructive leadership approaches, on the other hand, are negatively associated with mental health outcomes among employees (Montano, Reeske, Franke, & Hüffmeier, 2017). Destructive leadership behaviours are characterized by high levels of verbal and/or non-verbal aggressiveness, disrespectfulness, authoritarian, and punitive behaviours and research shows that such leadership behaviours are associated with more frequent affective symptoms, burnout, and stress, and lower levels of well-being and psychological functioning (Montano et al., 2017). Moreover, a systematic review on leadership styles and quality of care measures, suggests that

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effective leadership of healthcare professionals is critical for strengthening quality and integration of care (Sfantou et al., 2017). Based on current evidence, the aim of this chapter is to synthesize how different approaches to leadership are associated with healthy and unhealthy employee and patient outcomes, and further point to promising Healthy Healthcare approaches.

## 6.2 Leadership or Management?

Considerable organizational and social research of leadership styles and behaviours has led to numerous definitions, theories, classifications, and explanations about leadership. There is somewhat consensus among researchers and practitioners that leadership is a developmental process with new research adding to the knowledgebase without totally disregarding previous work (Khan, Nawaz, & Khan, 2016).

Although the terms leadership and management tend to be used interchangeably, leadership is often defined as the act of inspiring and motivating employees to work for a common goal, whereas management is about organizing and controlling work activities (Yukl & Gardner, 2019), focusing on administration and task achievement. Leadership thus refers to the relation “one to one” or “one to many” (leadership), whereas management is about how work is organized. When it comes to labelling leadership styles, traditions or approaches, some use ‘leadership’, and others use ‘management’. Therefore, it might be confusing and sometimes incorrect to assume that leadership constructs are distinct because they have different labels (Rudolph, Murphy, & Zacher, 2020). This is a methodological flaw described as ‘jangle fallacy’, pointed out by Rudolph et al. (2020) in a recent review of ‘healthy leadership’ approaches. Another incorrect assumption is to assume that two constructs are the same because they have the same label (jingle fallacy) (see for example Kelley, 1927).

Leader and management positions in healthcare are held both by health professionals and trained managers. How leaders are recruited might differ across organizations and units. Are the best nurses and medical doctors recruited to lead their groups of professionals, or are leaders recruited from persons with management training? This is an ongoing debate, and evidence shows that recruitment of leaders and managers in healthcare is not an easy task (Haaland, Olsen, & Mikkelsen, 2019; Spehar, Frich, & Kjekshus, 2012). It seems that nurses have low aspirations of becoming managers, and traditional recruitment processes are described as a way of selecting and pushing excellent clinicians, lacking formal management education, into management positions (Titler, Shirey, & Hauck, 2014). If you lack motivation and formal skills, and often lack the support needed to successfully transition into management, as stressed by Abraham (2011), you are very unlikely to succeed.

Nevertheless, as noted by Shanafelt et al. (2015), physician and nurse leaders are typically selected because of their clinical or scientific expertise, and not necessarily their leadership qualities. Thus, professionals not prepared for leadership tasks are thrown into challenging situations. In a study of physicians’ evaluation of effective

leadership, the following dimensions were emphasised: a leader's ability to inform, inspire, engage, recognise, and develop its staff.

A study among nurses suggests that their motivation to take on managerial tasks is related to work characteristic, gender and age (Haaland et al., 2019). Haaland et al.'s study shows that males are more likely to have manager aspirations than females, and younger nurses are more motivated to pursue a managerial career than older nurses. Gender differences are also found in studies of work-family conflicts, which are perceived much stronger by women than men (Ollo-López & Goñi-Legaz, 2017). Studies into leadership suggest that females are less likely to pursue a managerial position or a managerial career than males (e.g., Colbjørnsen & Knudsen, 2018).

Haaland et al. (2019) found that motivation to pursue a management career is also related to nurses' perception of the psychosocial work environment. Nurses who receive high social support from their immediate supervisor are more interested in becoming a manager. This might imply that employees experiencing an efficient leader also may be more likely to see themselves as future managers. In their study, institutional stress is positively correlated with interest in pursuing a managerial career. Institutional stress is here understood as nurses' perceptions of not having power or being able to influence (low autonomy) and having managers that do not understand the challenges they meet in their daily work. When nurses who report high institutional stress aspire for management positions this could be understood as a will to influence and change current practices for the better. Higher workloads, on the other hand, seem to decrease nurses' interest in becoming managers. Is this only so for nurses? A study of clinicians' journey towards management positions in hospitals suggest that the doctors had not anticipated a career in clinical management. Similar to nurses they felt persuaded to take the position. Not only did they feel "thrown into the position", but they were also expected to take on the task without being sufficiently prepared for it. The likely outcome is that the managers experience little support from superiors, and thus become frustrated in their role because of increased administrative workloads, without being able to delegate work effectively (Spehar et al., 2012). A recent study suggests that leaders both need internal (personal), external, and contextual (peer support) resources, as it may help leaders to better engage in transformational leadership, which is important in order to protect employees from burning out (Tafvelin, Nielsen, von Thiele Schwarz, & Stenling, 2019).

It seems that there are several issues that need to be addressed to improve leadership in healthcare. Expectations from employees of what an efficient leader should do, do not seem to match the conditions (i.e., support, workload, role clarity) that many of these managers work under. In a healthcare setting where job outcomes can be fatal (i.e., patient death), it is of uttermost importance that employees and middle managers are satisfied so that they are capable of caring for patients. The content of such healthcare roles is being debated to understand how one can better provide quality of care. Tewes and Fischer (2017) thus ask if healthcare leaders are too busy to lead and draw an example from German nurse leaders and the challenges they face. With increasing focus on delivering efficient health services, this question is relevant across countries and across health professions. Tewes and Fischer (2017)

describe a situation where leaders are burdened with an overwhelming workload. Due to workforce shortage, leaders at most levels spend “a tremendous proportion of their resources on managing understaffing, finding substitutes for staff on sick-leave and some may even do their scrubs and work a shift they simply could not find someone else to fill” (2017, p. 1). One of the main challenges for leaders on all levels is thus that their time is consumed by fixing short-term problems (e.g., staffing problems), leaving little or no time for leading and being strategic to solve long-term challenges. In the long run this is not sustainable and will thus not lead to Healthy Healthcare organizations.

On the positive note, research suggests that leaders who have the requisite agency to positively influence their staff and the organization’s culture, climate and performance are more likely to succeed in future healthcare organizations (Collini, Guidroz, & Perez, 2015; Hannah, Avolio, Luthans, & Harms, 2008). Leadership training for nurses and physicians exists but are not widespread. Thus, evidence-based leadership training should be encouraged.

Most healthcare units are dependent on inter-professional collaboration. This is not only employees with different educational backgrounds, but also what Tewes and Fischer label ‘skill and grade mix’ (2017), indicating that health educations vary from vocational training to higher university degrees. As pointed out by Al-Sawai (2013), “healthcare systems are composed of numerous professional groups, departments, and specialties with intricate, nonlinear interactions between them; the complexity of such systems is often unparalleled as a result of constraints relating to different disease areas, multidirectional goals, and multidisciplinary staff. Within large organizations such as healthcare systems, the numerous groups with associated subcultures might support or be in conflict with each other. Leadership needs to capitalize on the diversity within the organization as a whole and efficiently utilize resources when designing management processes, while encouraging personnel to work towards common goals”. In creating healthcare teams, it is deemed important to find the adequate numbers and skill mix, as well as facilitate collegial relationships (Twigg & McCullough, 2014), where professionals respect each other, and understand their common contribution to patient recovery and safety.

Leadership and management theories are dynamic, and new theories are developed over time (Al-Sawai, 2013). A number of leadership approaches can be adapted to the healthcare setting to optimize management in this highly complex environment.

It is thus time for more holistic thinking when it comes to building sustainable healthcare organisations (Eriksson, Orvik, Strandmark, Nordsteinen, & Torp, 2017). Future initiatives should however build on current leadership evidence, but also have its departure from established challenges in healthcare jobs. As stated above, the leadership literature is vast. In the following, a range of approaches to leadership will be reviewed in light of their potential to contribute to Healthy Healthcare.

## 6.3 Leadership Approaches to Healthy Healthcare

Leadership is considered one of the most important elements in the success of an organization (Landis, Hill, & Harvey, 2014). According to Bass and Stogdill (1990) “if a theory of leadership is to be used for diagnosis, training, and development, it must be theory-grounded in the concepts and assumptions that are acceptable to and used by managers, officials, and emergent leaders” (Bass & Stogdill, 1990, p. 37). Although it has long been acknowledged that social support from leaders has an influence on employees’ health and wellbeing (Rudolph et al., 2020), different approaches to leadership exist alongside each other, and put different emphasis on the relation between leader and employee. In healthcare, considerable attention has been directed to the key role leaders play in changing the organizations they work in. Focus is not only on creating healthier and safer practice environments for healthcare professionals, but aligning this with focusing on the health of the patients. Moreover, there is increasing emphasis on understanding the connections between healthy work environments, patient safety, and the health and well-being of health professionals (see e.g., Laschinger & Finegan, 2005). In this section, leadership approaches that are theoretically and empirically linked to employee health or patient outcomes are reviewed.

### 6.3.1 *Transactional Leadership*

Transactional leaders focus on achieving results (contingent rewards) and show direction so the job gets done. The belief is that the contractual agreements between the leader and the employee foster ample motivation to perform, and extrinsic rewards (e.g., wages) are used to enhance employee motivation. Transactional leadership is performed as management-by-exception (active), because the leader trusts that the employees will finish their job according to a set standard. This may work in technology intensive environments, with high degree of precision, technical expertise and precision. Transactional leadership is not focusing on inspiring employees to perform beyond expectations, rather when goals are met, there is no need to change, and business continues as usual.

However, in human-intensive environments such as healthcare, transactional leadership has its limitations (Khan & Nawaz, 2016). Effective leadership styles among nurse managers are associated with staff nurse job satisfaction and retention. Evidence is blurred whether one leadership style is better than the other in a healthcare context, and research from different cultural contexts are difficult to compare. Healthcare organizations in general and hospitals in particular tend to be bureaucratic organizations where transactional leadership is closely related to the structure. Although nurse managers philosophically may be strong supporters of a more relational approach, such as transformational leadership, they may be unable

to demonstrate such leadership characteristics in actual practice. If an organization rewards its managers for performance measures of a transactional nature (e.g., productivity, cost management, and policy compliance), there may be little motivation for using other leadership approaches (McGuire & Kennerly, 2006). Although both transformational and transactional leadership styles have been described as effective, transactional leadership approaches are found to have negative influence on nurse retention (Kleinman, 2004).

### ***6.3.2 Transformational Leadership***

Transformational leadership comprises four dimensions: (1) idealised influence or charisma—i.e., the leader acts as a role model and takes the lead in displaying desirable behaviour, (2) inspirational motivation—i.e., the leader outlines a clear vision and the way forward, (3) intellectual stimulation—i.e., the leader encourages employees to make use of their skills and coaches in decision-making, and (4) individualised consideration—i.e., the leader acknowledges individual differences and adjusts behaviour accordingly.

Transformational leaders motivate employees to perform beyond expectations through empowering and influencing their attitudes. For transformational leaders, the relationship with their employees has high priority and these leaders show high individualized consideration for their employees (meeting their needs for empowerment, personal growth, self-efficacy and achievement) (Khan & Nawaz, 2016).

Research shows that transformational leadership is positively correlated with both individual and organizational outcomes. A meta-review by Arnold (2017), suggests that transformational leadership can predict many positive and negative aspects of employee wellbeing, however, evidence is blurred. Also, a study by Nielsen and Daniels (2016) suggest that there is a flipside to the coin. They found that transformational leaders may affect employee long-term sickness absence in the long run. This may be so because employees with transformational leaders perform beyond own capacities, which may have long-term negative health consequences. Thus, one can argue that studies in healthcare apply more approaches to leadership than transactional and transformational leadership.

### ***6.3.3 Authentic Leadership***

Researchers in Canada (Wong, Cummings, Laschinger and colleagues) have examined authentic leadership as an approach to Healthy Healthcare, linking authentic leadership to positive work outcomes for health professionals (see e.g., Wong & Cummings, 2009).

Authentic leaders are self-aware and insightful, and act in accordance with own values, beliefs, preferences, and emotions, rather than acting to please others (e.g.,

getting rewards, avoiding punishment). This approach to leadership focuses on positive role modelling through showing honesty, integrity, and high ethical standards when leader-follower relationships are developed. Interpersonal relationships, including relationships between employees and their leaders, are built on trust. Because employees' trust is based on leader behaviour, it is important for leaders to act in accordance with their stated values in order to build trust and show integrity. In nursing, authentic leadership is associated with structurally empowering working conditions.

Structural empowerment refers to having access to information, support and opportunities to learn and grow, and is positively associated with lower burnout (Laschinger, Wong, & Grau, 2012), greater inter-professional collaboration (Laschinger & Smith, 2013), and higher job performance and job satisfaction (Wong & Laschinger, 2013).

Findings suggest that there is a positive link between supportive, empowering leader behaviour and employee voice behaviour, which is the willingness to offer suggestions for improving the workplace, but also voice concerns related to patient care (Wong & Cummings, 2009). In a study of new nurses, Read and Laschinger (2015) found that authentic leaders create structurally empowering work environments that in turn lead to higher degree of social relational capital. Nurses with high social relational capital (sense of belonging to the work community) also have higher job satisfaction and lower mental problems after the first year.

More recent contributions suggest that new ways of thinking about leadership in healthcare and evidence-based human resource management are required to improve health professionals' work environments (Aiken, Sloane, Bruyneel, Van den Heede, & Sermus, 2013; Hutchinson & Jackson, 2013; Kirwan, Matthews, & Scott, 2013; Ma, Olds, & Dunton, 2015).

#### **6.3.4 Contingency Theory**

How do the different approaches to leadership interact? The contingency theory suggest that leadership is situational, and there is no single right way to lead, because it depends on the situation of the followers. This means that one style that is effective in one situation, may not be effective in a different situation. There are however, a few elements that are important to address in this vein. Leadership is relational, and thus the dyad relationship between the manager and his or her employees is central to how one can develop a healthy healthcare workforce. Further, across leadership styles, conflicts can occur in dyad, intra-group or inter-group levels.

### ***6.3.5 Leader-Member Exchange Theory***

Across leadership approaches it is suggested that different dyadic relationships are developed between a leader and subordinates (see e.g., Yukl & Gardner, 2019). This is to imply that leaders vary their behaviour with different employees. One of the theories explaining how unique dyad relationships between leaders and employees develop is the LMX theory (leader-member exchange theory) (Graen & Uhl-Bien, 1995). This theory describes the role-making processes between leaders and their employees, and how relationships develop over time. Dyad relationships are formed based on personal compatibility. Normally, a leader would develop a close high-quality relationship to a small number of trusted employees, and employees in close relationships would get access to more information, interesting tasks, partaking in decision making and networks. Employees with low-quality relationships with their leader need only to comply with formal requirements according to the work contract. Research suggest that employees in lower-quality relationships have lower job satisfaction, lower organizational commitment, higher role conflict and less role clarity. They also report higher levels of perceived stress, bullying and age discrimination (see e.g., Furunes, Mykletun, Einarsen, & Glasø, 2015). The LMX theory postulates that unless leaders and managers are aware of these mechanisms, managers will have a motivated in group and a less committed out group. If aware, managers can focus on developing high-quality relationships with a larger group of employees.

### ***6.3.6 Conflict Management***

Conflicts can occur in every dyad relationship and within every organization, and unresolved conflicts can be particularly damaging within healthcare organizations, as they often lead to gaps in communication from which failure in working practices can occur and be detrimental to patient outcomes. Common sources of conflict are: organizational structure, individualistic behaviour within the organization, poor communication, and inter-individual or inter-group disagreements. Conflicts usually develop from suppressed underlying issues (not being communicated or managed) and can develop to perceived conflict (where the issue becomes apparent), with subsequent behaviour.

In interdisciplinary teams, there are many potential sources of conflicts. In order to create efficient healthcare teams, healthcare managers should thus adopt an approach to conflict management intervening at an early stage and aiming to create a positive outcome for the involved parties. The opposite would be leaders that avoid providing goals and standards and who wait for things to go wrong before they take action. In a healthcare setting, lack of conflict management can have serious consequences for patients and employees. By use of healthy conflict management strategies the team may build resilience.

Striving for health promotion has a longer tradition in healthcare than in other industries, and there is ample research on health-promoting work environments. However, there is still little accumulated research that take a management perspective on health promotion. Although the role of leadership in the psychosocial work environment is well acknowledged, scarce knowledge exists on how leadership qualities and behaviours have an impact on work-related health (Dellve, Skagert, & Vilhelmsen, 2007; Laschinger, Finegan, & Wilk, 2009; McElligott, Siemers, Thomas, & Kohn, 2009). More knowledge on how leaders can promote health and sustainable careers among nurses is needed.

As pointed out by Al-Sawai (2013), and relevant for the leadership approaches reviewed above it is a difficulty when considering leadership of healthcare professionals because most theories were for the business setting and then applied to healthcare, not developed within a healthcare context. Thus, there is scarce evidence that such leadership initiatives are associated with improvements in patient care or organizational outcomes when applied in the healthcare setting.

## 6.4 Towards Healthy Healthcare through Health-Promoting Leadership

Health-promoting leadership is considered a promising path to building organizational capacity (Eriksson, 2011), and resilience (Antonovsky, 1996; Lindström & Eriksson, 2006). Whitehead (2006) suggested that healthcare managers play an important role in developing and implementing holistic workplace health-promotion strategies. Although definitions vary, “Health-promoting leadership concerns creating a culture for health promoting workplaces and values that inspire and motivate employees to participate in such a development” (Eriksson, 2011, p. 17).

A few years ago, we started a new research line on health promoting leadership, particularly exploring the concept in a healthcare context (see e.g., Akerjordet, Furunes, & Haver, 2018). In this section, focus is on the core attributes and critical conditions for health-promoting leadership to be successful in healthcare settings. To the best of our knowledge less than ten studies are published on health promoting leadership in healthcare (Dellve et al., 2007; Eriksson, Axelsson, & Axelsson, 2007; Franke, Felfe, & Pundt, 2014; Furunes, Grindland, & Akerjordet, 2020; Furunes, Kaltveit, & Akerjordet, 2018; Grönlund & Stenbeck-Hult, 2014; Nilsson, Hertting, Petterson, & Theorell, 2005; Skarholt, Blix, Sandsund, & Andersen, 2016).

According to a systematic review (Akerjordet et al., 2018), health-promoting leadership has additional value to transformational leadership and is more than good leadership. The health promoting leader engages in employees’ health, takes responsibility for action, maintains open communication, and accommodates employees’ participation in change processes.

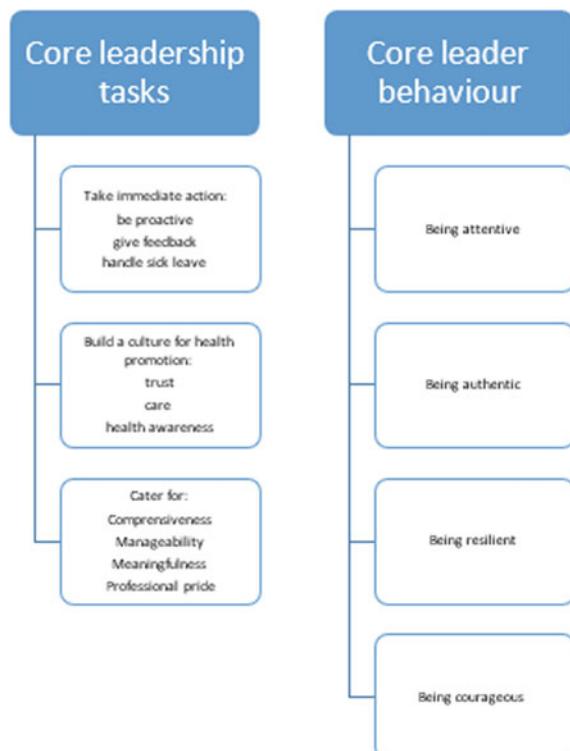
A recent study of nurses’ view on what a health promoting work environment is (Furunes et al., 2018), elaborates health-promoting leadership further. In a health

promoting work environment nurses have autonomy, role clarity and the relevant level of job demands.

Moreover, they are invited to participate in decision making, have a supportive group of colleagues, and have the possibility to develop their skills and competence. In this study a health-promoting leader is described to be attentive, take action, and communicate openly (e.g., explain changes that occur). This implies that employees expect leaders to be there to interact with employees and patients, and handle potential challenges when they appear (e.g., sick leave), instead of hiding in their offices. Furthermore, employees expect leaders to promote and care about their professional development, e.g., foster opportunities for learning and development. What we have not seen from previous studies is that nurses also expect their leaders to cater for meaningfulness in their daily work. Meaningfulness is found to be of particular importance for health professionals (Furunes et al., 2020) and may buffer burnout or other negative outcomes.

A recent study on leaders (Furunes et al., 2020) suggests that health promoting leadership concerns both core leadership tasks, and core leadership behaviour (see Fig. 6.1). Core leadership tasks can be split in short-term and long-term tasks. Short-term tasks are tasks that demand immediate action, such as giving feedback to employees and handling sick leave.

**Fig. 6.1** Core tasks and leader behaviour of health-promoting leadership.  
Source Furunes et al. (2020)



Medium term activities include building an organisational culture for health promotion, with primary activities such as building trust, care and health awareness. Long-term activities revealed in this study are the leadership tasks related to catering for employees' sense of coherence (Antonovsky, 1996). Sense of coherence refers to the degree that employees feel that their work (situation) is meaningful, manageable and whether they understand the whole.

When it comes to health promoting leader behaviour this supports previous studies expecting leaders to be attentive. Further, the study adds to previous studies by indicating that health promoting leaders need to authentic, curious and courageous.

In contrast, the non-health promoting leader is unreliable, showing lack of morality, giving unfair treatment, does not support or acknowledgement employees, and does not communicate well with employees (lack of feedback & follow-up). Other features of non-health-promoting leaders are that they tend to stick to routines and old patterns, avoid creativity, have no intent to develop themselves professionally or personally, and hide behind their titles (the boss) when hard decisions are to be made (Grönlund & Stenbeck-Hult, 2014).

So far, most of the research on health-promoting leadership relates to the context of health-promoting leadership in secondary (specialist medical care) healthcare. Thus, there is less knowledge of how HPL is experienced and understood in the primary healthcare setting (Akerjordet et al., 2018). Research on HPL is so far primarily done in Western cultures, thus there is scarce knowledge on the applicability of the concept in other cultures (Fig. 6.2).

**Fig. 6.2** Health promoting leadership in Healthy Healthcare



## 6.5 Critique of Healthy Leadership Research and Ways Forward

There are still ways to improve research on healthy leadership, and to establish and improve good practice. Rudolph et al. (2020) have recently published a review of research approaches to healthy leadership. Their main criticism of the “healthy leadership” literature goes as follows: There are a number of constructs (measures or scales) in the literature with similar labels (health specific leadership, health-promoting leadership, health-aware leadership etc.). Such circumstances may lead to wrong assumptions (mistaken beliefs or fallacies) among researchers and practitioners. One such mistaken belief is that two constructs are the same because they have the same label (this mistake belief is called ‘jingle fallacy’). A second mistaken belief is to think that constructs are different because they have different labels (this mistake belief is called ‘jangle fallacy’, Kelley, 1927). The way forward in this landscape is to build accumulated knowledge. Many of the empirical studies suffer from methodological problems that are not unique to this area of research, but nevertheless are problematic. Examples of such problems are the widely use of cross-sectional designs (which are not appropriate to predict outcomes), single-source designs (which are not optimal when studying dyad relationships between leaders and their employees), or failing to control for established leadership constructs (e.g., transformational and transactional leadership) (leaving it open whether there is an overlap between ‘new’ and established constructs). New studies into Healthy Healthcare should build on the existing studies to systematically increase our knowledge of the phenomenon.

## 6.6 Leadership and Management are Contextual

Historically, most leadership models have been developed in a Western context. And recent research has acknowledged that what is effective in one context, might be ineffective in another. This is because leadership processes are affected by organizational and societal cultural values in which organisations are embedded (for reviews, see Dickson et al., 2003). Thus, researchers have taken more interest in exploring effective leadership on a global scale to illuminate which attributes are etic (universal) and which are emic (culture specific) (Aktaş & Sargut, 2011). The use of ‘context’ as a term is sometimes used to refer to issues that are perceived to be nationally or culturally dependent but could also refer to issues that are industry specific (e.g., healthcare) or perceived as specific to an organization (one hospital) or a profession (e.g., nurses or medical doctors). Leadership can be contextual in all these ways. Below follows a discussion of how context specific factors can influence the way leadership is practiced and perceived in (1) different cultures, and (2) within health organizations.

### ***6.6.1 Leadership and Culture***

When discussing the applicability of leadership approaches and transferability of research findings across cultures, Hofstede's work (Hofstede, 1980, 2001) on national culture has been influential on leadership and organisational studies. Hofstede defines culture as "The collective programming of the mind that distinguishes one group or category of people from another. It is also stressed that culture is (a) a collective, not individual, attribute; (b) not directly visible but manifested in behaviours; and (c) common to some but not all people" (Hofstede & McCrae, 2004, p. 58). It is important to note that Hofstede's model was designed to explain patterns observable when the agents are whole nations, not individuals (Minkov, 2018). The main dimensions of Hofstede's work are as follows:

Individualism versus collectivism refers to the degree to which individuals are bound to groups. In individualist societies, the ties between individuals are loose: Everyone is expected to look after himself for herself and his or her immediate family. In collectivist societies, people are integrated from birth onward in to strong, cohesive in-groups, often extended families (with uncles, aunts, and grandparents), protecting them in exchange for unquestioning loyalty.

Power distance refers to the extent to which the less powerful members of organizations and institutions (such as the family) accept and expect that power is distributed unequally. This represents inequality (more vs. less) but is defined from below, not from above. It suggests that a society's level of inequality is endorsed by the followers as much as by the leaders.

According to the theory, a society's power distance level is bred in its families through the extent to which its children are socialized toward obedience or toward initiative. In countries with high power distance, organisations will be very hierarchical, and employees will be expected to have high respect for their boss. In countries with lower power distance, organisational structures will be flatter. A leader will not necessarily have obedient employees but will have to earn respect and trust through his or her leader behaviour.

Uncertainty avoidance refers to a society's tolerance for ambiguity. It indicates to what extent a culture programs its members to feel either uncomfortable or comfortable in unstructured situations. Unstructured situations are situations that are novel, unknown, surprising, and different than usual. Uncertainty-avoiding cultures try to minimize the possibility of such situations by strict laws and rules, by safety and security measures, and, on the philosophical and religious level, by a belief in absolute Truth: "There can only be one Truth and we have it." People in uncertainty-avoiding countries are also more emotional and are motivated by inner nervous energy. The opposite type, uncertainty-accepting cultures, are more tolerant of opinions different from what they are used to; they try to have as few rules as possible, and on the philosophical and religious level they are relativist and allow many currents to flow side by side. People within these cultures are more phlegmatic and contemplative and are not expected by their environment to express emotions.

Masculinity versus femininity refers to the distribution of emotional roles between the sexes, another fundamental problem for any society to which a range of solutions are found. The IBM studies revealed that (a) women's values differ less among societies than men's values; and (b) men's values vary along a dimension from very assertive and competitive and maximally different from women's values on one side to modest and caring and similar to women's values on the other. The assertive pole has been called "masculine" and the modest, caring pole "feminine." The women in feminine countries have the same modest, caring values as the men in masculine countries, they are somewhat assertive and competitive, but not as much as the men, so that these countries show a gap between men's values and women's values.

Minkov (2018) has criticized Hofstede's dimensions for not being replicable across a larger population. This implies that further studies are needed to define the constructs. Still, cross-cultural differences are shown to exist. Related to leadership, the main notion that has to be taken into account is that because nations differ along certain cultural dimensions that implicitly influence the relationship between leader and employee, leadership approaches that give desired outcomes (employee satisfaction, patient safety) in one context, can thus not be successfully copied into a new context.

### **Contextualization of leadership in healthcare: Variations within health contexts**

Recent leadership studies acknowledge that context should be acknowledged rather than ignored. In addition to national culture there are other contextual factors that may play a role in healthcare, such as the distinction between leadership in primary versus secondary healthcare. Research evidence is too vague to address this in more detail.

As summarized by Amanchukwu, Stanley, and Ololube (2015), there are a great number of factors that play a role affecting what kind of leadership approach is perceived to be effective within one health organization (Amanchukwu et al., 2015), such as size of unit, degree of interaction, goal congruency, level of decision making, and professional differences, as outlined below:

#### **Size of organization and units**

The size of a unit or organization will influence communication patterns and distribution of power. A normal response in growing units is to divide into subgroups where the real decision-making power lies. Another tendency is that it is becoming more difficult for employees to address senior management, and some organizations react to growth and increased need for maintaining control by centralizing work tasks, which in turn leads to limited employee participation or no participation at all. To increase employee involvement, managers can present ideas and invite feedback.

#### **Degree of interaction**

Degree of interaction and communication can refer to how social and organizational structures are designed to achieve organizational and individual goals, and how relational approaches between two or more individuals are (leader-member, or between colleagues).

In surroundings with high uncertainty, for instance, there is more need for managers to inform and be involved with staff. In healthcare settings employees are highly dependent on each other in order to accomplish tasks, and to foster collaboration managers can focus on sharing information and be involved with staff.

### **Goal congruency**

Goal congruency refers to the degree that organizational operations and activities support the achievement of its goals. For most health organizations patient safety and employee motivation are key goals. Depending on the existing goal of an organization, different leadership approaches may be applied.

### **Level of decision making**

One way of distinguishing managers' efficiency may be to evaluate their decision-making processes, and how these processes are perceived by the employees. In centralized organizations there are less possibilities for lower level decision making or influence from employees. In very centralized organizations, directives are handed out and strict obedience is expected. Leadership in such organizations have a more directive than participatory approach. Thus, the location of decision making to a large degree determines the leadership approach, ranging from the leader making the decision alone and announces the decision, to consensus reaching where decision making is delegated to the team (for details, see Weddle's 5 levels of decision making in organizations, [2013](#)).

### **Professional differences**

As outlined above, the healthcare workforce is compound of different professions, and also a skill and grade mix (education on different levels). Professional differences may lead to controversies about responsibilities and knowledge (e.g., between medical doctors/physicians, nurses and other health professionals). Introduction of New Public Management along with shortage of health personnel has led to change in the workforce composition. A study from the UK shows that the introduction of new non-medical roles in primary care may lead to unclear role definitions and increased tension at professional boundaries (Nelson, Bradley, McBride, Hodgson, & Martindale, [2019](#)). It must be acknowledged that introduction of new roles is a process that requires management planning, communication and attention.

Continuous reorganization and downsizing of healthcare, together with growing patient demands and acuity of care, increased medical specialization and changing professional roles have led to increased workload and pressure for nurses (Cowden, Cummings, & Profetto-McGrath, [2011](#); Smith & Cusack, [2006](#); Sorensen, Iedema, & Severinsson, [2008](#)).

According to Al-Sawai ([2013](#)), "The types of challenges that clinicians face when leading within the complex setting of a modern healthcare services include: diverse and changing needs, increasing patient expectations, and the high cost of new interventions and treatments. This requires clinicians to: consider the needs of the wider patient population; to take decisions that not only make the best of resources but also deliver clinical quality; and implement clinically-led service improvements that are

likely to succeed”. This should be done through inter-professional collaboration and in ways that improve employee and patient health and wellbeing.

## 6.7 Leadership and Quality of Care

In some countries, the manager responsibility for continuous quality and safety improvement is established in the regulations of the healthcare system (Norwegian Ministry of Health and Care Services, 2012, 2016; NOU, 2015). Thus, there is increasing research interest in the links between leadership and quality of care. As stated by von Thiele Schwarz, Hasson, and Tafvelin (2016), “The safety climate in an organization is determined by how managers balance the relative importance of safety and productivity. This gives leaders a central role in safety in an organization, and from this follows that leadership training may improve safety”. Still, evidence is blurred, and it is challenging to compare one context to the other. The authors of a literature review on safety culture in the U.S. hospital setting emphasize that “culture of safety begins with leadership” (Sammer, Lykens, Singh, Mains, & Lackan, 2010), saying that leaders are responsible for building a patient safety culture. A longitudinal study shows that poor patient safety culture is associated with injuries to both patients and health personnel (Taylor et al., 2012). Bad working conditions and high nurse turnover result in higher injury rates among nurses as well as patient injuries. Taylor and colleagues (2012) thus suggest that patient and employee safety are related components of an organization’s safety culture, not separate silos, as often treated in research.

A good safety culture is associated with a wide range of patient safety-related outcomes (i.e., less medical errors, less infections, higher patient satisfaction, and higher patient ratings of nurse responsiveness), and also with employee outcomes (i.e., less back injuries and higher job satisfaction) (Hofmann & Mark, 2006) and fewer adverse events (Wang et al., 2014). Similar links between safety culture and patient and employee outcomes are thus found across health contexts and countries, and there is increasing research interest in the link between leadership styles and employee safety behaviour, and related outcomes. A meta-analysis of antecedents of employee safety behaviours at the workplace, suggests that both transactional and transformational leadership approaches are associated with aspects of safety (Clarke, 2013), and thus recommends a combination of transformational and transactional styles in improving patient safety. Whereas transactional leadership had a positive association with employees’ perceived safety climate, safety participation and compliance with rules and regulations, transformational leadership was primarily associated with successfully encouraging employee participation in safety. Clarke (2013, p. 35) illustrates the leadership approaches the following way: “Transformational leaders may be viewed as ‘paying lip service’ to safety issues, whereas the critical element of active transactional leaders is that they are seen to ‘walk the talk’: transactional behaviours, such as active monitoring and intervention when problems occur, demonstrate clearly to employees in a highly visible way the importance

attached to their work activities in terms of safety. Such behaviours would result in the daily reinforcement of safety as part of employees' work role".

Ree and Wiig (2019a, 2019b) found that transformational leadership has a significant impact on patient safety culture and work engagement in home care services in Norway. Employees' perceptions of job demands, available resources and engagement also affect patient safety culture. A study of employees' perceptions of patient safety, shows that perceptions in both healthcare services. In home care, teamwork seems to be a significant contributing factor to patient safety and building sound teams with mutual trust and collaboration should therefore be an essential part of managers' work with patient safety. In nursing homes, the focus when building a good patient safety culture should be on open communication, ensuring that staff's ideas and suggestions are valued.

Trinchero, Farr-Wharton, and Brunetto (2019) who studied safety culture in an acute care hospital in Italy, surveyed a wide range of clinical staff (registered nurses, doctors, nursing assistants, biologist, dieticians, pharmacists and health technicians), and found that safety behaviours of clinical staff is associated with the quality of the supervisor-employee relationship (LMX), the clinical staffs' engagement on the job, feelings about safety, and the quality of perceived organisational support. This study thus suggests that the manager has an important role in enhancing employees' consideration of safety goals.

## 6.8 Leadership Development in Healthcare through Interventions

Several studies point to the need for creating awareness about leadership style and employee outcomes and training healthcare workers towards acquiring leadership skills and to embrace challenges for improving quality in healthcare (see e.g., Deshpande et al., 2018). With the discussed relations between leadership, employee and patient outcomes, leadership development seems to be one way to improve healthcare. Leadership training can either be done in a school setting or as evidence-based organizational interventions. From what we know about context specific aspects of healthcare as addressed above, this section focuses on evidence from organizational interventions. For instance, von Thiele Schwarz et al. (2016) run leadership training as an occupational health intervention. In their case organization safety climate improved over time, while self-rated productivity remained unchanged. As intended, managers' transformational leadership behaviour and safety self-efficacy increased. Researchers emphasize that focusing on general leadership skills showed greater improvement on safety climate, it is thus suggested that specific safety or productivity training has no added effects.

A leadership intervention on improving quality and safety in primary care (nursing homes and home care) a leadership guideline was developed to support managers in their safety and quality improvement work (Johannessen et al., 2019). Managers

found the guide useful and adapted it to their own context, but found it challenging to include patients or next of kin.

These tendencies are similar to health promotion intervention studies, suggesting that leadership interventions apply a holistic view. Further, evidence-based leadership training should be encouraged, also involving employees and patients.

## 6.9 Implications for Practice

Evidence shows that leadership, patient and employee outcomes are interlinked, and this has practical implications for all pillars of Healthy Healthcare. For leadership to be a driver in developing strong caring cultures it is strongly recommended that, rather than pushing excellent clinicians and nurses into management positions, it is necessary to educate and properly train talents that show an interest in a managerial career path. Training of healthcare managers should include awareness raising of leadership styles (see for example, Ree & Wiig, 2019a, 2019b), and the links to patient safety culture and employee outcomes.

Clarke's meta-analysis (2013), shows that both transformational and active transactional leadership styles are important aspects of effective safety leadership. Practitioners who are involved with the design of leadership training and development programmes, should bear in mind that interventions are tools for development and should be evidenced-base but at the same time be as tailored to the organization. Leadership studies point to the lack of motivation (e.g., Haaland et al., 2019), but also preparations to enter management positions (e.g., Spehar et al., 2012). Also, it is suggested, both from managers and employees that managers receive too little support and have too little time for being attentive and the same time have time for reflection (Furunes et al., 2018, 2020).

## 6.10 Summarizing Key Points

On the road towards Healthy Healthcare there are known and unknown obstacles. Research shows that effective leadership can build organizational capacity to increase employee and patient outcomes. There is not one single way to lead, because it depends on the situation. Healthcare is a people intensive industry, and leadership is relational. Both employees and managers need training and support to perform well in their jobs. As per now, there is a lack of managers trained to uphold a holistic view and responsibility of the organization. For healthcare organizations to succeed with improving quality and patient safety, they are dependent on a wide range of health professions, and efficient inter-professional relations.

Professional differences are one of the many contextual factors in healthcare, and across professions there is need for an understanding of all three pillars of Healthy Healthcare.

## 6.11 Unresolved Issues and Knowledge Gaps that Lack Empirical Evidence

Nielsen and Taris (2019) point out four unresolved issues that need to be addressed in future research. First, across leadership styles, they question what good leadership is. As reviewed above, particular leadership approaches are linked to positive employee or patient outcomes, but studies also suggest that highly committed employees that put in more effort on their job, also may face potential negative long-term health consequences. Nielsen and Taris thus call for more research on the leadership characteristics that account for positive outcomes.

Secondly, when ‘good leader behaviour’ is identified, there is need for more information on how good leadership behaviour can be promoted. This issue is discussed above, and calls for evidence-based interventions to develop current practice.

Thirdly, there is a call for more knowledge on the inter-mediate and long-term effects of leadership on employee health. Because employees tend to frequently change jobs, and leaders-member dyads are subject to change, also within organizations, it is challenging to measure the effects of leadership on employee health within organizations. Using individual register data combined with organizational data can be useful in building more knowledge.

Fourthly, Nielsen and Taris (2019), state the need for understanding the boundary conditions for good leadership. For instance, what kind of resources do leaders, supervisors or managers have? As discussed above, healthcare managers are often left to do the job with scarce resources and have little time for strategic thinking or reflection. Health-promoting leadership may be a fruitful avenue for building organizational capacity, but more accumulated research is needed to clarify the wide range of ‘healthy’ leadership measures applied (Rudolph et al., 2020).

## References

- Abraham, P. J. (2011). Developing nurse leaders: A program enhancing staff nurse leadership skills and professionalism. *Nursing Administration Quarterly*, 35(4), 306–312. <https://doi.org/10.1097/NAQ.0b013e31822ecc6e>
- Aiken, A., Sloane, D. M., Bruyneel, L. V., den Heede, K., & Sermeus, W. (2013). Nurses' reports of working conditions and hospital quality of care in 12 countries in Europe. *International Journal of Nursing Studies*, 50, 143–153. <https://doi.org/10.1016/j.ijnurstu.2012.11.009>
- Akerjordet, K., Furunes, T., & Haver, A. (2018). Health-promoting leadership: An integrative review and future research agenda. *Journal of Advanced Nursing*, 74(7), 1505–1516. <https://doi.org/10.1111/jan.13567>
- Aktaş, M., & Sargut, A. S. (2011). How followers' need for leadership differs according to cultural values?: A theoretical framework. *TODA&E's Review of Public Administration*, 5(4), 195–217.
- Al-Sawai, A. (2013). Leadership of healthcare professionals: Where do we stand? *Oman Medical Journal*, 28(4), 285–287. <https://doi.org/10.5001/omj.2013.79>
- Amanchukwu, R. N., Stanley, G. J., & Ololube, N. P. (2015). A review of leadership theories, principles and styles and their relevance to educational management. *Management*, 5(1), 6–14. <https://doi.org/10.5923/j.mm.20150501.02>

- Antonovsky, A. (1996). The salutogenic model as a theory to guide health promotion. *Health Promotion International*, 11(1), 11–18. <https://doi.org/10.1093/heapro/11.1.11>
- Arnold, K. A. (2017). Transformational leadership and employee psychological well-being: A review and directions for future research. *Journal of Occupational Health Psychology*, 22(3), 381–393.
- Bass, B. M., & Stogdill, R. M. (1990). *Bass & Stogdill's handbook of leadership: Theory, research, and managerial applications*. New York: The Free Press.
- Clarke, S. (2013). Safety leadership: A meta-analytic review of transformational and transactional leadership styles as antecedents of safety behaviours. *Journal of Occupational and Organizational Psychology*, 86(1), 22–49.
- Colbjørnsen, T., & Knudsen, K. (2018). Underveis Menns og kvinners lederkarrierer [On the way. Men's and women's managerial careers in Norway]. *Tidsskrift for samfunnsforskning*, 59(2), 131–156. <https://doi.org/10.18261/ISSN.1504-291X-2018-02-01>
- Collini, S. A., Guidroz, A. M., & Perez, L. M. (2015). Turnover in healthcare: The mediating effects of employee engagement. *Journal of Nursing Management*, 23, 169–178.
- Cowden, T., Cummings, G., & Profetto-McGrath, J. (2011). Leadership practices and staff nurses' intent to stay: A systematic review. *Journal of Nursing Management*, 19(4), 461–477. <https://doi.org/10.1111/j.1365-2834.2011.01209.x>
- Dellve, L., Skagert, K., & Vilhelmsson, R. (2007). Leadership in workplace health promotion projects: 1- and 2-year effects on long-term work attendance. *European Journal of Public Health*, 17(5), 471–476.
- Deshpande, S., Sahni, S., Karemire, T., et al. (2018). Evaluation of relationship between leadership style and job satisfaction amongst healthcare professionals. *MedEdPublish*, 7(1), 24. <https://doi.org/10.15694/mep.2018.0000024.1>
- Dickson, M. W., Den Hartog, D. N., & Mitchelson, J. K. (2003). Research on leadership in a cross-cultural context: Making progress, and raising new questions. *The leadership quarterly*, 14(6), 729–768. <https://doi.org/10.1016/j.lequa.2003.09.002>
- Eriksson, A. (2011). *Health-promoting leadership. A study of the concepts and critical conditions for implementation and evaluation* (PhD thesis). Gothenburg, Sweden.
- Eriksson, A., Axelsson, R., & Axelsson, S. B. (2007). Development of health promoting leadership—Experiences of a training programme. *Health Education*, 110(2), 109–124.
- Eriksson, A., Orvik, A., Strandmark, M., Nordsteinen, A., & Torp, S. (2017). Management and leadership approaches to health promotion and sustainable workplaces: A scoping review. *Societies*, 7, 1–17. <https://doi.org/10.3390/soc7020014>
- Franke, F., Felfe, J., & Pundt, A. (2014). The impact of health-oriented leadership on follower health: Development and test of a new instrument measuring health-promoting leadership. *German Journal of Human Resource Management*, 28(1–2), 139–161.
- Furunes, T., Grindland, I., & Akerjordet, K. (2020). *Health-promoting leadership: Core tasks and leader behaviour*. Submitted for publication.
- Furunes, T., Kaltweit, A., & Akerjordet, K. (2018). Health-promoting leadership: A qualitative study from experienced nurses' perspective. *Journal of Clinical Nursing*, 27(23–24), 4290–4301. <https://doi.org/10.1111/jocn.14621>
- Furunes, T., Mykletun, R. J., Einarsen, S., & Glasø, L. (2015). Do low-quality leader-member relationships matter for subordinates? Evidence from three samples on the validity of the Norwegian LMX scale. *Nordic Journal of Working Life Studies*, 5(2).
- Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *Leadership Quarterly*, 6(2), 219–247.
- Grönlund, A., & Stenbock-Hult, B. (2014). Vårdpersonalens syn på hälsofrämjande ledarskap [Caring professionals' attitudes to health-promoting leadership]. *Nordic Journal of Nursing Research*, 34(1), 36.

- Haaland, G. H., Olsen, E., & Mikkelsen, A. (2019). Making a career in hospitals: Determinants of registered nurses' aspirations to become a manager. *Journal of Advanced Nursing*. <https://doi.org/10.1111/jan.14002>
- Hannah, S. T., Avolio, B., Luthans, F., & Harms, P. D. (2008). Leadership efficacy: Review and future directions. *The Leadership Quarterly*. <https://doi.org/10.1016/j.lequa.2008.09.007>
- Hofmann, D. A., & Mark, B. (2006). An investigation of the relationship between safety climate and medication errors as well as other nurse and patient outcomes. *Personnel Psychology*, 59(4), 847–869. <https://doi.org/10.1111/j.1744-6570.2006.00056.x>
- Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills, CA: Sage.
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Thousand Oaks, CA: Sage.
- Hofstede, G., & McCrae, R. R. (2004). Personality and culture revisited: Linking traits and dimensions of culture. *Cross-Cultural Research*, 38(1), 52–88.
- Hutchinson, M., & Jackson, D. (2013). Transformational leadership in nursing: Towards a more critical interpretation. *Nursing Inquiry*, 20(1), 11–22.
- Johannessen, T., Ree, E., Strømme, T., Aase, I., Bal, R., & Wiig, S. (2019). Designing and pilot testing of a leadership intervention to improve quality and safety in nursing homes and home care (the SAFE-LEAD intervention). *British Medical Journal Open*. [https://doi.org/10.1136/bmjopen-027790](https://doi.org/10.1136/bmjopen-2018-027790)
- Kelley, T. L. (1927). *Interpretation of educational measurements*. Yonkers-on-Hudson, NY: World Book Company.
- Khan, I., & Nawaz, A. (2016). The leadership styles and the employees performance: A review. *Gomal University Journal of Research [GUJR]*, 32(2). ISSN: 1019-8180.
- Khan, Z. A., Nawaz, A., & Khan, I. (2016). Leadership theories and styles: A literature review. *Journal of Resources Development and Management*, 6.
- Kirwan, M., Matthews, A., & Scott, P. A. (2013). The impact of the work environment of nurses on patient safety outcomes: A multi-level modelling approach. *International Journal of Nursing Studies*, 50(2), 253–263. <https://doi.org/10.1016/j.ijnurstu.2012.08.020>
- Kleinman, C. (2004). The relationship between managerial leadership behaviors and staff nurse retention. *Hospital Topics*, 82(4), 2–9.
- Landis, E. A., Hill, D., & Harvey, M. R. (2014). A synthesis of leadership theories and styles. *Journal of Management Policy and Practice*, 15(2), 97–100.
- Laschinger, H. K., & Finegan, J. (2005). Using empowerment to build trust and respect in the workplace: A strategy for addressing the nursing shortage. *Nursing Economics*, 23(1), 6–13.
- Laschinger, H. K. S., Finegan, J., & Wilk, P. (2009). New graduate burnout: the impact of professional practice environment, workplace civility, and empowerment. *Nursing Economic*, 27(6), 377–383.
- Laschinger, H. K. S., & Smith, K. M. (2013). The influence of authentic leadership and empowerment on new-graduate nurses' perceptions of interprofessional collaboration. *JONA: The Journal of Nursing Administration*, 43(1), 24–29. <https://doi.org/10.1097/NNA.0b013e3182786064>
- Laschinger, H. K., Wong, C. A., & Grau, A. L. (2012). The influence of authentic leadership on newly graduated nurses' experiences of workplace bullying, burnout and retention outcomes: A cross-sectional study. *International Journal of Nursing Studies*, 49(10), 1266–1276.
- Lindström, B., & Eriksson, M. (2006). Contextualizing salutogenesis and Antonovsky in public health development. *Health Promotion International*, 21(3), 238–244. <https://doi.org/10.1093/heapro/dai016>
- Ma, C., Olds, D. M., & Dunton, N. E. (2015). Nurse work environment and quality of care by unit types: A cross-sectional study. *International Journal of Nursing Studies*, 52(10), 1565–1572.
- McElligott, D., Siemers, S., Thomas, L., & Kohn, N. (2009) Health promotion in nurses: Is there a healthy nurse in the house? *Applied Nursing Research*, 22(3), 211–215. <https://doi.org/10.1016/j.apnr.2007.07.005>

- McGuire, E., & Kennerly, S. M. (2006). Nurse managers as transformational and transactional leaders. *Nursing Economics*, 24(4), 179–185.
- Minkov, M. (2018). A revision of Hofstede's model of national culture: Old evidence and new data from 56 countries. *Cross Cultural & Strategic Management*, 25(2), 231–256. <https://doi.org/10.1108/CCSM-03-2017-0033>
- Montano, D., Reeske, A., Franke, F., & Hüffmeier, J. (2017). Leadership, followers' mental health and job performance in organizations: A comprehensive meta-analysis from an occupational health perspective. *Journal of Organizational Behavior*, 38, 327–350. <https://doi.org/10.1002/job.2124>
- Nelson, P. A., Bradley, F., McBride, A., Hodgson, D., & Martindale, A.-M. (2019). Skill-mix change in general practice: A qualitative comparison of three 'new' non-medical roles in English primary care. *British Journal of General Practice*. <https://doi.org/10.3399/bjgp19X704117>
- Nielsen, K., & Daniels, K. (2016). The relationship between transformational leadership and follower sickness absence: The role of presenteeism. *Work & Stress*, 30(2), 193–208. <https://doi.org/10.1080/02678373.2016.1170736>
- Nielsen, K., & Taris, T. W. (2019). Leading well: Challenges to researching leadership in occupational health psychology—And some ways forward. *Work & Stress*, 33(2), 107–118. <https://doi.org/10.1080/02678373.2019.1592263>
- Nilsson, K., Hertting, A., Petterson, I.-L., & Theorell, T. (2005). Pride and confidence at work: Potential predictors of occupational health in a hospital setting. *BMC Public Health*, 5(1), 92.
- Norwegian Ministry of Health and Care Services. (2012). Meld. St. 10 (2012–2013). *God kvalitet—trygge tjenester. Kvalitet og pasientsikkerhet i helse- og omsorgstjenesten. [High quality- safe services. Quality and patient safety in health- and welfare services]*, Oslo, Norway.
- Norwegian Ministry of Health and Care Services. (2016). *Forskrift om ledelse og kvalitetsforbedring i helse- og omsorgstjenesten [Regulation on leadership and quality improvement in the health and care services]*. Oslo, Norway: Helse- og omsorgsdepartementet [Ministry of Health and Care Services]. Retrieved from <https://lovdata.no/dokument/LTI/forskrift/2016-10-28-1250>
- NOU. (2015). *Med åpne kort. Forebygging og oppfølging av alvorlige hendelser i helse og omsorgstjenestene [With open cards. Prevention and follow up of critical incidents in health and welfare services.]* Norway's public investigations on behalf of the Government]. Oslo, Norway: Helse og omsorgsdepartementet [Ministry of Health and Care Services].
- Ollo-López, A., & Goñi-Legaz, S. (2017). Differences in work–family conflict: Which individual and national factors explain them? *The International Journal of Human Resource Management*, 28(3), 499–525. <https://doi.org/10.1080/09585192.2015.1118141>
- Read, E. A., & Laschinger, H. K. S. (2015). The influence of authentic leadership and empowerment on nurses' relational social capital, mental health, and job satisfaction over the first year of practice. *Journal of Advanced Nursing*, 71(7), 1611–1623. <https://doi.org/10.1111/jan.12625>
- Ree, E., & Wiig, S. (2019a). Employees' perceptions of patient safety culture in Norwegian nursing homes and home care services. *BMC Health Services Research*, 19, 607. <https://doi.org/10.1186/s12913-019-4456-8>
- Ree, E., & Wiig, S. (2019b). Linking transformational leadership, patient safety culture and work engagement in home care services. *Nursing Open*.
- Rudolph, C. W., Murphy, L. D., & Zacher, H. (2020). A systematic review and critique of research on "healthy leadership". *The Leadership Quarterly*, 31(1). <https://doi.org/10.1016/j.lequa.2019.101335>
- Salmela, S., Koskinen, C., & Eriksson, K. (2017). Nurse leaders as managers of ethically sustainable caring cultures. *Journal of Advanced Nursing*, 73(4), 871–882. <https://doi.org/10.1111/jan.13184>
- Sammer, C. E., Lykens, K., Singh, K. P., Mains, D. A., & Lackan, N. A. (2010). What is patient safety culture? A review of the literature. *Journal of Nursing Scholarship*, 42(2), 156–165. <https://doi.org/10.1111/j.1547-5069.2009.01330.x>
- Sfantou, D. F., Laliotis, A., Patelarou, A. E., Sifaki-Pistolla, D., Matalliotakis, M., & Patelarou, E. (2017). Importance of leadership style towards quality of care measures in healthcare settings: A systematic review. *Healthcare*, 5(73). <https://doi.org/10.3390/healthcare5040073>

- Shanafelt, T. D., et al. (2015). Impact of organizational leadership on physician burnout and satisfaction. *Mayo Clinic Proceedings*, 90(4).
- Skarholt, K., Blix, E. H., Sandsund, M., & Andersen, T. K. (2016). Health promoting leadership practices in four Norwegian industries. *Health Promotion International*, 31(4), 936–945.
- Smith, M., & Cusack, L. (2006). Commentary on Whitehead D (2004). Health-promoting hospitals: The role and function of nursing. *Journal of Clinical Nursing*, 15(2), 230–232. <https://doi.org/10.1111/j.1365-2702.2006.01263.x>
- Sorensen, R., Iedema, R., & Severinsson, E. (2008). Beyond profession: Nursing leadership in contemporary healthcare. *Journal of Nursing Management*, 16(5), 535–544. <https://doi.org/10.1111/j.1365-2834.2008.00896.x>
- Spehar, I., Frich, J. C., & Kjekshus, L. E. (2012). Clinicians' experiences of becoming a clinical manager: A qualitative study. *BMC Health Services Research*, 12(421). <https://doi.org/10.1186/1472-6963-12-421>
- Tafvelin, S., von Nielsen, K., Thiele Schwarz, U., & Stenling, A. (2019). Leading well is a matter of resources: Leader vigour and peer support augments the relationship between transformational leadership and burnout. *Work & Stress*, 33(2), 156–172. <https://doi.org/10.1080/02678373.2018.1513961>
- Taylor, J. A., Dominici, F., Agnew, J., Gerwin, D., Morlock, L., & Miller, M. R. (2012). Do nurse and patient injuries share common antecedents? An analysis of associations with safety climate and working conditions. *BMJ Quality & Safety*, 21(2), 101–111. <https://doi.org/10.1136/bmjqqs-2011-000082>
- Tewes, R., & Fischer, T. (2017). Editorial: Too busy to lead? Current challenges for German nurse leaders. *Journal of Nursing Management*, 25(1), 1–3.
- Titzer, J. L., Shirey, M. R., & Hauck, S. (2014). A nurse manager succession planning model with associated empirical outcomes. *Journal of Nursing Administration*, 44(1), 37–46. <https://doi.org/10.1097/NNA.0000000000000019>
- Trinchero, E., Farr-Wharton, B., & Brunetto, Y. (2019). A social exchange perspective for achieving safety culture in healthcare organizations. *International Journal of Public Sector Management*, 32(2), 142–156. <https://doi.org/10.1108/IJPSM-06-2017-0168>
- Twigg, D., & McCullough, K. (2014). Nurse retention: A review of strategies to create and enhance positive practice environments in clinical settings. *International Journal of Nursing Studies*, 51, 85–92.
- von Thiele Schwarz, U., Hasson, H., & Tafvelin, S. (2016). Leadership training as an occupational health intervention: Improved safety and sustained productivity. *Safety Science*, 81, 35–45. <https://doi.org/10.1016/j.ssci.2015.07.020>
- Wang, X., Liu, K. E., You, L.-M., Xiang, J.-G., Hu, H.-G., Zhang, L.-F., & Zhu, X.-W. (2014). The relationship between patient safety culture and adverse events: A questionnaire survey. *International Journal of Nursing Studies*, 51(8), 1114–1122. <https://doi.org/10.1016/j.ijnurstu.2013.12.007>
- Weddle, J. (2013). *Levels of decision making in the workplace*. Retrieved March 13, 2014, from [https://www.jobdig.com/articles/1115/Levels\\_of\\_Decision\\_Making\\_in\\_the\\_Workplace.html](https://www.jobdig.com/articles/1115/Levels_of_Decision_Making_in_the_Workplace.html)
- Whitehead, D. (2006). Workplace health promotion: The role and responsibilities of nursing managers. *Journal of Nursing Management*, 14, 59–68.
- Wong, C. A., & Cummings, G. G. (2009). The influence of authentic leadership behaviors on trust and work outcomes of health care staff. *Journal of Leadership Studies*, 3, 6–23. <https://doi.org/10.1002/jls.20104>
- Wong, C. A., & Laschinger, H. K. S. (2013). Authentic leadership, performance, and job satisfaction: The mediating role of empowerment. *Journal of Advanced Nursing*, 69(4), 947–959. <https://doi.org/10.1111/j.1365-2648.2012.06089.x>
- Yukl, G., & Gardner, W. L. (2019). *Leadership in organizations* (global edition, 9th ed.). Harlow, England: Pearson.

# Chapter 7

## Healthy Healthcare from a Labour-Market Economic Perspective: Taking Mobility and Aging in Regions into Account



Masood Gheasi and Annet H. de Lange

**Abstract** Life expectancy is increasing in most part of the world and this factor varies significantly within the countries at the regional level. Poor and remote regions are not only experiencing a rapid aging but also confronted with health professional shortages and very high turnover rates. This paper provides a concise overview of regional characteristics and net flow of health professionals in the Netherlands. Our primary results show that richer regions are gaining healthcare professionals, while smaller regions are not only losing healthcare professionals, but they are also aging faster. Regions like Zuid Holland, Gelderland, and Noord Holland are the net receiver of healthcare professionals, while Zeeland and Flevoland regions are the net contributors.

**Keywords** Geographical labour mobility · Health professionals · Regional characteristics

### 7.1 Background

Life expectancy is increasing in most parts of the world because of improved health among older individuals, and medical improvements that makes it possible to live longer with multiple diagnoses, and more complex caring needs. At the same time, the proportion of older individuals will be relatively large compared to the younger. After World War II, many Western countries had an increase in birth rates (also labelled the Baby-boomer generation); these Baby boomers are now transferring into retirement. From the 80s, birth rates have declined, and the current working

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population (16–70 yrs.) is declining. Consequently, the dependency ratio, a measure for how many persons are on pension relative to the number of persons working in a country, increase. This means that there is a decreasing number of persons working leads to less taxpayers to fund public expenditures like public pensions and public healthcare. Not only is the number of persons on pension increasing, but the numbers of years on pension is also higher, putting pressure on public economy. Preparing for population aging, many countries have gone through pension reforms over the last decade, aiming at prolonging older workers' careers and thus reduce their number of years on pension and increase their number of years as taxpayers. These reforms have been somewhat effective, but only partly solves future challenges.

At the same time as the increase in ageing population, the pool of younger individuals from which to recruit future healthcare workers is decreasing. This in turn has led to a global projected workforce shortage in healthcare. A shortage that is already observable in some countries (Bishop, 2013), and prominent among certain professional groups, such as nurses. The projected shortage is not only related to the fact that too few health professionals are being educated, but research has shown that many nurses leave the profession long before retirement and a leakage of experienced workforce to other vocations outside healthcare.

Worryingly many countries experience difficulties in retention of health personnel. For instance, many young nurses leave the profession few years after they have graduated (Flinkman & Salanterä, 2015; Laschinger et al., 2016), and older healthcare workers leave their profession or go into early retirement (e.g., Flinkman et al., 2010). With the projected shortage of healthcare professionals, healthcare organizations need to look for new ways to attract, develop and retain a healthy and motivated workforce (Whitehead, 2006).

The demographic changes and difficulties in retention of healthcare personnel create challenges for maintaining sustainably the healthcare systems. The answer to this issue lies in two main sub-points. First, it is contained in monitoring the subjective and objective health status of people (and predicting inflow of patients). Second, it concerns the creation of Healthy Healthcare systems with enough staff members relative to patients in specific branches to prevent serious shortages or possible unhealthy healthcare systems for instance due to high work pressure of the remaining staff members or more risk in errors at work (Karsh, Holden, Alper & Or, 2006).

It is relevant to approach these concerns from a labour economic perspective as national and regional labour market policies can have an important role in shaping and overcoming these challenges. Parkinson (2018, p. 1) emphasized that: "An integrated health and productivity approach, emerging science, and practices can accelerate healthcare systems' goal to improve employee health and organizational competitiveness". In line with Parkinson (2018), there is a need for (i) more integrated approaches for Healthy Healthcare system and (ii) keeping record of relevant parameters about the overall characteristics of work environment and organisation, and the care delivery modalities such as available staff to develop in more integrated data analytic capabilities. Exept from Onderzoeksprogramma Arbeidsmarkt Zorg & Welzijn, (AZW, Eng: Labour market research program on care and welfare,

[www.azwinfo.nl](http://www.azwinfo.nl)) which provides descriptive information on mobility of healthcare personnel in the Netherlands, there are no actual tools to measure the relative internal and external mobility of healthcare personnel nationally or regionally. This is also apparent in many other countries.

The current chapter present steps necessary to create a Labour Mobility Index (LMI) as a tool to understand regional demands for healthcare services and supply of healthcare personnel with the Netherlands as case example.

## 7.2 The Labour Mobility Index

The purpose of the development of an LMI is based on two main concerns.

Firstly, as for other countries, various labour market trends and developments have been reported that have an impact on the quality of healthcare delivered in the Dutch healthcare and welfare sector. According to Azwinfo (2019), one of the most important trends and developments among them are that the greying as well as dejuvenilization of the available workforce, resulting in an overall lower number of healthcare staff. Building on their expressed standpoint, the following important facts are outlined.

In 2018, 55% of employers in the healthcare and welfare sector indicated a shortage in staffing certain positions which is an increase by 33% since 2016 and 45% since 2017 (AZW info 2019).

The demand for employees with competencies, skills and experience for handling complex care issues is increasing, whereas the demand for low-skilled employees is reducing over time.

Task shifts is frequent between healthcare professionals and caregivers. More than half (57%) of the care institutions use volunteers and informal caregivers for tasks that until recently were performed by professionals. As a result, healthcare and welfare institutions pay more attention to the sustainable employability and the internal and external mobility of their staff in order to be able to secure enough staff and to continue to guarantee the quality of care.

Secondly, the variation in the size of healthcare organizations, its distribution and composition within a region's healthcare workforce is in this context also relevant. For example, the number of healthcare workers available in a region can indicate the region's capacity to provide better healthcare services. Clearly, the internal and external labour mobility within the healthcare sector plays an important role. Internal labour mobility refers to the mobility of employees within one sector from one position to a new one in the same institution or another institution in the same branch. Wages are usually determined locally and at times without market pressure. External labour mobility is usually costly, labour flow moves between different sectors and firms. Meanwhile, it is costly since the employers do not exactly know the quality and capacity of workers (Lazear and Oyer, 2004).

The rationale in the construction of LMI and the basis for its components is presented below.

### **7.2.1 Labour Mobility**

Labour mobility refers to the ease that workers can move around within an economy or between different economies. The allocation of workers to companies are formed by a competitive labour market equilibrium, as workers are searching for higher paid jobs and firms are looking for cheap labours. Labour mobility is either a geographic labour mobility or an occupational labour mobility. The geographical labour mobility refers to the spatial mobility of workers, while occupational labour mobility refers to the workers' ability to change jobs (Singell and Stater, 2006).

#### **7.2.1.1 Geographic Labour Mobility**

Geographic labour mobility has attracted significant attention from both researchers (e.g. Greenwood, 1969) and policy makers. Labour economists relate geographic mobility to economic reasons, and the main assumption in their analyses is that “workers calculate the value of employment opportunities available in each of the alternative labour markets, net out the costs of making the potential move, and choose whichever option maximizes the net present value of lifetime earnings.” (Borjas, 2013, p. 319). This type of labour mobility is complex and has different types such as: internal labour mobility vs external/international labour mobility, temporary vs permanent, etc.

#### **7.2.1.2 Occupational Mobility**

Occupational mobility concerns a specific kind of accumulation of human capital. Namely, this is an augmentation of human capital which does not build general skills but enables workers to switch firms, while they remain within their profession. Occupation mobility also creates certain challenges for the workers, especially considering how occupational mobility may be related to changes in occupational structure and economic development and some uncertainties. A move between two jobs can be downward, upward, or lateral. However, occupational mobility is not automatically translated into income mobility. For example, two occupations may be different in content, but could be similar in salary. Therefore, switching between these two jobs would be considered lateral occupational mobility without income mobility. Occupational mobility may also have a drastic change from being an employee to self-employment or the other way around, but not as a rule. Change of occupation often indicates a change of employer, but not necessarily always. For example, a job changes as a result of promotion could be considered a proxy for occupational mobility without changing employer (Singell and Stater, 2006).

**Box 7.1**

Econometric analysis is the application of statistical techniques that identifies the labour market factors that are assumed to have impact on labour participation and health services utilization.

For example, access to health services and preference of health consumers. Scheffler et al. (2020) applied econometric techniques to estimate the demand for physicians through population forecasting. Furthermore, econometric techniques also help us to better understand both hopes and worries concerning health professional mobility are supported by scientific evidence or not. One of the techniques is called flow analysis which captures the dynamic of health professional mobility by capturing the number of professionals leaving and entering certain geographical areas. Another way of presenting inflow and outflow is to calculate the share of newly arrived/leaving professionals among all healthcare professional. Both inflow and outflow of professional provide important information not only the numbers but also their professionals, specializations and their geographical distribution.

This study presents healthcare professional labour mobility within and outside the sector and indicates the availability of enough versus serious low numbers of healthcare personnel across different regions in a country.

The case of the Netherlands provides an example of its application. The current findings might help the government and local authorities, but also healthcare staff to improve strategic personnel-planning and quality of delivered care in the local healthcare labour market.

### **7.2.2 *The Measurement of Labour Mobility***

Measuring labour mobility in general is very challenging, as mobility rates are very sensitive to measurement error in the labour market. The core of this challenge is that if one focuses on a sector, a small error in flow in one year may lead to a large spurious flow in others (Kambourov and Manovskii, 2013). The current chapter demonstrate how to measure the mobility of workers within a sector. This is mostly referred to as ‘labour turnover’ and covers a part of labour flow (into and out of a certain firm/industry). There are several measures identified by Brissenden (1920, p 443) for labour mobility and they are as following:

1. Separation rate: the rate that employees are leaving, quitting, discharging (firing rate) or being laid-off.
2. Accession rate: the hiring rate.
3. Replacement rate: separation minus excess of separation over accessions.
4. Increase rate: the difference between accession rate and separation rate.
5. Decrease rate: the difference between separation rate and accession rate.

## 6. Flux rate: the sum of accession rate and separation rate.

It is also important to note that labour mobility consists of irregular employment and unemployment. The focus of the current chapter is on healthcare professional flows into and out of this sector. Not irregular employment or unemployment. Based on the result it is relevant to address how the current findings can aid the government and local authorities and healthcare administrators to improve the local healthcare labour markets striving towards workplaces characterized by Healthy Healthcare. Including the importance of monitoring labour-market dynamics of different healthcare professionals across regions and branches to better develop a sustainable strategic human resource planning in healthcare.

The main question that usually raises in building a healthcare mobility index is; what type of data and which variables should be added to the index? The current data comes from two sources, namely the supplier by AZW open data which consists of labour flow of healthcare professional, the demander by Statistics Netherlands (Central Bureau of Statistics, CBS) data for regional characteristics. AZW is a research organization collecting data on healthcare and welfare systems in the Netherlands. The AZW goal is to provide accurate information on inflow and outflow of healthcare personnel at the national and regional levels. The current chapter consider the net flow of overall health personnel (inflow–outflow) from AZW open data and regional variables such as, average age, and migration from the CBS.

The healthcare labour supply data consist of detailed information on education, age, specialization, and working place. Turning to the labour demand, unfortunately, it is difficult to access to accurate data on available vacancies for specific occupations within the healthcare sector. As an alternative regional characteristic can contribute to indirect measurement of the demand for healthcare services.

Is it possible to develop an index considering a Healthy Healthcare perspective by including workers, quality of care and organizational practices? With the available data it is possible to discuss relevant relations between the different pillars of Healthy Healthcare. More specifically, to highlight relations between staff mobility, branches and regional differences in relation to regional characteristic and discuss the implications for policy makers concerning sufficient versus insufficient mobility index scores.

## 7.3 Application Example of LMI in the Netherlands

This mobility index is an important instrument for creating and monitoring balance in staff versus patients and systems in healthcare. The current preliminary results are an example of LMI based on Dutch data. Table 7.1 presents the mobility of healthcare professionals in the Netherlands. Considering, the inflow rate and outflow rate, when the inflow rate exceeds the outflow rate the difference shows labour increase rate, while if the outflow rate exceeds the inflow rate the difference shows the decrease rate in labour mobility. The net flow in Table 7.1 presents the increase rate, decrease

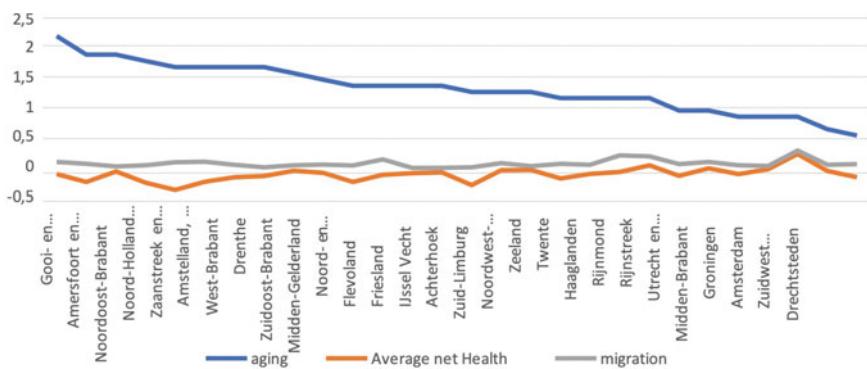
**Table 7.1** General healthcare professional mobility

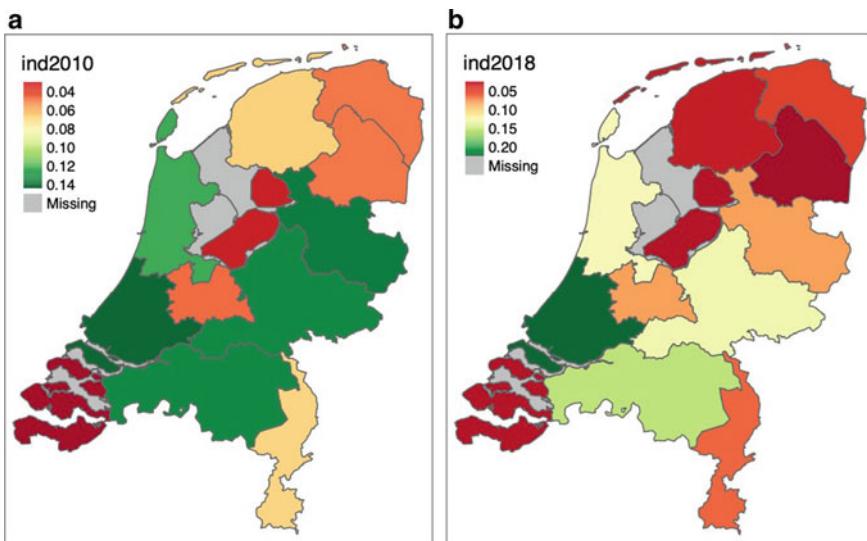
Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total inflow	711.320	603.690	552.570	484.540	436.050	491.120	506.210	575.750	617.110
Total outflow	443.030	476.130	516.500	564.640	560.470	571.920	526.740	469.940	483.390
Inflow rate	0.14	0.12	0.11	0.10	0.09	0.10	0.10	0.12	0.12
outflow rate	0.10	0.10	0.11	0.12	0.12	0.12	0.11	0.10	0.10
Net flow	0.05	0.02	0.00	-0.03	-0.03	-0.03	-0.01	0.01	0.02

Authors' calculation based on CBS data

rate and a balanced situation where the inflow rate is equal to outflow rate. Clearly, healthcare sector in 2010 in general had an increase of health professionals (0.5), while for four years in a row healthcare sector experienced a decrease rate.

The aggregated results in Table 7.1 presents the situation for the overall healthcare system in the Netherlands. In order to tackle heterogeneity at the regional level, the results were presented at the regional level. CBS healthcare mobility data shows that nurses have higher inflow and outflow numbers compared to other healthcare professionals (StatLine-mobility, 2019). Nurses' mobility index at the regional level is a relevant example in this regard. Figure 7.1 shows that the average netto level of nurses in healthcare considering internal and external mobility differs across the regions. A score below zero reflects a shortage and a score above zero reflects a sufficient level of nurses working in these regions. Figure 7.1 shows, for example, that the regions like Achterhoek and Zaanstreek experience serious nurse shortages while the region Amsterdam presents sufficient numbers of nurses. On the other hand, the blue line presents an increase in the average age of people (average age

**Fig. 7.1** Labour market dynamics nurses relative to aging in Dutch regions



**Fig. 7.2** Geographical distribution of healthcare professionals in The Netherlands

= 41 years) in each region which may indicate pressure on healthcare as especially older people will consume more healthcare assistance. Interestingly, some regions like Gooi and Amersfoort are aging faster in comparison to others. The grey line shows the mobility of international migrants in each region, added with migration to capture the external shocks in demand for health services in each region. As migrants are more attracted to bigger cities Amsterdam is the most attractive city for migrants.

Figure 7.2 presents the geographical distribution in general by health professional net flow of LMI in the Netherlands. The graph ranges between red and green, the green areas show higher net flow of healthcare professionals, while the red colour represents the shortages. The comparison between 2010 and 2018 shows a significant change across regions in the Netherlands. As can be observed, apart from Zuid-Holland, the rest of the regions are affected by an increasing shortage of healthcare professionals (see Table 7.2 for more detailed information on the time related changes).

Table 7.2 presents in relative form the net flow of healthcare professionals in different regions in the Netherlands. Table 7.2 is sorted on year 2018, as can be observed, some regions like Zuid Holland, Gelderland, and Noord Holland maintained as major net receiver of healthcare professional in most of years observed, while, Zeeland and Flevoland are ranked the net contributor of healthcare professionals for most of the years.

**Table 7.2** Relative net flow of healthcare professionals and ranking by province

Regions	2010	Rank	2011	Rank	2012	Rank	2013	Rank	2014	Rank	2015	Rank	2016	Rank	2017	Rank	2018	Rank	
Zuid-Holland	0.14	1	0.23	1	0.19	1	-0.31	12	-0.21	12	-0.05	4	0.09	1	0.19	1	0.23	1	
Noord-Brabant	0.13	4	0.11	4	0.12	3	-0.14	10	-0.15	10	-0.22	12	-0.08	6	0.12	3	0.15	2	
Gelderland	0.13	3	0.16	2	0.11	5	-0.09	8	-0.12	9	-0.16	10	-0.23	10	0.16	2	0.13	3	
Noord-Holland	0.12	5	0.14	3	0.08	7	-0.17	11	-0.18	11	-0.16	11	-0.26	12	0.12	4	0.12	4	
Utrecht	0.05	10	0.08	6	0.10	6	0.00	2	-0.10	8	-0.08	9	0.03	4	0.05	8	0.08	5	
Overijssel	0.14	2	0.10	5	0.15	2	-0.02	4	ara>	-0.05	6	-0.06	5	-0.08	7	0.09	6	0.08	6
Limburg	0.07	6	0.02	11	0.11	4	-0.08	7	-0.08	7	-0.06	6	-0.11	8	0.06	7	0.06	7	
Groningen	0.05	9	0.06	7	0.07	8	0.00	1	-0.02	2	-0.06	7	-0.15	9	0.09	5	0.05	8	
Friesland	0.07	7	0.03	9	0.03	10	-0.09	9	-0.03	4	-0.01	1	0.04	3	0.02	11	0.03	9	
Zeeland	0.02	12	0.02	12	-0.02	12	-0.05	6	-0.01	1	-0.03	3	-0.05	5	0.01	12	0.03	10	
Flevoland	0.03	11	0.02	10	0.01	11	-0.02	3	-0.03	5	-0.03	2	0.04	2	0.04	10	0.03	11	
Drenthe	0.05	8	0.03	8	0.04	9	-0.03	5	-0.03	3	-0.07	8	-0.24	11	0.04	9	0.02	12	

## 7.4 Discussion and Future Research Directions

The current chapter present an outlined for a new index to improve analyses on the mobility of healthcare professionals across regions in the Netherlands. The main focus of this chapter was to measure the pillar staff in the Healthy Healthcare concept, and to better measure the relative in- versus outflow of staff members of healthcare professionals in different regions of the Netherlands, while taking into account aging people in the region and migrants as relevant concepts of quality of care in Healthy Healthcare. By limited yearly CBS online data the current results show that there is an increasing demand for healthcare professionals in the Netherlands. Some regions are facing more challenges in comparison to others. Wealthier regions are attracting healthcare workers, while smaller regions are not only losing healthcare professionals, but the workforce of healthcare are older. Regions like Zuid Holland, Gelderland, and Noord Holland are the net receiver of healthcare workers, while Zeeland and Flevoland regions are the net contributors. This unbalanced mobility of healthcare workers may pose significant challenges such as overcrowding effect of healthcare personnel in some regions at the cost of difficulties in serving better the health needs of people in others. This study is the first step towards developing a healthcare labour mobility index and present the patterns emerged from the data without explaining the causality. The results can be used by policy makers and practitioners to proacts possible serious shortages and to see possible chances in sharing staff across regions to sustain a high level of healthcare across the nation.

### 7.4.1 Future Work

This work is highly beneficial by considering labour market fluctuations and regional differences in internal versus external mobility of healthcare workers relative to expected incoming patients. LMI is a new way of looking at labour market dynamics in developing Healthy Healthcare contexts. Given the difficulties in accessing data on mobility of healthcare professionals, the result of this chapter remained descriptive. Future works need to accommodate detailed information on demand and supply of healthcare workers. For future research, more fine-grained analyses should be conducted on possible differences in types of branches for instance cure versus care institutions, extramural versus intramural healthcare and considering the dynamics of unpaid or temporary work in healthcare settings. The current index is the first steps toward developing a complicated mobility index for healthcare professional.

## References

- Al-Assaf, A. F., Bumpus, L. J., Carter, D., & Dixon, S. B. (2003). Preventing errors in healthcare: a call for action. *Hospital Topics*, 81(3), 5–13. <https://doi.org/10.1080/00185860309598022>.

- Azwinfo. (2019). <https://www.awzinfo.nl/jive/jive..>
- Brissenden, P. F. (1920). The measurement of labour mobility. *Journal of Political Economy*, 28, 441–476.
- Borjas, J. G. (2013) Labour Economics (6th edn.). New York: McGraw-Hill
- Flinkman, M., Salanterä, S. (2015). Early career experiences and perceptions - a qualitative exploration of the turnover of young registered nurses and intention to leave the nursing profession in Finland. *Journal of Nursing Management*, 23, 1050–1057
- Flinkman, M., Leino-Kilpi, H., Salanterä, S. (2010). Nurses' intention to leave the profession: Integrative review. *Journal of Advance Nursing*, 66, 1422–1434.
- Greenwood, J. M. (1969). An analysis of the determinants of geographic labour mobility in the United States. *The Review of Economics and Statistics*, 51, 189–194.
- Kambourov, G., Manovskii, I., (2013). A cautionary note on using (March) current population survey and panel study of income dynamics data to study worker mobility. *Macroeconomic Dynamics*, 17(1), 172–194. <https://doi.org/10.1017/S1365100510000350>
- Karsh, B. T., Holden, R. J., Alper, S. J., & Or, C. K. (2006). A human factor engineering paradigm for patient safety: designing to support the performance of the healthcare professional. *Quality and safety in healthcare*, 15(Suppl 1), i59–i65. <https://doi.org/10.1136/qshc.2005.015974>
- Laschinger, H., Zhu, J., Read, E. (2016). New nurses' perceptions of professional practice behaviours, quality of care, job satisfaction and career retention. *Journal of Nursing Management*, 24, 656–665.
- Lazear, E. P., Oyer, P. (2004). Internal and external labour markets: A personnel economics approach. *Labour Economics*, 11, 527–554.
- Parkinson, M. D. (2018). The healthy healthcare workplace: A competitive advantage. *Current Cardiology Reports*, 20(10), 98, 1–8. <https://doi.org/10.1007/s11886-018-1042-3>
- Scheffler, M. R., Liu, X. J., KinfuIII, Y., & Dal Poz, R. M. (2020). Forecasting the global shortage of physicians: An economic- and needs based approach. *Bulletin of the World Health Organization*.
- StatLine. (2019). Retrieved: 22–09–2019. <https://awzstatline.cbs.nl/#/AZW/nl/dataset/24049NED/table?ts=1566384949127>.
- Singell, L. D., Stater, M. (2006). Going, going, gone: The effects of aid policies on graduation at three large public institutions. *Policy Sciences*, 39, 379–403.
- Whitehead, D. (2006) The health-promoting school: What role for nursing? *Journal of Clinical Nursing*, 15, 264–327.

## Chapter 8

# Capacity Planning in Healthcare: Finding Solutions for Healthy Planning in Nursing Home Care



Dennis Moeke and René Bekker

**Abstract** Matching supply and demand in nursing home practice is not straightforward, as it always takes place within a ‘client—care worker—organizational’ triangle. This chapter illustrates how data-driven capacity planning can support nursing homes in their search for ways to further increase their efficiency while maintaining an appropriate quality level of care. This is done using a framework based on a four-step approach adopted from workforce management in call centres. In addition, it is also shown that data-driven capacity planning allows for a more evenly spread workload for the care workers.

**Keywords** Nursing home care · Staffing · Healthcare logistics · Capacity planning · Scheduling

### 8.1 Introduction

Demographic projections reveal that the EU population is turning increasingly ‘grey’ in the coming decades. This change in demographics puts pressure on the financial sustainability of the European long-term healthcare systems because of two main reasons. Firstly, the prevalence of physical or mental disability, and thus dependency, increases with age (especially with very old age groups, 80+). As such the increasing share of elderly is likely to lead to an increase in the demand for Long Term Care (LTC). Secondly, chronic diseases such as cancer, heart disease and diabetes are more common among older people. In fact, many elderly have more than one chronic disease. Consequently, the ageing population has increased the pressure on the long-term healthcare systems and will continue to do so in the forthcoming decades. In order to ensure the long-term financial sustainability of the European healthcare

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systems, providers of long-term care are challenged to provide their care services in a more efficient manner.

Nursing homes play an important role in the provision of long-term care. A nursing home can be described as a facility with a domestic styled environment that provides 24-h functional support and care for persons who require assistance with activities of daily living and who often have complex health needs and increased vulnerability (Sanford et al., 2015, p. 183). It should be noted that in this chapter no distinction is made between nursing homes and residential homes (less intensive care) as, in practice, the boundary between the two is diffuse (Hamers, 2011).

Often, nursing home clients need ongoing assistance with basic activities of daily living due to physical or psychological disabilities. Consequently, in order to live their lives according to their own daily routines, nursing home clients depend greatly on timely delivery of care and support. As such, quality of care in a nursing home largely depends on the coordination and timing of service delivery. In practice, however, nursing homes must balance the goal of meeting clients' preferences with the efficient use of resources. The real-life letter reproduced in Fig. 8.1 illustrates how some nursing homes struggle to meet these seemingly contradictory goals. It shows how nursing home department X has difficulties with meeting the time preferences of the clients during busy periods of the day with the resources available. It is even taken for granted by department X that clients have little or no influence on their daily routine

Dear client of department X,

15 November 2012

We would like to draw your attention for the following:

In the morning, which is the most busy part of the day, we receive many call button requests. These requests are mainly about when the regular morning care will be delivered.

Responding to these additional requests results in extra work for the care workers, which causes it to take even longer before all clients have received the care and support they need.

Therefore we ask you:

-To use the call buttons only in case of an emergency.

-This applies especially to the following time frames: 7:00-10:00hrs and 16:30-20:00hrs

None of the clients receive care by appointment. You will all receive the necessary care and support, but when care will be given depends on the particular circumstances of that moment, and will therefore vary.

Hopefully we have informed you sufficiently. If you have any further questions, please do not hesitate to contact us.

Kind regards,

Care workers department X

Team manager department X

**Fig. 8.1** Real-life letter in here

as “none of the clients receive care by appointment” and “when care will be given depends on the particular circumstances of that moment, and will therefore vary”.

Capacity planning plays a key role in ensuring that an organization has the capability to respond sufficiently to the level of demand experienced, see e.g. Jack and Powers (2009). For nursing homes, care workers are by far the most important resource. This is since care workers are responsible for the daily care and supervision of the residents and their labour costs account for a significant proportion of the total healthcare expenditure (Di Giorgio, Filippini, & Masiero, 2014). The focus of capacity planning should thus be on matching availability of care workers (supply) with the needs and preferences of clients (demand).

Matching supply and demand in nursing home practice is not straightforward, as it always takes place within a ‘client—care worker—organizational’ triangle. Clearly, the needs and preferences of the nursing home clients are a vital element of capacity planning. More specifically, we find that their needs and preferences should dictate the timing of care and support activities and should be the starting point of any capacity plan. In turn, the role of the organization is to match the required care and support with appropriate nurse staffing levels (i.e. matching supply and demand), within the boundaries of human and financial resources. Finally, the professional responsibility of the care workers should also be considered. For example, care workers are confronted with an inherent tension between their desire to respect and foster the personal autonomy of the client and their responsibility to act in the best interest of the client (Rodriguez & Dominguez, 2008). Therefore, we like to stress that from a care workers’ perspective, capacity planning is more than blindly obeying to time schedules, as it could undermine their professional dignity (Tønnessen, Nortvedt, & Førde, 2011).

Thus, one could say that the focus of capacity planning in a nursing home setting is on getting the right number of care workers with the right set of skills in the right job at the right time. The result of an adequate capacity planning process is a well-balanced workload, having major benefits for both the clients as well as the care workers. For the clients, a well-balanced workload will result in less waiting and care being delivered closer to their preferred time. From the perspective of the care worker, the literature shows that not having a balanced workload contributes to emotional exhaustion (e.g., Tønnessen S, Nortvedt, & Førde, 2001; Rai, 2010) and potential cognitive impairment (e.g., Kuntz, Mennicken, & Scholtes, 2015). Hence, capacity planning plays a crucial role in ensuring the physical and mental wellbeing of the care worker.

Furthermore, nursing homes are becoming more and more information-intensive enterprises. Nowadays, they have access to large amounts of clinical and operational data due to the increasing adoption of electronic health records and other IT systems. This development enhances data-driven decision making and accelerates digital transformation. Also, when it comes to capacity planning nursing homes are starting to recognize data-driven decision making as essential to improve their (future) operations.

### 8.1.1 Contribution and Outline

This chapter illustrates how data-driven capacity planning can support nursing homes in their search for ways to further reduce their costs while maintaining an appropriate quality level of care. This is done using a framework based on a four-step approach adopted from workforce management in call centres. In addition, it is also shown that data-driven capacity planning allows for a more evenly spread workload for the care workers.

The remainder of this chapter is structured as follows. The next section introduces measures that can be used to evaluate the performance of capacity planning efforts. Section 8.3 provides insight into three concepts which are crucial for a thorough understanding of the domain of data-driven capacity planning. In Sect. 8.4, a four-step approach for data-driven capacity planning is introduced and substantiated. Finally, in Sect. 8.5, the added value and challenges of data-driven capacity planning are being discussed.

## 8.2 Data-Driven Performance Measures

Before elaborating on performance measures associated with data-driven capacity planning, it is important to realize that there are two types of healthcare demand. The difference between the two is explained below.

Nursing homes are challenged to operate effectively and efficiently in an uncertain environment. A well-known definition of uncertainty is that of Galbraith (1973, p. 5). He defines it as: “the difference between the amount of information required to perform the task and the amount already possessed by the organization”. In other words: “if the task is well understood prior to performing it, much of the activity can be preplanned” (Galbraith, 1974, p. 28). In practice, for some of the care activities it is possible, based on the individual needs and preferences of the clients, to make a detailed schedule in advance. Examples of this type of activities are ‘giving medicine’ and ‘help with getting out of bed in the morning’. In this chapter, these activities will be referred to as deterministic care activities.

On the other hand, a nursing home should also have the responsiveness to handle what (Galbraith, 1974, p. 30) refers to as “non-routine, consequential events that cannot be anticipated and planned for in advance”. ‘Providing assistance with toileting’ is an example of a care activity which is carried out in response to random or unexpected demand. In this chapter, activities of this type will be referred to as random care activities.

### ***8.2.1 Client-Centred Performance Measures***

As mentioned in the introduction, in order to live their lives according to their own daily routines, nursing home clients depend greatly on timely delivery of care and support. In this light, from a data-driven perspective, two prominent performance measures are:

The percentage of care tasks that should be conducted within Y minutes of the preferred delivery time (for deterministic care). For example, a nursing home department may aim to conduct at least 95% of the deterministic care tasks within 15 min of the preferred delivery time.

The percentage of the care requests that should have a response time less than Y minutes (for random care). For example, a nursing home department may aim to respond to at least 95% of the random care requests within 10 min.

Another common performance measure is the average waiting time. Although average waiting time can be a valuable measure, it should be used with care. The flaw of this performance measure is that possible fluctuations in waiting are not considered. For example, suppose that clients A, B and C have to wait respectively 19, 4 and 1 min in response to a random care request. In this case, the average waiting time is 8 min. Nevertheless, client A has to wait more than two times longer than the average! Hence, the average does not reveal the variability in the waiting time.

### ***8.2.2 Capacity-Centred Performance Measures***

The nursing home clients are a prominent stakeholder, as they essentially are the customers of a nursing home organization. However, as mentioned in the introduction, nursing home care always takes place within a ‘client—care worker—organization’ triangle. As such, the perspectives of the care workers and organization are also of importance.

Firstly, it should be realized that if clients have to wait a ‘backlog’ is created, where backlog is defined as the total amount of unfinished work due to not delivering the required care on time. Large backlogs are undesirable because it increases the pressure on care workers and leads to dejected clients as they lose grip on their daily routine (which may cause stress for the care worker as well). In addition, backlogs can lead to more work as a result of an increasing number of questions from clients.

From the perspective of the organization as well as the care worker, ‘capacity utilization’ is an important performance measure. Capacity utilization indicates the relative amount of available capacity that is being used to supply the demand. Regarding the utilization of care workers, it is useful to divide the working time of care workers into four categories. First, care worker provide care; these are the client-related activities during which the care worker is present at the client’s site (or preparing or wrapping up). Second, there are administrative duties that are often related to the client. The third category concerns the time that care workers do not

perform client-related care or administrative duties. This may include care workers waiting on purpose for ‘random demand’ of clients, or time that is left. Finally, the fourth category involves other moments when care workers are not performing any tasks, such as holidays, illness, training, meetings and paid breaks. In call centres, the fraction of time staff is unavailable to answer calls relative to the total capacity is called shrinkage. Koole (2013) reports that a shrinkage of 40% is not exceptional. In practice, typically a fixed percentage for shrinkage is used. In this chapter, we restrict ourselves to the first and third category, i.e. the moments that care workers are present and available to perform care-related activities. Hence, the administrative tasks and shrinkage are not directly considered in this chapter. As such, we define the occupancy of a care worker as follows:

$$\text{Occupancy} = \frac{\text{Total time spend on care tasks}}{\text{Total time spend on care tasks and total idle time}} \times 100\%$$

In this context, we prefer the term occupancy over utilization to stress that the considered net capacity involves the time that care workers are present and available to perform care-related activities.

### **8.2.3 Optimization Approaches**

When it comes to data-driven capacity planning two type of optimization approaches can be applied. In the first approach, the available capacity is taken as starting point and the central question is: how can we maximize the performance, given the available (amount of) capacity? In the second approach, a pre-determined performance objective is taken as point of departure and the central question is: how much capacity is (when) needed in order to achieve a pre-determined performance objective? The first approach is most prevalent in practice.

## **8.3 Elementary Concepts**

The literature on hospital logistics shows that the extent to which healthcare demand can be planned for is largely influenced by the following three interdependent concepts: (1) variability, (2) predictability and (3) scale (e.g., De Bruin, Van Rossum, Visser, & Koole, 2007; Joustra, Van der Sluis, & Van Dijk, 2010; Upshur, Moineddin, Crighton, Kiefer, & Mamdani, 2005; Van Oostrum, 2009). In the next subsections, it will be illustrated why and how these concepts are also of importance in relation to capacity planning in a nursing home context.

### 8.3.1 Variability

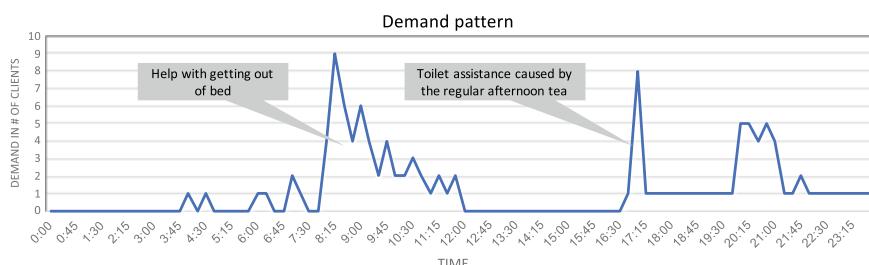
Nursing homes are challenged to meet the needs and preferences of their clients efficiently, despite variability (i.e., fluctuations) in demand over time. Without variability in demand, capacity planning would be a simple one-time exercise. However, in every-day nursing home practice, demand fluctuates from day to day and even from hour to hour, which makes capacity planning a challenging task.

Figure 8.2 shows the demand for care and/or support during a regular day (i.e., the number of clients in need of support) of a department within a Dutch nursing home facility. Demand varies during the day. As most clients wake up between 7:00 and 10:00 h and need help with getting out of bed and personal hygiene, a high demand can be observed during this time period. Furthermore, the figure also shows a peak in demand around 17:00 h, due to an increased need for assistance with toileting. This increased need for assistance with toileting is caused by the regular afternoon tea at 16:00 h.

According to Litvak and Long (2000), understanding and distinguishing between natural and artificial variability is key to improving healthcare processes. The high demand between 7:00 and 10:00 h, due to help with getting out of bed and personal hygiene, is an example of so-called natural variability. Natural variability is inherent to the system and a direct result of the actual needs and preferences of clients.

On the other hand, the large need for assistance with toileting around 17:00 h is an example of artificial variability as it is created by the way the system is set-up and managed. To be more specific, the peak in demand is caused by the afternoon tea which is served around 16:00 h and is driven by personal preferences and priorities of the care workers (rather than actual needs and preferences of the nursing home clients). In most cases artificial variability undermines the effectiveness and the efficiency of healthcare systems and should therefore be eliminated.

However, artificial variability can also be the result of well-considered decision-making. For instance, most nursing homes make use of so-called ‘general medicine rounds’. During such a medicine round, a single care worker wheels around a trolley to provide nursing home clients with the necessary medication. Providing medicine at fixed times is a well-considered choice as it has two major advantages. First, making a single care worker responsible for administering medication reduces the risk of



**Fig. 8.2** Variability in demand, based on Moeke and Verkooijen (2013)

interruptions, which can lead to medication errors. Secondly, pooling the provision of medication leads to a more efficient allocation of resources.

### **8.3.2 *Predictability***

If one can predict the variability in demand, it can be planned for. Here, predictability is defined as the degree to which a correct prediction or forecast can be made regarding the healthcare activities required to meet the demand of the nursing home clients. Distinguishing between predictable and unpredictable variability is relevant for nursing home managers and policymakers as the need for reactive decision making (i.e. responsiveness) increases and the potential for efficient and effective planning decreases when healthcare activities become less predictable.

Some of the variability in demand is largely predictable as it can be determined in advance. This type of variability, also referred to as deterministic variability, can be easily planned for.

Unfortunately, in practice, not all demand is fully known in advance. However, by analysing historical data often regular patterns can be identified (i.e. systematic changes) like seasonality and trends. Such regular patterns can be planned for. The peak in demand during the early morning is an example of predictable variability. Hence, it can be expected that during the early morning most clients need help with getting out of bed and personal hygiene.

On the other hand, demand can also be unpredictable. The exact number of random care requests during a certain time-interval is an example of unpredictable variability in demand.

However, although single random events are by definition unpredictable, in many cases the frequency of different outcomes over a large number of events shows relatively less fluctuation and can be described using probability distribution functions.

### **8.3.3 *Scale***

The planning of healthcare activities is also influenced by scale, where scale is defined as the level of aggregation of demand. This phenomenon has been studied extensively, for instance, in the context of inventory pooling (e.g., Benjaafar, Cooper, & Kim, 2005; Eppen, 1979; Yang & Schrage, 2009).

The so-called pooling principle suggests that the relative variability is reduced when demand is aggregated. Essentially, this is due to the possibility that high demand from one client is balanced out by low demand from another client. Statistically, the advantage of pooling is the consequence of a reduction in relative variability as the standard deviation of the sum of two random variables is smaller than the sum of the

two standard deviations (if the coefficient of correlation is smaller than 1). When variability decreases, demand becomes more predictable. In other words, predictability and scale are interrelated concepts. For example, Berg, Schellekens, and Bergen (2005) argues that, in general, healthcare activities are better predictable at a more aggregate level. Furthermore, the enlargement of scale increases the flexibility in planning.

Given adequate numbers, even the emergency consultation or admission is predictable at an aggregate level and can thus be planned for. It can be predicted how many patients will visit an outpatient clinic without a scheduled appointment each day, or how many emergency surgeries come to the hospital daily (Berg et al., 2005, p. 79).

### JUPITER CASE: Effect of Scale

Figure 8.3 provides an example of the effect of scale on flexibility in planning. In each of the two small-scale living facilities of a nursing home department called Jupiter there are six clients in need of care. Each client has his or her own time preference concerning the delivery of morning care and there are only two care workers available. Furthermore, we assume that a care worker spends 30 min per client. When each of the two care workers is assigned to a single living facility, it is not possible to meet the time preferences of all clients. The peaks in demand of facilities 1 and 2 between 7:00 and 7:30 hours and 8:30 and 9:00 h, respectively, cannot be satisfied with the existing capacity. In other words, there are clients who have to wait until the care worker is available to provide the necessary care and/or support. Moreover, a single delay can cause a chain reaction. In this example, small scale planning will result not only in waiting time for clients 2 or 4 and 8 or 11, but also for clients 3, 6, 7, 9 and 10. By merging the planning (i.e. schedule) of the two living facilities, it becomes possible to meet all of the individual time preferences.

Hence, the peaks in demand are balanced out. Advantages that result from carrying out a process on a larger scale are also referred to as ‘economies of scale’.

These principles with respect to scale are of great practical importance, as there is a trend towards small-scale living facilities. Policy makers and nursing home managers should not blindly focus on creating small-scale living facilities, without taking potential economies of scale into account. Hence, creating small-scale living facilities should not become an end in itself (Moeke, 2016).

<b>Small scale living facility 1 (1 care worker)</b>			<b>Small scale living facility 2 (1 care worker)</b>		
Client	Time preference	Bottleneck	Client	Time preference	Bottleneck
1	9:30		7	9:30	
2	7:00	X	8	8:30	X
3	7:30		9	9:00	
4	7:00	X	10	10:00	
5	10:00		11	8:30	X
6	8:00		12	6:30	

<b>Scheduling living facilities 1 &amp; 2 together (2 workers)</b>		
Client	Time preference	Bottleneck
12	6:30	
2	7:00	
4	7:00	
3	7:30	
6	8:00	
8	8:30	
11	8:30	
9	9:00	
1	9:30	
7	9:30	
5	10:00	
10	10:00	

**Fig. 8.3** Increased flexibility in planning due to an increase in scale

## 8.4 Data-Driven Capacity Planning: A Four-Step Approach

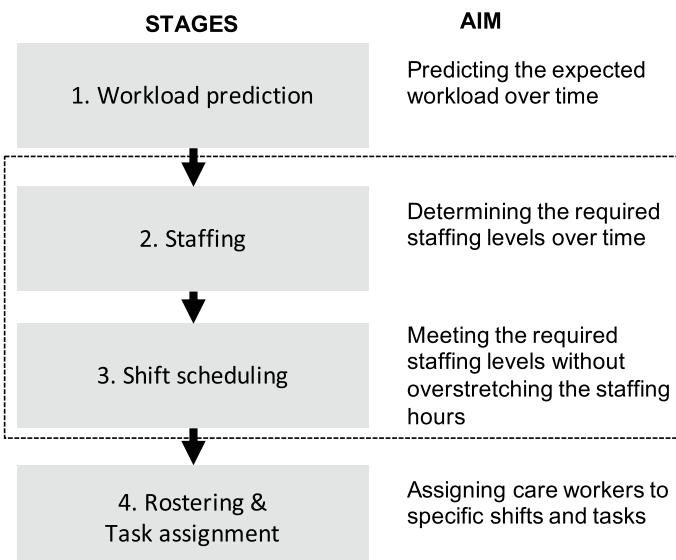
Capacity planning takes place at different organizational levels. Often a distinction is made between strategic, tactical and operational level, which corresponds to the long, middle-long and short term. On each planning level decisions are made that influence the next planning level. Here, the focus lies primarily on capacity planning at a tactical level, i.e., the aim is to determine the required capacity levels for the next weeks or months. This is precisely the time scale that involves making plans that strive to balance between available capacity and variable demand. At a strategic level, it is of primary importance to maintain a properly sized and well composed workforce that meets future demand scenarios. Typically, this is heavily influenced by political and societal developments and the situation at the labour market. Moreover, over the course of the day changes in the usage of capacity may be required due to unforeseen circumstances. This requires real-time control at an operational level.

As mentioned, in this chapter the emphasis lies on the tactical aspects of capacity planning. Following the lines of workforce management in the call centre domain, see e.g. Gans, Koole, and Mandelbaum (2003), the care-related capacity planning process can be divided into four stages: (1) workload prediction, (2) staffing, (3) shift scheduling and (4) rostering and tasks assignment. In the first stage (i.e., workload prediction) historical demand data is analysed, with the aim of predicting the expected

workload over time. The workload predictions form the basis for the second stage (i.e., staffing) where the focus lies on determining the corresponding staffing levels over time in order to meet the demand, thereby taking uncertainty into account. Next, in the third stage, the aim is to develop a shift schedule to meet the staffing levels from the second stage, without over-stretching the available staffing hours. Sometimes, the second and third stages are combined, which will often turn out to be convenient for a nursing home setting. From a methodological perspective, shift scheduling deals with the problem of determining the working shifts (start and end times, breaks, etc.), together with the assignment of the number and type of care workers to each shift.

Finally, in stage four the focus lies on assigning care workers to specific shifts and tasks. More specifically, it deals with the following two questions: Which of the available care workers should be assigned to which shift(s)? And, which of the available care workers should perform which care tasks at which time of the day in order to meet the demand of the nursing home clients as closely as possible? Such task schedules are generated for short periods, i.e., days. We like to note that a nursing home may decide not to assign tasks to care workers in advance. In that case, tasks are being distributed among the team of care workers on the spot (i.e., in real time). Still, the first three steps ensure that supply and demand are sufficiently balanced. Figure 8.4 shows the four stages of the care-related capacity planning process.

All stages are related as decisions at a higher-level stage form the input for the next stage. An optimal use of capacity requires decision making on all stages simultaneously. Due to the analytical complexity, such a fully integrated approach is not (yet) possible.



**Fig. 8.4** Stages of the tactical care-related capacity planning process

The result of the planning cycle above are rosters and task-schedules. This is, however, not yet the end of the story as unforeseen events might occur. Examples of such events are unavailability of care workers due to illness, holidays, and training, sudden changes in client needs, and administrative duties. This requires constant and real-time management of staffing capacity and assigning staff to activities. Also, the total available capacity should be sufficient to cope with shrinkage (see Sect. 8.2). As this involves a substantial amount of time, a good estimate of the fraction of time that care workers spend on non-care-related activities is crucial when determining the required amount of capacity. In addition, also the possibility of absenteeism should be paid attention to by creating some flexibility, e.g. by working with a flex pool. The organization of such kind of flexibility is out of scope of this chapter.

Finally, it should be noted that for the delivery of care and support, most nursing homes make use of the so-called differentiated practice. Based on their education and expertise, care workers are hierarchically divided into four distinct qualification levels (QLs). Depending on the required education and complexity of care, healthcare tasks are assigned to a healthcare worker with that specific qualification level. For comprehensibility reasons, in this chapter, qualification levels are not considered.

### **8.4.1 Workload Prediction**

As the role of capacity planning is to balance capacity with demand, it is crucial to have insight in how the demand behaves over time. Although this may seem evident, it should be envisaged that insight in healthcare demand is often lacking in nursing home settings. Availability of data (or the lack of it) is a key element here. Below, a distinction is made between ‘deterministic demand’ and ‘random demand’.

First, during the day, the majority of the demand is related to activities of daily living (ADLs). Although there may be strong fluctuations in ADL related demand, it is possible to collect the time preferences of each client regarding ADLs and estimate the corresponding care durations.

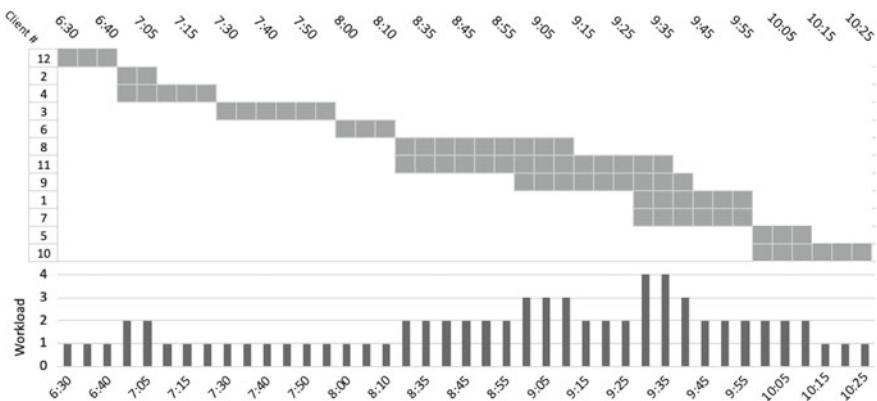
Combining the time preference of an activity with the duration provides an estimate of the workload, i.e., the number of care workers required to meet the demand. In practice, regarding ADLs, we see that there are peaks in the workload especially during the morning and, to a smaller extent, in the evening (e.g., Bekker, Moeke, & Schmidt, 2019; Moeke, Van de Geer, Koole, & Bekker, 2016; Van Eeden, Moeke, & Bekker, 2016).

#### **JUPITER CASE: Workload prediction**

The nursing home department Jupiter (see also Sect. 8.3) aims to deliver the necessary care and support as close as possible to the time preferences of the residents. Figure 8.5 provides an overview of the time preferences regarding ADL care activities for each of the 12 nursing home residents. In addition,

Client	Preferred	Duration	End
12	06:30	15	06:45
2	07:00	10	07:10
4	07:00	25	07:25
3	07:30	30	08:00
6	08:00	15	08:15
8	08:30	45	09:15
11	08:30	70	09:40
9	09:00	45	09:45
1	09:30	30	10:00
7	09:30	30	10:00
5	10:00	15	10:15
10	10:00	30	10:30

**Fig. 8.5** Care activities, time preferences and expected durations



**Fig. 8.6** Workload prediction based on Figs. 8.3 and 8.5 with individual (top) and aggregate (bottom) workloads

for each of the required care activities the care duration is estimated. Based on these data, the manager of Jupiter has made a prediction of the workload. This workload prediction is shown in Fig. 8.6. In this example the expected workload fluctuates between 1 and 4.

Second, there is ‘random demand’. Data involving random demand is scarce, as many organizations do not register such activities. However, some nursing homes make use of a call button system in which every call button request is registered automatically in a central database. In addition, all care workers are equipped with a key card. Every time a care worker enters or leaves the room of a resident, the key card is swiped along an electronic keypad, registering the timestamp and the

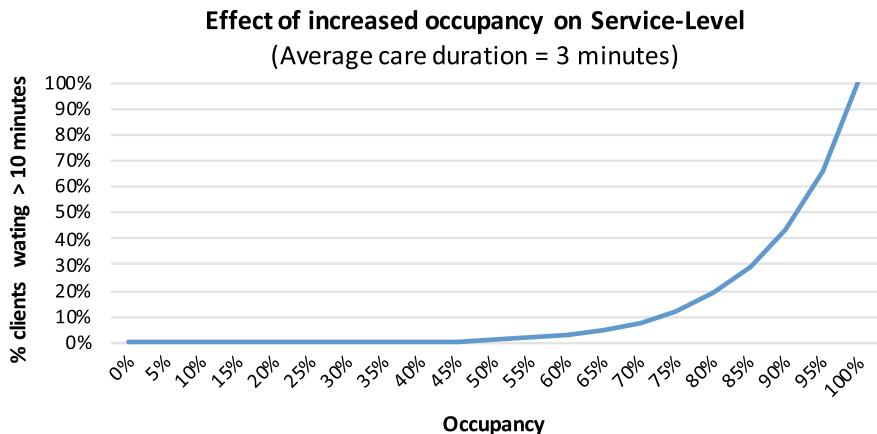
location. If such a system is not available, then an estimate is the best that can be achieved, which should be calibrated based on practical experience.

### 8.4.2 Staffing

Given the workload predictions, the next step is to determine the corresponding staffing levels over time. Again, a difference should be made between deterministic and random demand. If demand is fully deterministic, the ideal staffing level is equal to the workload. Hence, in that idealized situation, staff is fully utilized (occupancy = 100%), whereas there is sufficient staff to meet demand. The problem is that in practice the workload fluctuates widely (see e.g. Fig. 8.2), and the staffing capacity is not flexible enough to follow such a pattern. This issue can be partly covered by shift scheduling in the next stage. In this case, staffing and shift scheduling should be a one-step approach, see also Sect. 8.4.3.

For random fluctuations in demand, some slack capacity is required. Using estimates for the average number of care activities and their average durations, it is possible to estimate the performance (waiting time and occupancy) using queueing models. A particularly useful model that is applied in a variety of service settings is the celebrated M/M/s (or Erlang delay) model. This model requires the arrival rate (i.e. rate at which new care activities occur) and mean duration of an activity and gives, for a given number of care workers, the waiting time (both in terms of its average and the service level). The performance is reasonably robust in its assumptions and easy to apply, e.g. due to online calculators. The underlying assumptions involve a Poisson arrival process of random care activities and exponential durations of such activities. The Poisson arrival assumption is shown to hold in many cases for uncontrolled arrival requests. Also, the model is insensitive to the exponential distribution of care durations, if the coefficient of variation of these durations is close to one. Regarding a nursing home setting, Van Eeden et al. (2016) showed that the M/M/s model is applicable to determine the staffing during the night.

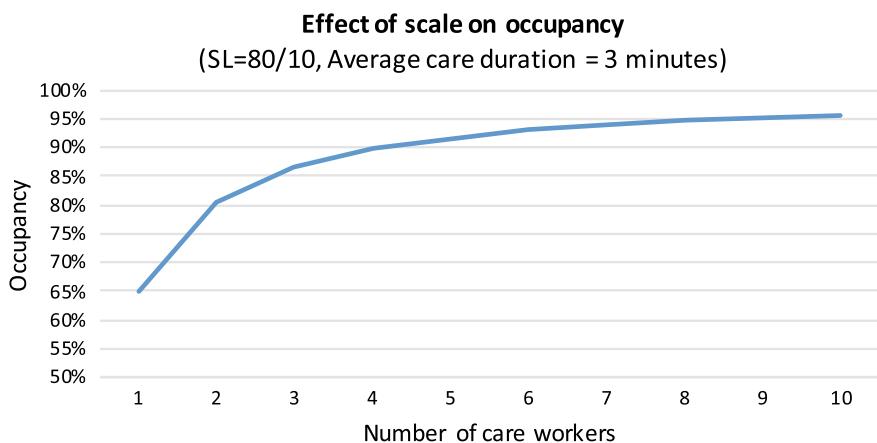
In Fig. 8.7 the impact of the occupancy on the waiting time is visualized. Specifically, it shows the fraction of clients that wait more than 10 min. Based on Van Eeden et al. (2016), it is assumed that random care activities take 3 min on average. The number of care workers is 2, representing staffing overnight. It can be observed that a fast drop in performance occurs when the occupancy is getting close to 100%. This reveals that in situations with random demand, high occupancy is undesirable, as it will lead to excessive waiting. Indirectly, this also influences the wellbeing of care workers and the associated increase in risk of mistakes. In this example, an occupancy of 80% will lead to about 20% of the clients waiting more than 10 min, which seems a reasonable choice. Of course, this concerns a managerial trade off that is also highly affected by the available budget. From a different angle, it could be argued that the results of the queueing analysis should provide the starting point for decisions about available budgets. The shape of the curve in Fig. 8.7 is common for this type of queueing systems. However, it should be stressed that the actual values



**Fig. 8.7** Fraction of clients waiting at least 10 min as a function of occupancy

depend on the assumptions and parameters involved. Hence, it is not possible to give a single occupancy level that is appropriate for all systems.

The influence of parameters is visualized in Fig. 8.8, where the scale of the system is being varied. Again, it is assumed that random care activities take 3 min. Furthermore, an 80/10 service level is used as ‘golden standard’; the aim is to respond to at least 80% of the random care requests within 10 min. The figure shows that if the scale increases, in terms of the number of care workers, occupancy also increases. This reflects economies of scale, where some fluctuations cancel out and the system becomes more efficient (Fig. 8.3). This gain in efficiency is most pronounced for small systems. This implies that organizing care at a small scale may have serious consequences in terms of efficiency. Unless some form of flexibility in the use of



**Fig. 8.8** Impact of scale for a SL where 80% of the clients wait at most 10 min

capacity is organized, it is recommended to avoid such small-scale settings as much as possible.

### 8.4.3 Shift Scheduling

In the stage of shift scheduling, the goal is to translate the staffing levels over the course of a day, that are determined at the previous stage, into shifts that should be carried out by care workers. A shift here specifies the start and end of the working time during a day, and possibly the breaks (which we neglect here). Again, there is a dichotomy between deterministic and random demand. For deterministic demand, it will typically not be desirable to be able to instantly meet all demand; this will lead to inefficient use of staffing capacity due to the rather strong fluctuations in demand compared to the length of a shift. As such, the staffing and scheduling stages should be integrated. Random demand usually has a clearly more stable pattern over the course of a day (including the night). For such demand, it is desirable to have slack capacity at (almost) any moment in time. This setting is much more comparable to traditional service systems, see e.g., Aykin (1996); Bhulai, Koole and Pot (2008); Ernst, Jiang, Krishnamoorthy, and Sier (2004) for some shift scheduling approaches.

Shift scheduling for deterministic demand will be discussed first. More specifically, the following question is considered: which shifts should be carried out to optimize performance? From the perspective of a nursing home client, this means waiting should be avoided as much as possible, where waiting is defined as the difference between actual starting time of a care activity and the preferred starting time. As the waiting time is difficult to determine in an analytical fashion, ‘backlog’ is used as a proxy. In this light, the backlog may also affect the wellbeing of the nursing staff, further supporting this choice.

#### JUPITER CASE: Constant staffing

As many nursing homes, Jupiter tries to stabilize the available capacity. During the period between 6:30 and 10:30, Jupiter works with 4 shifts of 2 h each. Stabilizing capacity then implies that there are two shifts working from 6:30 to 8:30 and two shifts from 8:30 to 10:30. From the workload prediction in Fig. 8.6, it may be observed that during the early shifts there is quite some overcapacity; in fact, the occupancy rate will only be 40% if they adhere to the time preferences of the clients. During the last two shifts, things become tight. In fact, even though both care workers will be constantly busy with providing care and support, they will run 20 min short in time. Moreover, clients 9, 7, 1, 5, and 10 will have to wait yielding a total waiting time of 90 min.

In the case of Jupiter, it can be observed that constant staffing gives rise to high working pressure and long waiting times during the day.

Next, a mathematical optimization model is used to determine the required shifts. To get some intuition for the approach, first the optimization problem is presented; a more general version of the model can be found in Bekker et al. (2019). In this example, it can start the 2-h shifts at every multiple of 15 min. That means that potential starting times are 6:30, 6:45, 7:00, ..., 8:30.

This provides 9 types of shifts. Let  $x_k$  be the number of care workers that are scheduled for shift type  $k$ , with  $k = 1, 2, \dots, 9$ , representing the different starting times; note that  $x_k$  will be zero when this shift is not carried out. To determine the number of care workers that are working at any moment,  $a_{tk}$  is needed, where  $a_{tk} = 1$  if shift type  $k$  works during interval  $t$ , and  $a_{tk} = 0$  otherwise. Here,  $t = 1, \dots, 48$  represents all five-minute intervals between 6:30 and 10:30. The staffing level during interval  $t$  is then  $c_t = \sum_{k=1}^9 x_k a_{tk}$ , for  $t = 1, 2, \dots, 48$ .

To determine the backlog, it is assumed that a team of care workers can all jointly work when there is any workload (this may not always be the case when the workload is due to a single client). The backlog during interval  $t$ , denoted by  $q_t$ , can then be recursively defined, as follows:

$$q_{t+1} = \max\{q_t + L_t - c_t, 0\},$$

$L_t$  is the new amount of work in interval  $t$  that follows from the workload prediction of the first stage, and  $c_t$  is the staffing capacity following from the shift schedule  $x_k$ . Observe that there is an almost linear relation between  $q_{t+1}$  and  $q_t$  (up to the  $\max\{\cdot, 0\}$  operator); this can be exploited in the formulation. Specifically, we can now formulate the shift scheduling problem as a Mixed Integer Linear Programming problem, as follows:

$$\text{Minimise} \sum_{t=1}^{48} q_t \quad (8.1)$$

$$\text{Subject to } c_t = \sum_{k=1}^9 x_k a_{tk} \quad t = 1, \dots, 48 \quad (8.2)$$

$$q_{t+1} \geq q_t + L_t - c_t, \quad t = 1, \dots, 47 \quad (8.3)$$

$$\sum_{k=1}^9 x_k = 4 \quad (8.4)$$

$$c_t \geq 1, \quad t = 1, \dots, 48 \quad (8.5)$$

$$q_t \geq 0, \quad t = 1, \dots, 48 \quad (8.6)$$

$$x_k \in \mathbb{N}_0 \quad k = 1, \dots, 9 \quad (8.7)$$

Equation (8.1) reflects that the goal is to minimize the total backlog. Equation (8.2) gives the staffing capacity at time  $t$  in terms of the shifts. Equation (8.3), jointly with the minimization, provides the recursive relation between the backlogs at successive intervals. Equation (8.4) provides that there are only 4 shifts available, whereas (8.5) guarantees that at any moment at least 1 care worker is available.

Finally, (8.6) provides that backlogs are non-negative and (8.7) makes sure that an integer number of each shift type is scheduled (including 0). From this formulation, it may be observed that alternative choices in the formulation are possible.

Finally, it should be noted that the performance of shifts in terms of waiting times can only be determined after the activities are assigned to care workers. Doing this in an efficient way is the goal of the next stage.

### JUPITER CASE: Shift Scheduling

Using the shift scheduling formulation of Eqs. (1.1)–(1.7), it turns out that it is best to use the shifts as presented in the table below:

Number of shifts	Start time	End time
1	6:30	8:30
1	8:00	10:00
2	8:30	10:30

Using these shifts, the peak in demand between 9:00 and 9:40 can be handled much better. As there is only one care worker between 6:30 and 8:00, clients 4 and 3 now have to wait (which was previously not the case). However, the total waiting time decreases to 35 min, and there is no work remaining at all at 10:30.

#### 8.4.4 Rostering and Task Assignment

In the fourth step of the capacity-planning process, care workers need to be assigned to shifts such that each care worker has a roster. In addition, if desired, care workers should be assigned to specific activities. So far, the steps in the framework of the capacity planning process (Fig. 8.4) can be independently carried out for each day separately. This also applies for assigning activities to staff members. Rostering of staff, on the other hand, should be carried out for consecutive days, weeks, or sometimes even months. In that sense, the time horizon of the rostering process deviates from the other steps.

Composing a roster or timetable for the personnel is a classical topic in workforce management that appears in many industries and organizations. There are

different ways to organize this (see also Koole, 2013). First, it is possible that staff provides preferences and unavailability beforehand. The rostering is then a complex scheduling or timetabling problem, requiring an advanced optimization algorithm to determine a timetable that attempts to satisfy all constraints and preferences of the staff as much as possible. We refer to Burke, De Causmaecker, Berghe, and Van Landeghem (2004) for an overview of scientific literature in this area. A disadvantage of this approach is that it is often difficult to quantify the perceived quality of a roster (see e.g. Smet, Martin, Ouelhadj, Ozcan, & Berghe, 2012). A second option is that staff can choose their shifts on some auction system (see e.g. De Grano, Medeiros, & Eitel, 2009). Third, assignment of nurses to shifts can be done based on a self-rostering system. This approach has the advantage that the staff has direct control over their schedule and can therefore balance their personal and professional lives. This approach is of course more of an organizational nature than a quantitative approach. See e.g. Bailyn, Collins, and Song (2007) for a reported pilot on self-rostering.

The assignment of tasks to care workers is more specific for a nursing home setting. Specifically, the ‘route’ of each care worker should be decided upon, meaning that each activity should be assigned to one care worker next to the starting time of the activity. This problem can be viewed as an unrelated parallel machine scheduling problem, but the performance measure crucially differs. In machine scheduling problems, the performance is typically in terms of the make-span (i.e. time the last activity finishes), whereas we are interested in the waiting time of clients (i.e. delay in starting activity compared to the preferred activity time). Another related area is home care scheduling, where care workers visit clients at home preferably within a time window indicated by the client. The study of Mankowska, Meisel, and Bierwirth (2014) shows an interesting example of a home care task assignment problem involving time windows. From the literature it becomes evident that the task assignment problem is NP-hard, implying that large (real life) instances cannot be solved to optimality. Compared to home care, an advantage of nursing homes is that distances, and thus travel times, between clients are much smaller. As such, it seems easier to develop a fast task assignment heuristic with reasonable performance.

Let us now specify a simple and greedy task assignment heuristic. With such a heuristic it is also possible to determine waiting times for activities (see the end of Algorithm 1). Moreover, it may provide an initial solution for an optimization procedure. The greedy heuristic, shown in Algorithm 1, starts at 6:30 and iterates through time, here in time steps of 5 min. At every time instant, the algorithm first updates which activities finish, then updates the status of the care workers (including possible starting and ending of shifts), and finally determines which activities can start and by which care worker this is carried out. This final step is the most interesting. The activities will be inspected in a specific order indicating their priority. This priority can be influenced by sorting the preferred activity schedule. An appealing way to sort activities is by:

**Algorithm 1** Greedy task scheduling algorithm

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```

initialize care workers status, waiting list
sort preferred activity schedule           ▷ use heuristic for smart sorting
for  $t = 6:30, 6:35, \dots, 10:30$  do
    if activities finish at  $t$  then finish these activities
    update care worker status                 ▷ incl. starts and ends of shifts
    if there are activities that may start at  $t$  then
        if there are idle care workers then
            Select care worker()          ▷ may involve different heuristic rules
        else
            add activity to waiting list
        update care worker status & waiting list
    calculate performance measures

```

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Preferred starting time: activities with an earlier preferred starting time should start first, i.e., First Come First Served (FCFS). Short activities first, as this will result in less overall waiting, i.e., Shortest Job First (SJF).

Next, if multiple care workers are available, it needs to be determined which care workers will take care of the next activity. In Algorithm 1, this is indicated by a Select care worker procedure. A simple rule would be to assign an activity to an arbitrary care worker or to the care worker that is idle for the longest time. However, it may involve more complex rules taking e.g. the remaining length of the shift, or the amount of work carried out so far into account. For instance, next to availability, a possible requirement is that a care worker may only start an activity if the activity will finish before the end of a shift (or by the care worker that exceeds the end of the shift by the smallest amount). Another assignment rule could be to assign an activity to the care worker with the smallest occupancy so far. Of course, mixtures of such rules can also be constructed, depending on desired criteria.

Another option for improvement is to start some activities before their preferred activity time, in order to avoid delays later. To optimize the task assignment, the preferences between waiting and earliness should be quantified; for example, all deviations from the preferred activity time may be valued equally bad. In that case, an optimal task assignment should minimize the deviations from the preferred activity time, by assigning activities to care workers and determining their starting time. Another performance measure might be to balance the workload among care workers (or a mixture of these performance measures). Due to complexity of the optimization problem, we typically must rely on heuristic solution methods for real life instances; see Rasmussen, Justesen, Dohn, and Larsen (2012) for an example of an advanced exact solution method for home care scheduling and routing. Another interesting study in the home care scheduling area is that of Mankowska, Meisel, and Bierwirth (2014), which develop a local search heuristic that tries to improve solutions by searching for better solutions in the neighbourhood of the current one. See e.g. Fikar and Hirsch (2017) for a review of routing and scheduling the home care setting. In

particular, it becomes clear that there is a variety of (heuristic) solution procedures for related problems.

### JUPITER CASE: Task assignment

To get a good feeling for the impact of the planning process, Jupiter uses three different scenarios. The first two scenarios use a greedy task assignment procedure, whereas the third scenario is based on an optimized approach. Moreover, the first scenario uses constant staffing, whereas the second and third scenario use the optimized staffing levels.

Scenario	Staffing	Task assignment	Waiting time (min.)	Earliness (min.)	Overtime (min.)
1	Constant	Greedy	90	0	20
1	Optimized	Greedy	35	0	0
2	Optimized	Optimized	5	15	0

From the results, we see that the largest gain in performance is achieved by determining the shifts appropriately. There is potential for optimizing task assignment, however the potential gains (in particular in practice) are smaller.

Finally, it should be mentioned that the task assignment procedure assigns activities to care workers in advance. This is possible when there is hardly any random demand during the considered time window or when there are separate care workers that handle random demand. If this do not apply, then the nature of the optimization problem changes. Moreover, it is then questionable what the added value of a predetermined task assignment is. The random demand will lead to changes in the assignment that was constructed in advance and will require real-time updating of plans. Although the real-time control of such a system may give rise to interesting optimization problems, embedding real-time optimization approaches in software for nursing homes is a solution for the more distant future.

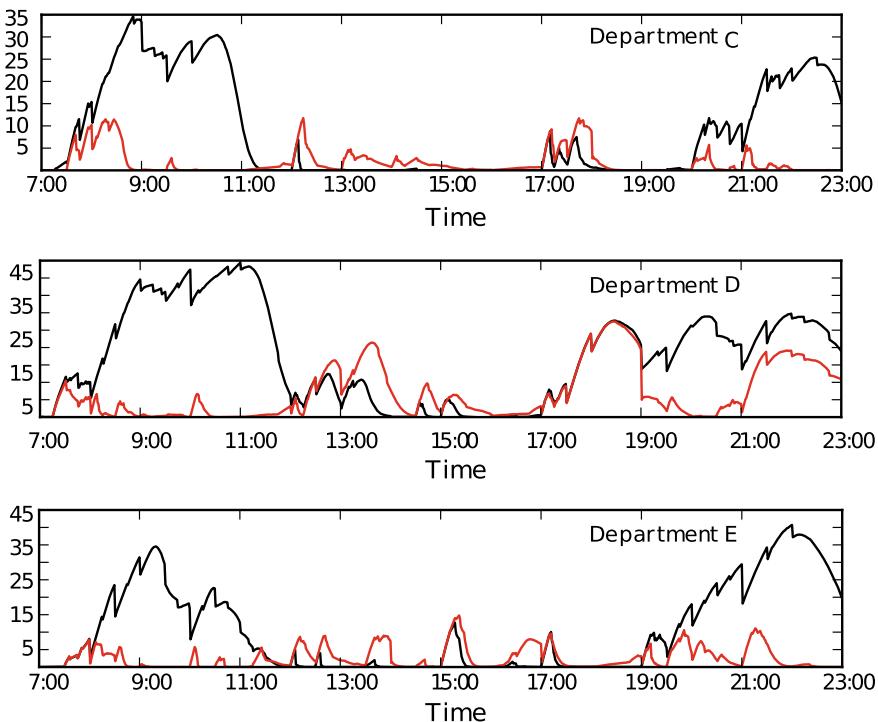
## 8.5 Value and Challenges of Data-Driven Capacity Planning

Recent studies show that nursing homes could greatly benefit from applying data-driven capacity planning approaches. A good example is the study of Bekker et al. (2019) in which the potential gain of data-driven shift scheduling for three independent nursing home departments of single Dutch nursing home has been investigated. Figure 8.9 shows the main numerical results of this study. For all three departments substantial improvements can be observed, both in terms of average waiting time as

Current	Dep. C	Dep. D	Dep. E
Avg. waiting time	9.59 minutes	14.49 minutes	10.34 minutes
15 min. SL	78.5%	70.9%	77.4%
Optimal	Dep. C	Dep. D	Dep. E
Avg. waiting time	2.89 minutes	7.20 minutes	3.37 minutes
15 min. SL	96.0%	83.5%	95.0%

**Fig. 8.9** Overview main results study of Bekker et al. (2019)

well as in service level. The waiting time across the day, for each of the three departments, is visualized in Fig. 8.10. As expected, waiting reduces significantly during rush hours, whereas there is only a slight increase in waiting time during non-rush hours. For example, during the morning rush hour the maximum average waiting times for departments C, D and E drop from 35, 45 and 35 min to around 12, 15 and 8 min, respectively. Furthermore, as the proposed staffing pattern is more balanced, it created a more evenly spread workload for the care workers. The added value of a



**Fig. 8.10** Waiting time (in min.) during the day: current (black) vs optimal (red) for departments C, D and E (Bekker et al., 2019)

well-balanced workload should by no means be underestimated in the light of care workers' wellbeing.

An important first step towards data-driven capacity planning would be to introduce objective performance measures regarding timely delivery of care and support. Consequently, nursing homes should have a sufficient information system to make it possible to work with those types of performance measures. However, in practice, there is a lack of reliable and valid data. Fortunately, due to developments in technology (e.g., ICT support for domestic tasks, robotics and registration systems), data generation is increasing rapidly. As such, an important future challenge will be to transform these data into tools that support decision making. This will be a challenging task as nursing home processes have many complex characteristics and research on nursing home operations from an applied mathematical perspective is still in its infancy.

Furthermore, in order to implement data-driven capacity planning, sufficient staffing flexibility must be ensured. In this case, a distinction should be between numerical and functional flexibility. Numerical flexibility can be defined as the ability of teams to adjust the number of workers, or the level of worked hours, in line with changes in the level of demand for them (Atkinson, 1987). Numerical flexibility could, for example, be achieved by creating a flex pool. A flex pool consists of care workers who are 'on call' and available for work as and when required. Supplementing a core team of full-time care workers with flex pool workers allows nursing home managers to balance their staffing levels better over the course of a day. Functional flexibility can be defined as internal flexibility and refers to the ability of care workers to perform a broader range of tasks, which makes it possible to assign them to different tasks and jobs (Atkinson, 1987).

## References

- Atkinson, J. (1987). Flexibility or fragmentation? The United Kingdom labour market in the eighties. *Labour and Society*, 12(1), 87–105.
- Aykin, T. (1996). Optimal shift scheduling with multiple break windows. *Management Science*, 42(4), 591–602.
- Bailyn, L., Collins, R., & Song, Y. (2007). Self-scheduling for hospital nurses: An attempt and its difficulties. *Journal of Nursing Management*, 15(1), 72–77.
- Bekker, R., Moeke, D., & Schmidt, B. (2019). Keeping pace with the ebbs and flows in daily nursing home operations. *Health Care Management Science*, 22(2), 350–363.
- Benjaafar, S., Cooper, W. L., & Kim, J. S. (2005). On the benefits of pooling in production-inventory systems. *Management Science*, 51(4), 548–565.
- Berg, M., Schellekens, W., & Bergen, C. (2005). Bridging the quality chasm: Integrating professional and organizational approaches to quality. *International Journal for Quality in Health Care*, 17(1), 75–82.
- Bhulai, S., Koole, G., & Pot, A. (2008). Simple methods for shift scheduling in multiskill call centers. *Manufacturing & Service Operations Management*, 10(3), 411–420.
- Burke, E. K., De Causmaecker, P., Berghe, G. V., & Van Landeghem, H. (2004). The state of the art of nurse rostering. *Journal of Scheduling*, 7(6), 441–499.

- De Bruin, A. M., Van Rossum, A. C., Visser, M. C., & Koole, G. M. (2007). Modelling the emergency cardiac in-patient flow: An application of queuing theory. *Health Care Management Science*, 10(2), 125–137.
- De Grano, M. L., Medeiros, D. J., & Eitel, D. (2009). Accommodating individual preferences in nurse scheduling via auctions and optimization. *Health Care Management Science*, 12(3), 228.
- Di Giorgio, L., Filippini, M., & Masiero, G. (2014). Implications of global budget payment system on nursing home costs. *Health Policy*, 115(2–3), 237–248.
- Eppen, G. D. (1979). Note—Effects of centralization on expected costs in a multi-location newsboy problem. *Management Science*, 25(5), 498–501.
- Ernst, A. T., Jiang, H., Krishnamoorthy, M., & Sier, D. (2004). Staff scheduling and rostering: A review of applications, methods and models. *European Journal of Operational Research*, 153(1), 3–27.
- Fikar, C., & Hirsch, P. (2017). Home health care routing and scheduling: A review. *Computers & Operations Research*, 77, 86–95.
- Galbraith, J. R. (1973). *Designing complex organizations*. Addison-Wesley Longman Publishing Co., Inc.
- Galbraith, J. R. (1974). Organization design: An information processing view. *Interfaces*, 4(3), 28–36.
- Gans, N., Koole, G., & Mandelbaum, A. (2003). Telephone call centers: Tutorial, review, and research prospects. *Manufacturing & Service Operations Management*, 5(2), 79–141.
- Greenglass, E. R., Burke, R. J., & Fiksenbaum, L. (2001). Workload and burnout in nurses. *Journal of Community & Applied Social Psychology*, 11(3), 211–215.
- Hamers, J. P. H. (2011). *De intramurale ouderenzorg: Nieuwe leiders, nieuwe kennis, nieuwe kansen*. Den Haag: Raad voor de Volksgezondheid en Zorg.
- Jack, E. P., & Powers, T. L. (2009). A review and synthesis of demand management, capacity management and performance in health-care services. *International Journal of Management Reviews*, 11(2), 149–174.
- Joustra, P., Van der Sluis, E., & Van Dijk, N. M. (2010). To pool or not to pool in hospitals: A theoretical and practical comparison for a radiotherapy outpatient department. *Annals of Operations Research*, 178(1), 77–89.
- Koole, G. (2013). *Call center optimization*. Lulu. com.
- Kuntz, L., Mennicken, R., & Scholtes, S. (2015). Stress on the ward: Evidence of safety tipping points in hospitals. *Management Science*, 61(4), 754–771.
- Litvak, E., & Long, M. C. (2000). Cost and quality under managed care: Irreconcilable differences. *American Journal of Managed Care*, 6(3), 305–312.
- Mankowska, D. S., Meisel, F., & Bierwirth, C. (2014). The home health care routing and scheduling problem with interdependent services. *Health Care Management Science*, 17(1), 15–30.
- Moeke, D. (2016). *Towards high-value(d) nursing home care: Providing client-centred care in a more efficient manner* (Doctoral dissertation). Available at SSRN 3116326.
- Moeke, D., Van de Geer, R., Koole, G., & Bekker, R. (2016). On the performance of small-scale living facilities in nursing homes: A simulation approach. *Operations Research for Health Care*, 11, 20–34.
- Moeke, D., & Verkooijen, L. (2013). Doing more with less: A client-centred approach to healthcare logistics in a nursing home setting. *Journal of Social Intervention: Theory and Practice*, 22(2), 167–187.
- Smet, P., Martin, S., Ouelhadj, D., Ozcan, E., & Berghe, G. V. (2012, February). *Investigation of fairness measures for nurse rostering*. Paper presented at the 9th International Conference on the Practice and Theory of Timetabling, Son, Norway. Retrieved from [https://www.patatconference.org/patat2012/proceedings/3\\_8.pdf](https://www.patatconference.org/patat2012/proceedings/3_8.pdf).
- Rai, G. S. (2010). Burnout among long-term care staff. *Administration in Social Work*, 34(3), 225–240.

- Rasmussen, M. S., Justesen, T., Dohn, A., & Larsen, J. (2012). The home care crew scheduling problem: Preference-based visit clustering and temporal dependencies. *European Journal of Operational Research*, 219(3), 598–610.
- Rodriguez-Osorio, C. A., & Dominguez-Cherit, G. (2008). Medical decision making: Paternalism versus patient-centered (autonomous) care. *Current Opinion in Critical Care*, 14(6), 708–713.
- Sanford, A. M., Orrell, M., Tolson, D., Abbatecola, A. M., Arai, H., Bauer, J. M., Cruz-Jentoft, A. J., Dong, B., Ga, H., Goel, A., Hajjar, R., Holmerova, I., Katz, P. R., Koopmans, R. T., Rolland, Y., Visvanathan, R., Woo, J., Morley, J. E., & Vellas, B. (2015). An international definition for “nursing home”. *Journal of the American Medical Directors Association*, 16(3), 181–184. <https://doi.org/10.1016/j.jamda.2014.12.013>
- Tønnessen, S., Nortvedt, P., & Førde, R. (2011). Rationing home-based nursing care: Professional ethical implications. *Nursing Ethics*, 18(3), 386–396.
- Upshur, R. E., Moineddin, R., Crighton, E., Kiefer, L., & Mamdani, M. (2005). Simplicity within complexity: Seasonality and predictability of hospital admissions in the province of Ontario 1988–2001, a population-based analysis. *BMC Health Services Research*, 5(1), 13.
- Van Eeden, K., Moeke, D., & Bekker, R. (2016). Care on demand in nursing homes: A queueing theoretic approach. *Health Care Management Science*, 19(3), 227–240.
- Van Oostrum, J. (2009). Applying mathematical models to surgical patient planning. ERIM Ph.D. Series in Research in Management, 179 (No. EPS-2009-179-LIS), Erasmus University of Rotterdam, the Netherlands.
- Yang, H., & Schrage, L. (2009). Conditions that cause risk pooling to increase inventory. *European Journal of Operational Research*, 192(3), 837–851.

# Chapter 9

## Digital Health Technology Implementation: Is It Effective in a Healthy Healthcare Perspective?



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**Abstract** Digital health technological initiatives have been sprouting during the last years in most countries. The implementation of such technologies is thought to have the potential to transform the organization of healthcare while promoting a healthy workforce and ensuring access to affordable quality care for all. Nevertheless, evidence on the effectiveness of digital health technologies regarding system efficiency, quality of care and health workers' health and well-being, is still fragmented and scarce. Therefore, there is still a lack of evidence-based information on the impact of these new technologies within the Healthy Healthcare perspective. Taking a context-sensitive approach, such as proposed by the Healthy Healthcare perspective, may bring insights on how to implement digital health technologies more efficiently while producing evidence of their impact on the three pillars of this innovative concept.

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## 9.1 Introduction

Throughout existence, humans have used knowledge and skills to develop tools, devices, medicines, procedures, guidelines, and systems to solve real-world problems (Carroll, 2017; Rivers, 2005; World Health Organization, 2019a). As emphasized in Chap. 2, some innovations have changed the course of human history, and unquestionably the personal computer and its applications have revolutionized healthcare systems and services the most (De Rosis and Seghieri, 2015). Digital health technological initiatives have been sprouting during the last years in most countries. In the same vein, current developments in healthcare sectors worldwide show that the rise of digital platforms and technology for health has been dramatic during the past decade. By the 2010s, the digitalization of healthcare became inevitable. Huge amounts of data were collected and analysed leading to an exponential increase in medical knowledge (Meskó et al., 2017). The main aim of this digitalization is to transform the organization of healthcare, while simultaneously promoting a healthy workforce, quality of care and ensuring access to affordable quality care for all. Central drivers of these initiatives are strengthening the patients' role, finding ways to capitalise better on public and private resources, facilitating better knowledge aggregation across communities and, providing means for wider and more radical service innovation. These innovations support communication within healthcare, information sharing, distributed data management, diagnosis, treatment and peer-to-peer patient networks or flexibly organized health communities.

Technology is a complex concept and is generally defined as “the practical application of knowledge especially in a particular area” (Carroll, 2017; Merriam-Webster, 2019). Digital health technologies, also referred to as electronic health (e-health) or health information and communication technologies (health ICT), are a set of tools that have been continuously developed to store and share health information in a more efficient way to support decision making (AHRQ, 2019a, b; HealthiT.gov, 2019a; Kruse and Beane, 2018; Meskó et al., 2017; World Health Organization, 2019a).

In healthcare field, health workers and patients have been struggling to make decisions with the overload of information that is available on literature and internet, while policy and decision makers have been hesitant to implement new technologies given the limited resources (Meskó et al., 2017). The adoption of such technologies is thought to have the potential to improve health workers' performance, the quality of patient care as well as organisational practice within the system-based understanding of Healthy Healthcare. One should bear in mind, however, that in spite of the apparent advantages of digital health technologies, there is a need to identify the trade-off, as the implementation can also lead to additional costs and may even negatively affect health workers' health, which in turn may decrease efficiency in the healthcare and

leads to poorer quality of patient and/or healthcare in general. Even though, it is expected that these innovations can change for a better standard of healthcare.

The current chapter provides an overview of digital healthcare technologies and brings together findings that address the technical/quality of healthcare, social/worker, and organisational aspects together and how this affects Healthy Healthcare.

## 9.2 Modalities of Digital Health Technologies

Different modalities of digital health technologies have been increasingly applied in the context of healthcare (Table 9.1). The goal of these technologies is to improve and optimize the quality of care and the efficiency of health systems, bringing also the potential to positively impact health workers' health and well-being by reducing their workload and job demands for instance by reducing the number of repetitive tasks. In this part of the chapter, a definition of each modality of digital health technology is provided and a summary is provided of the available evidence on the use of these digital health technologies regarding the three pillars of the Healthy Healthcare concept including quality of patient care, organisational practice and worker's health and well-being.

Digital platforms are popular and are defined as network-enabled information technology systems that are shared, evolvable and allow the emergence of derivative products and services. In healthcare field, digital platforms have been used to deliver online psychological interventions (web-based interventions) or to record mood, behaviour and activities in real time (Basavarajappa and Chand, 2017; Iorfino et al., 2019; Pugatch et al., 2018). For many health organizations digital platforms are attractive as they offer a digital infrastructure that is adaptable, scalable, and extensible to many other parties. Nevertheless, the evidence on the impact of digital platforms on patient safety is limited (Chambers et al., 2019). Also, there is inconsistent evidence of their effects on service use and organisational practice (Chambers et al., 2019). Evidence on the effect of using digital platforms on worker's health and well-being is still missing.

### 9.2.1 Patient Electronic Health Records (EHR)

EHRs have been implemented to improve quality of patient care (Chaudhry et al., 2006; De Rosis and Seghieri, 2015; Kruse and Beane, 2018). Patient EHRs can facilitate guideline adherence in clinical practice and reduce medical errors through better knowledge management (De Rosis and Seghieri, 2015). They can also contribute to the integration and continuity of care with improved communication among physicians, patients and specialists and therefore, improve organizational practice

**Table 9.1** Modalities of digital health technologies and definition

Digital health technology	Definition
Electronic health records (EHR) (also referred to as health information technology)	Digital version of a patient paper record containing a patient's medical history, diagnoses, medications, treatment plans, immunization dates, allergies, radiology images, laboratory and test results. It allows access to evidence-based tools that providers can use to make decisions about a patient's care and to automatize and streamlining provider workflow
Computerized provider order entry (CPOE) (AHRQ, b) (also referred to as health information technology)	System which allows health professionals to order exams electronically, with the orders transmitted directly to the recipient at the point-of-care
Health information exchange (HIE) (HealthIT.gov, 2019a) (also referred to as health information technology)	System which allows health professionals, health care providers and patients to securely access and share a patient's vital medical information electronically
Telemedicine/Telehealth (WHO, 2019a)	The remote delivery of health care services using information and communication technologies for the exchange of information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities
Mobile-health (m-health) (O'Donovan et al., 2015; Park, 2016)	Mobile computing, medical sensor, and communication technologies for healthcare. Medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants, and other wireless devices
Robots (van Wynsberghe, 2013)	Machines designed for use in home, hospital, or other settings to assist in, support, or provide care
Virtual reality (Dascal et al., 2017)	Refers to the interactions between an individual and a computer-generated environment stimulating multiple sensory modalities, including visual, auditory, or haptic experiences
Wearables sensors (Haghi et al., 2017; Yetisen et al., 2018)	Devices measuring physical status, recording physiological parameters, or informing schedule for medication
Internet of things (IoT) (Dimitrov, 2016)	Network of devices such as wearables sensors and m-health applications that contain electronics, software, actuators, and connectivity which allows these devices to connect, interact and exchange data
Artificial intelligence applications (Goodfellow et al., 2016)	Field of science that investigates how computers could learn from experience and understand the world in terms of a hierarchy of concepts, with each concept defined through its relation to simpler concepts

(continued)

**Table 9.1** (continued)

Digital health technology	Definition
Machine learning (Goodfellow et al., 2016; Langley, 2011)	Field of artificial intelligence focused on study of algorithms and statistical models to make prediction based on data. In the traditional methods the algorithms were based on traditional statistical modelling techniques such as logistic regression, naïve Bayesian classification, random forest, principal component analysis. In the deep learning, the computer system improves its performance automatically based on the patterns of the data

(De Rosis and Seghieri, 2015). These positive findings have been confirmed by systematic reviews, however whether and how healthcare institutions can achieve similar benefits in terms of costs are still unclear (Chaudhry et al., 2006; Kruse and Beane, 2018). Nevertheless, a systematic reviewed has shown that health information technology applications with patient-centred care related components have a positive effect on healthcare outcomes (Finkelstein et al., 2012).

### 9.2.2 Computerized Provider Order Entry (CPOE)

CPOE has been implemented to allow health professionals to directly order exams electronically (Schiff et al., 2015). CPOE can help reduce errors by ensuring that providers produce standardized, legible, and complete orders (AHRQ, 2019a, b; HealthIT.gov, 2018). CPOE can also help get medication, laboratory, and radiology orders to pharmacies, laboratories, and radiology facilities faster, thereby saving time and improving efficiency (HealthIT.gov, 2018). Therefore, CPOE has the potential to improve two pillars of the Healthy Healthcare perspective, namely quality of patient care and organizational practice. A systematic review has found preliminary benefits in the use of electronically available inpatient data systems on the quality of care (Reis et al., 2017). Nonetheless, evidence on the (cost)-effectiveness of CPOE is still limited (Prgomet et al., 2017; Sadoughi et al., 2018).

### 9.2.3 Electronic Health Information Exchange (HIE)

HIE has been designed to allow physicians, nurses, pharmacists, other healthcare providers and patients to securely access and share patients' vital medical information electronically, thereby improving the speed, quality, safety and cost of patient care and, ultimately, improving organisational practice (Feldman et al., 2014). Despite

the potential benefits, evidence on the effectiveness of HIE is still limited (Prgomet et al., 2017; Sadoughi et al., 2018).

#### **9.2.4 *Telemedicine/Telehealth***

This technology has been adopted to optimize organizational practice by allowing distant providers to evaluate, diagnose, treat, and provide follow-up care to patients (Dupлага and Zieliński, 2006; World Health Organization, 2010). The Telessaúde project in Brazil is one of several examples of how telehealth can optimize the flow of patients between primary and specialized levels of care (Harzheim et al., 2016). Clinicians at primary care can get advice on how to manage specific patients' cases at primary care by telephone avoiding unnecessary referrals. By increasing the accessibility of medical care, telemedicine can enable patients to seek treatment earlier and adhere better to their prescribed treatments and improve the quality of life for patients with chronic conditions (World Health Organization, 2010). Despite large number of studies and systematic reviews on the effects of telemedicine, high quality evidence to inform policy decisions on how best to use telemedicine to improve organizational practice in healthcare is still lacking (Delgoshaei et al., 2017; Ekeland et al., 2010).

#### **9.2.5 *Mobile-Health Applications***

Mobile-health applications have been used to help patients and clinicians to enhance the management of chronic conditions (Yi et al., 2018). A wide range of internet-based programs is available for health-related behaviours, disease prevention and treatment (Rogers et al., 2017). These programs have shown to be effective on improving quality of patient care in clinical trials but, they are usually not implemented in daily practice (Rogers et al., 2017).

Efforts have been made to include health workers as target population of web-based interventions (Kuster et al., 2017; Sassen et al., 2012). Nevertheless, there is low-quality evidence with conflicting results regarding the effectiveness of web-based interventions compared with in-person management for reducing work stress among employees (Kuster et al., 2017).

#### **9.2.6 *Robots***

Robots have been developed to perform repetitive tasks in the assistance of elderly patients, holding the potential to make aged-care jobs less demanding (Alaiad and

Zhou, 2014; Wachsmuth, 2018). Furthermore, robotic surgery has expanded exponentially in many hospitals worldwide (AHRQ, 2016; Mayo Clinic, 2019). Such surgeries have been shown to shorten hospital stays, to decrease the number of surgery complications and to allow surgeons to perform fine tasks (Hussain et al., 2014). They also enable surgeons to perform procedures on patients across long distances, scaling up the patient's access to high quality healthcare (Choi et al., 2018). These benefits regarding organisational practice, however, must be balanced against the increased intraoperative times, financial costs and the increased training burden associated with robotic techniques (Hussain et al., 2014).

### ***9.2.7 Virtual Reality (VR)***

VR has been used to distract children during wound care and in exposure therapy for phobias or posttraumatic stress disorder as a substitute for imagination of a feared environment (Dascal et al., 2017). VR has also been applied to train professionals and students by providing them potentially real experiences/practice without harmful consequence for patients (Kyaw et al., 2019). There is evidence suggesting that VR improves knowledge and skills compared to traditional education, however the effectiveness of VR regarding other outcomes such as attitude, satisfaction, cost-effectiveness, and organisational practice or behaviour change need further investigation (Kyaw et al., 2019).

### ***9.2.8 Wearables***

These are non-invasive devices used to acquire, transmit, process, store, and retrieve health-related data (Kim et al., 2019). These tools have helped to improve the precision of measurements of physical/biological functions (e.g. heartbeats, sleeping hours, monitoring alcohol in sweat) and with reminding patients' when to take their medication (Haghi et al., 2017; Yetisen et al., 2018). Wearables have been increasingly applied in a diversity of clinical settings aiming at improving quality of patient care. For instance, Fan et al. evaluated the performance of wireless capsule endoscopy and concluded that this technology has a high level of accuracy in detecting small intestinal ulcers (Fan et al., 2018). Another application of wearables is in the field of rehabilitation (Yetisen et al., 2018). Lin et al. studied the use of wearables in stroke patients receiving physiotherapy, which provided real-time information that could be used to monitor motion and functional assessment (Lin et al., 2018).

### ***9.2.9 Internet of Things (IoT)***

IoT facilitate the monitoring of patients with clinical conditions that ideally require close follow-up (Jagadeeswari et al., 2018). During the last decade, some studies were published on the application of IoT to improve the quality of patient care. For example, Vilallonga et al. compared timely measurement of anthropometric parameters among morbidly obese patients using a Wi-Fi scale with the standard follow-up procedure (Vilallonga et al., 2013). Both patients and physicians received timely information on the patient's weight, body mass index and percentage of body fat during the pre- and post-operative period of bariatric surgery. Most of the patients receiving both types of treatment were satisfied with the follow-up they were assigned to, but patients allocated to IoT group were more satisfaction, because follow-ups tended to be less time consuming. For preventive purposes, IoT has also been found to be promising. In a recent study, IoT was applied to monitor the risk of injury among professional athletes. The detection of instantaneous change in body mass acceleration by smartphone accelerometers proved to be a strong predictor of later injury, thus, raising the possibility of early initiation of appropriate interventions (Wilkerson et al., 2018). There are also some examples available of using IoT to improve organisational practice, such as to automate tasks that are part of the care for hospitalized patients. For example, IoT has been used to optimize intravenous infusion management system, where the infusion machines were equipped with sensors and a wireless system capable of providing real-time infusion information to electronic medical records (EMR) allows prompt recognition of abnormal conditions during infusion (Gao et al., 2018). Another example is the automated monitoring of a broad set of data in Intensive Care Units (ICU) (Bhatia and Sood, 2016). In ICUs, many kinds of data are collected, including data from electrocardiographs (ECG), electroencephalograph (EEG), blood pressure and temperature monitoring, respiratory rate, as well as information related to environmental conditions and the administered medications. In a highly complex setting, such as an ICU, presenting all acquired information in an accessible way requires several information processing steps, namely: (1) data acquisition by smart sensors, (2) data synchronization, (3) event classification, (4) cloud storage, (5) information mining, and (6) information analysis. Therefore, it is a challenge to implement IoT systems in healthcare systems and considering the three pillars of the Healthy Healthcare perspective of quality of patient care, organisational practice and workers' health and well-being.

### ***9.2.10 Deep Learning Algorithms***

Such algorithms are aimed at improving the accuracy of diagnoses based on radiological exams, histopathology or even clinical symptoms, have been extensively studied in recent years. Multiple studies have assessed the performance of deep learning algorithms in accurately diagnosing a variety of clinical conditions, such as

diabetic retinopathy (Abràmoff et al., 2016), age-related macular degeneration (Yoo et al., 2019), glaucoma (Chen et al., 2015), coronary artery disease (Betancur et al., 2019), melanoma (Bhattacharya et al., 2017), breast cancer (Araújo et al., 2017), prostate cancer (Takeuchi et al., 2019), osteosarcoma (Mishra et al., 2018), lung node detection (Tan et al., 2019), nasopharyngeal malignancies (Li et al., 2018a, b), bone age assessment (Kim et al., 2017; Lee et al., 2017), amyotrophic lateral sclerosis (Sengur et al., 2017), mild cognitive impairment and Alzheimer dementia (Li et al., 2015), dermatopathology such as basal cell carcinomas, dermal nevi, and seborrheic keratoses (Olsen et al., 2018). Altogether, these studies show that deep learning algorithms perform at least as good as humans in recognizing disease patterns but are far more efficient due to reductions in the time needed to complete the work process, which in turn has the potential to improve organisational practice and quality of patient care. Another example of the use of deep learning algorithms is the development of predictive models for prognostic purposes. Deep learning algorithms have been developed to predict patients risk of worsening clinical status in ICUs (Dervishi, 2017), early readmission in hospital (Futoma et al., 2015), in-hospital cardiac arrest (Kwon et al., 2018), and the manifestation of early stages of hypertension (Krittanawong et al., 2018). Results of these studies show that deep learning algorithms outperform previously employed strategies, such as regression models or empirical assessment by health professionals, in predicting their outcomes. In the field of rehabilitation, deep learning has been used to fine-tune movements of prosthetic hands with positive results (Li et al., 2018a, b). Deep learning has also been used for the identification of anatomical landmarks, thereby providing more precise references for robot-assisted or standard surgical procedures and other types of interventions (Sa et al., 2017; Sarikaya et al., 2017). Deep learning algorithms have also been used to predict the position of peripherally inserted central catheter (Lee et al., 2018).

Up until now, studies in the field digital health technologies have primarily focused on two pillars of the Healthy Healthcare perspective (i) improving care for patients or (ii) improving the efficiency of health systems. Little attention has been paid to understanding the impact of such technologies on the well-being and satisfaction of health workers. Although it seems logical to assume that the use of digital health technologies will reduce health workers' workload, reduce their number of errors, and will eventually lead to a better well-being of healthcare professionals, scientific evidence to support this proposition is lacking. This represents an important gap in knowledge that warrants further investigation.

### 9.3 Digital Health Technology and Healthy Healthcare

The current presentation of digital technology show that research has mainly focused on two of the three pillars of the Healthy Healthcare perspective, namely organisational practice and quality of patient care. Evidence on the impact of digital health technologies on health workers' health and well-being is still fragmented and scarce. This is evidenced by the fact that a scoping review on digital health technologies in

the occupational health setting has identified roughly 400 scientific papers in 2018 (Appendices 9.1 and 9.2), of which only articles focused on health worker's health outcomes, such as job demands, workload, and burnout. The first article measured occupational stress in nurses using a system to collect information based on the Internet of Things technology (IoT) (Cao et al., 2014). The second article discussed the importance of protecting employee health and its fitness data from potential misuse by the employer (Brown, 2016). The third article investigated the impact of using an IoT-based system for managing intravenous infusion automatically on nurse's workload such as the time spent by nurses in fluid preparation and in ring time to understand the infusion situation (Gao et al., 2018). Thus, this gap on the literature shows that further investigation is needed on the benefits of digital health technologies under the Healthy Healthcare perspective.

The introduction of digital healthcare technologies facilitates the transition to new services and a better integration of existing services that promote a more active patient role (Bush and Fox, 2016; OECD, 2017). Digital health technologies can help optimize intramural care (i.e. patient care provided by the different healthcare services) by allowing real time communication and information on patient's health status (Dijkstra, 2012; Noyce, 1990). Also, the transition from intramural to extramural care settings can be facilitated by using interconnected digital healthcare technologies (Darkins et al., 2008; Haggerty et al., 2003). For instance, when a nursing home has all necessary information about the patient from a hospital, the care can be adjusted to the personal situation (Dijkstra, 2012), process also known as personalized care (Swan, 2012). Technological innovations in healthcare allowing patients to assume a more active role is linked to improved prevention, better adherence to care regimes, increased value of healthcare encounters and more productive interactions between patients and healthcare providers. Digital healthcare technologies contribute to reducing the demand for certain institutional healthcare services by strengthening self-monitoring and self-care, simplifying healthcare handovers, and promoting good health maintenance and early disease detection. Despite sociotechnical complexities in this endeavour there is the potential for significant gains in healthcare quality and for a more efficient use of resources (Doe, 2012; Institute of Medicine (US) Committee on Quality of Healthcare in America, 2001; Jayadevappa and Chhatre, 2011).

Nevertheless, the innovative potential of digital healthcare technologies is hard to realize in healthcare. One of the reasons is that innovations operate according to logics that are different to the ones established within healthcare. Digital health technology can be of various modalities, they can be public, private, or hybrid, they can be created by healthcare providers, research institutions, special interest groups such as patient associations or business corporations. Accordingly, they tend to work around formal institutions and regulatory regimes by offering novel structures that do not fall within the realm of established rules. This happens for instance in relation to longstanding issues related to ethical concerns, such as concepts presented in Chap. 2 on quality of care in terms of data ownership and reuse, transparency, privacy, commitment to health, standards of service, and responsible stewardship. In addition, digital health technology challenge existing healthcare logics in relation to

the role of external actors in value creation, and to the distribution of control among central and peripheral actors. The enhancement of the patient role with the introduction of platforms also poses novel challenges such as the increased availability of personal health data collected outside institutional settings creates a need to reconsider data ownership and access, use and re-use, both for traditional purposes such as in research and public health and novel purposes like data-driven clinical decision-making, commercial exploitation. Moreover, it challenges established practices and routines, responsibilities, cooperation and division of labour among healthcare actors and might facilitate or require the development of new business models. To complicate this further, there are different national contexts reflecting the diversity of health system structures and socio- economics contexts across countries (see Chap. 4 on Organization of Healthcare). The main challenge is that despite the boost in access to data, health workers and patients have been struggling to make decisions with the overload of information, while decision makers were hesitant to implement new technologies given the limited resources available (Meskó et al., 2017).

Although there has been a significant growth in the number of studies evaluating the implementation of digital health technologies, their findings remain fragmented across different disciplines, such as studies with an economic orientation that are typically not linked to studies on technological aspects. In addition, the thrust of this research has been on platforms that are in sectors unrelated to healthcare, such as the hospitality industry or media services. The limited knowledge of the challenges associated with establishing digital technology in healthcare is due to the focus of current research on this in the commercial sector. The insights from these studies are highly relevant, but there are also important characteristics of healthcare that need to be considered. For instance, the technical, regulatory and organisational complexity in healthcare is high. In many cases, many organisations, both public and private, are involved in information flows and data custody. In addition, there is already a diverse portfolio of systems and registers in place. Furthermore, the role of citizens not as mere health service recipients, but as contributors and co-creators is becoming more central, while security concerns, government's responsibility for citizens' privacy and citizens' demand for transparent use of data are rising. It is difficult to develop a coherent framework on healthcare technology and its implications for Healthy Healthcare by consolidating and operationalising evidence-based findings across disciplinary fields.

The availability of digital health technology solutions is patchy and uneven, and there is a general lack of unified and interoperable infrastructures of digital healthcare technology. When seen in the context of increasing pressures on healthcare and failures of top-down implementations of centralized systems, such National Care Record Service in England (Cresswell et al., 2011) the need for leveraging platforms for healthcare becomes evident. Although there has been a significant growth in evidence-based knowledge, the findings remain fragmented across different disciplines and the thrust of this research has been on technology that are in sectors unrelated to healthcare such as the hospitality industry or media services.

Prior research has typically been confined along two lines. One line has a focus on the role of platforms as market intermediaries in two-sided or multisided

markets (Armstrong, 2006; Bakos and Katsamakas, 2008; Tan et al., 2015), while another stream investigates platforms as technical architectures that enable innovative business ecosystems (Copenhagen Business School et al., 2015; Ghazawneh and Henfridsson, 2013; Tiwana et al., 2010) or online community enablers (Avgerou and Li, 2013; Markus and Loebbecke, 2013; Spagnoletti et al., 2015). Most analyses are conducted from the perspective of the dominant platform owner in a commercial setting, pursuing strategies of “coopetition” (competition and cooperation), rather than from a broader ecosystem perspective. Hence, the specific challenges related to the application of platforms in healthcare remain underexplored. This gap is especially noticeable in the light of the current national and European level policies promoting the introduction of platforms for healthcare along with technical reports and business experts (Bush and Fox, 2016; OECD, 2017). It is important to learn from early experiences and draw lessons on the conditions that lead to failure or success. Taking a context-sensitive approach, such as Healthy Healthcare, can bring insights about the variations of digital healthcare technology moving beyond using the concept as a blanket term for a new approach to innovation in healthcare. Though it has not even been possible to articulate a comprehensive definition that captures all the essential properties and characteristics of digital health technology (European Commission, 2016; Schreieck et al., 2016), we defined it as “the practical application of knowledge especially in a particular area”. This in turn makes it difficult to examine how the configurations, practices, regulatory and technological challenges of digital platforms and technology affect leading to fragmented research in the domain of Healthy Healthcare in terms of how digital healthcare technology simultaneously affects the organization, the workers and the quality of care provided to patients.

## 9.4 Digital Health Technology Implementation and Ethical Aspects

The inclusion of technological innovations in healthcare systems, such as digital health technologies, raises important ethical and social issues. In this section of the chapter we will highlight these issues and discuss potential implications.

The healthcare field is, by nature, a system of interacting parts, as different workers and units all interact with and affect each other's work environment, job satisfaction and performance. The field of systems thinking recognizes that there are often multiple stakeholders or decision makers with potentially conflicting objectives and differing opinions on what problem requires attention and how to address it (Manley et al., 2016). If a decision maker works in isolation to implement a change in one group without consulting others at the organization, it could lead to unforeseen consequences in other parts of the system (Wiedemann, 2012). Also, the settings/context and individuals involved in the implementation process influence the adoption of technology innovations (Palacholla et al., 2019).

Healthcare services often implement their own platforms/digital systems which, in general, are not designed to integrate with other systems. The fragmented design of healthcare services (i.e. insufficient integration and communication between healthcare levels) and the lack of timely information on the benefits and costs associated with the adoption of technological innovations by healthcare providers are important barriers to the successful implementation of digital health innovations (Ghafur and Schneider 2019; Shaw et al., 2018). The acceptability and feasibility of technological innovations also demand continuous training of health workers to prevent a lack of knowledge on how to responsibly use the new technologies, that is technology literacy. Also, patients need to be able to use, manage, understand, and access the newly implemented digital health technologies. Consequently, associated with the unequal access to technology literacy whether by patients or health workers may rise.

It is of utmost importance that all stakeholders are engaged in a non-hierarchical way in order to promote Healthy Healthcare (i.e. full involvement of stakeholders in a non-hierarchical way referred to as a ‘coproduction’). In the Healthy Healthcare perspective, stakeholder engagement is critical to ensure that the right research questions are being asked (Table 9.2) (Concannon et al., 2012; Gillard et al., 2012; Oliver et al., 2014; Zanaboni et al., 2018). During the process of implementing digital health technologies, it is important for stakeholders to lay out the problem; to have a clear idea about the interests of all stakeholders; to understand the values that people

**Table 9.2** Framework to identify stakeholders in the healthy healthcare perspective

Category	Description
Patients and the public	Current and potential consumers of patient-centred health care and population-focused public health, their caregivers, families, and patient and consumer advocacy organizations
Providers	Individuals (e.g., nurses, physicians, mental health counsellors, pharmacists, lay health workers, health professionals, students and other providers of care and support services) and organizations (e.g., hospitals, clinics, community health centres, community-based organizations, pharmacies, skilled nursing facilities, schools) that provide care to patients and populations
Purchasers	Employers, the self-insured, government and other entities responsible for underwriting the costs of health care
Payers	Insurers, Medicare and Medicaid, state insurance exchanges, individuals with deductibles, and others responsible for reimbursement for interventions and episodes of care
Policy makers	National government, Ministry of Health, Department of Health and Human Services, congress, states, professional associations, intermediaries, and other policy-making entities
Product makers	Drug and device manufacturers
Principal investigators	Other researchers and their funders

Modified from Concannon et al. (2012)

attach to these new technologies; to define their resource use, acceptability, and feasibility and to be informed about the health benefits and harms of their implementation (Schünemann et al., 2017; Shaw et al., 2018).

With regards to the occupational healthcare setting, digital health technologies include worksite health promotion and safety interventions, of which the implementation is driven by some combination of ethical, legal, financial, and moral factors (Anderson and Goodman, 2002; Brown, 2016; Collste et al., 2006; Meskó et al., 2017; Wynsberghe, 2016; Wachsmuth, 2018), such as:

- Who is responsibility for the care delivered by digital health technologies?
- If digital health technologies (e.g. IoT systems) fail whose responsibility is it?
- What actions should be taken to ensure security in the collection, sharing and use of health-related information whether by/for health workers, patients, researchers, decision-makers?
- How to ensure privacy in the relationship between health workers and patients such as confidentiality and autonomy?
- What rules should be implemented in relation to use and/or sale of health-related products and digital health tools/applications?

To address these questions, various national governments, as well as the World Health Organization (World Health Organization), have taken actions (Kruse and Beane, 2018; World Health Organization, 2019b). Some developed countries, such as the United States, Denmark, Switzerland and Germany, have even made incentive payments available to healthcare providers in order to stimulate the implementation of digital health technologies (Kruse and Beane, 2018). Based on a critical evaluation of the evidence on emerging digital health interventions, the WHO has developed guidelines with practical recommendations (i.e. how to assess the benefits, harms, acceptability, feasibility, resource use and equity considerations) (World Health Organization, 2019b). The WHO's main motivation for developing these guidelines is to promote the adoption of digital health technologies as a means of ensuring quality, accessibility and affordability of health services in a transparent and ethical way (World Health Organization, 2019b).

## 9.5 Knowledge Gaps

The use of digital health technologies presents new opportunities, such as reducing the workload of health workers for instance reducing repetitive tasks and medical errors, optimizing healthcare utilization, quality of care and reducing costs. Health systems need to respond to the increased visibility and availability of information. Policymakers need to review if they provide digital tools to drive tangible changes and provides guidance on taking privacy considerations on access to patient data. Nonetheless, some major challenges remain on:

- How to better understand the factors associated with the usage/acceptability of digital health technologies by health workers in the Healthy Healthcare perspective.
- The definition of which outcomes are meaningful for measuring the impact of digital health technologies on the health worker's health and well-being (i.e. vitality, job satisfaction, quality of life, work ability, employability, quality of life, presenteeism, absenteeism), and how to accurately measure these outcomes given the data provided by the digital health tools/applications.
- How to translate the large volumes of data coming from digital health technologies into a useful format that could be understood by health workers, managers, and patients.
- How to implement new digital health technologies under the perspective of the three pillars of the Healthy Healthcare perspective (see Chap. 1).
- How to ensure information security and data privacy of the data generated by digital health tools/applications.
- How to investigate the cost-effectiveness of digital health technologies in the Healthy Healthcare perspective.

## 9.6 Conclusion and Take-Home Messages

- The development of digital health technologies has increased exponentially during the last years in most countries.
- Despite the potential benefits of digital health technologies, healthcare organizations are slow to implement these technologies.
- Evidence on the effectiveness of digital health technologies regarding quality of care, system efficiency, and health workers' health and well-being, is still fragmented and scarce.
- There is still a lack of evidence-based information on the impact of digital health technologies within the Healthy Healthcare perspective.
- Taking a context-sensitive approach, such as Healthy Healthcare, may bring insights on how to implement digital health technologies more efficiently while producing evidence of their effect on the three pillars of this perspective.

## Appendix 9.1: Search Terms Scoping Review (PubMed) #1

"Artificial Intelligence"[Mesh] OR intelligence, artificial OR computational intelligence OR intelligence, computational OR machine intelligence OR intelligence, machine OR computer reasoning OR reasoning, computer OR AI (artificial intelligence) OR computer vision systems OR computer vision system OR system, computer vision OR systems, computer vision OR vision system, computer OR

vision systems, computer OR knowledge acquisition (computer) OR acquisition, knowledge (computer) OR knowledge representation (computer) OR knowledge representations (computer) OR representation, knowledge (computer) OR "Point-of-Care Systems"[Mesh] OR point of care systems OR point-of-care system OR systems, point-of-care OR point-of-care OR point of care OR bedside computing OR computing, bedside OR point of care technology OR bedside technology OR bedside technologies OR technologies, bedside OR technology, bedside OR "Telemedicine"[Mesh] OR mobile health OR health, mobile OR health OR tele-health OR ehealth OR "Electronic Health Records"[Mesh] OR electronic medical records OR electronic medical record OR medical record, electronic OR medical records, electronic OR record, electronic medical OR records, electronic medical OR electronic health record OR health record, electronic OR health records, electronic OR record, electronic health OR records, electronic health OR medical records, computerized OR medical record, computerized OR computerized medical record OR record, computerized medical OR records, computerized medical OR computerized medical records OR "Digital platform\$" OR "Virtual technology" OR "virtual reality" OR Robot\$ OR "software agent\$" OR "machine learning" OR "deep learning" OR "internet of things" 4.043 hits.

#2

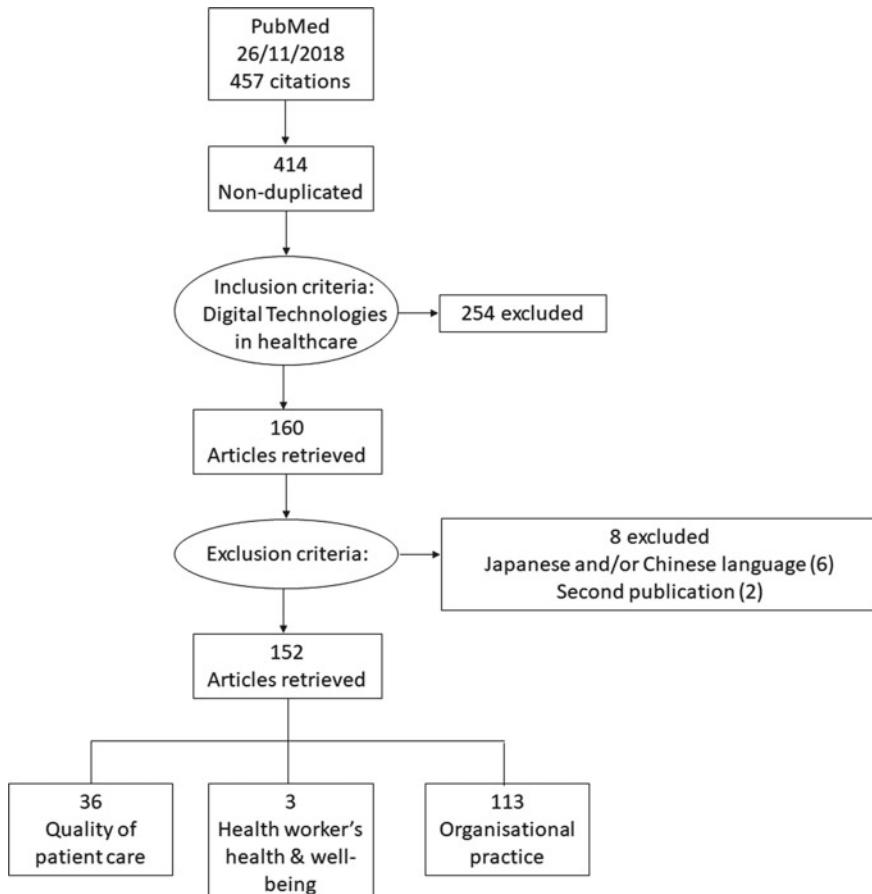
"Occupational Health"[Mesh] OR Health, Occupational OR Industrial Hygiene OR Hygiene, Industrial OR Industrial Health OR Health, Industrial OR Safety, Occupational OR Occupational Safety OR Employee Health OR Health, Employee OR "Patient Satisfaction"[Mesh] OR Satisfaction, Patient OR "Job Satisfaction"[Mesh] OR Job Satisfactions OR Satisfaction, Job OR Satisfactions, Job OR Work Satisfaction OR Satisfaction, Work OR Satisfactions, Work OR Work Satisfactions OR "Quality of Life"[Mesh] OR Life Quality OR Health-Related Quality Of Life OR Health.

Related Quality Of Life OR HRQOL OR "Burnout, Professional"[Mesh] OR Professional Burnout OR Occupational Burnout OR Burnout, Occupational OR "Patient Safety"[Mesh] OR Patient Safeties OR Safeties, Patient OR Safety, Patient OR "Risk Management"[Mesh] OR Management, Risk OR Management, Risks OR Risks Management OR Reporting, Hospital Incident OR Reportings, Hospital Incident OR Reportings, Hospital Risk OR Hospital Risk Reporting OR Hospital Risk Reportings OR.

Reporting, Hospital Risk OR Risk Reporting, Hospital OR Risk Reportings, Hospital OR Incident Reportings, Hospital OR Incident Reporting, Hospital OR Hospital Incident Reportings OR Voluntary Patient Safety Event Reporting OR Hospital Incident Reporting OR Incident Reporting OR Incident Reportings OR Reporting, Incident OR Reportings, Incident OR "Efficiency, Organizational"[Mesh] OR "Efficiency"[Mesh] OR Productivity OR Organizational Efficiency OR Efficiency, Administrative OR Administrative Efficiency OR Program Efficiency OR Efficiency, Program OR Program Efficiencies OR Productivity,

Organizational OR Organizational Productivity 1.645.390 hits #1 AND #2 = 457 references.

## Appendix 9.2: Flowchart of the Scoping Review Main Findings.



## References

- Abràmoff, M. D., Lou, Y., Erginay, A., Clarida, W., Amelon, R., Folk, J. C., & Niemeijer, M. (2016). Improved automated detection of diabetic retinopathy on a publicly available dataset through integration of deep learning. *Investigative Ophthalmology & Visual Science*, 57(13), 5200–5206.
- AHRQ. (2019a). Computerized provider entry/AHRQ patient safety network. Available from: <https://psnet.ahrq.gov/primer/primer/6/Computerized-Provider-Order-Entry>. Accessed January 25, 2019.

- AHRQ. (2019b). *Health IT for improved chronic disease management |AHRQ national resource center; Health information technology: Best practices transforming quality, safety, and efficiency*. Washington, USA: U.S. Department of Health & Human Services.
- AHRQ. (2016). *Robotic surgery: Risks vs. rewards*. AHRQ Patient Safety Network, U.S. Department of Health & Human Services, Washington, USA.
- Alaiad, A., & Zhou, L. (2014). The determinants of home healthcare robots adoption: An empirical investigation. *International Journal of Medical Informatics*, 83(11), 825–840.
- Anderson, J. G., & Goodman, K. W. (Eds.). (2002). *Evaluation: An imperative to do no harm, in ethics and information technology: A case-based approach to a healthcare system in transition* (pp. 123–153). Springer New York. doi.org/10.1007/978-0-387-22488-6\_6
- Araújo, T., Aresta, G., Castro, E., Rouco, J., Aguiar, P., Eloy, C., et al. (2017). Classification of breast cancer histology images using convolutional neural networks. *PLoS ONE*, 12(6), e0177544.
- Armstrong, M. (2006). Competition in two-sided markets. *The RAND Journal of Economics*, 37(3), 668–691.
- Avgerou, C., & Li, B. (2013). Relational and institutional embeddedness of Web-enabled entrepreneurial networks: Case studies of entrepreneurs in China. *Information Systems Journal*, 23(4), 329–350.
- Bakos, Y., & Katsamakas, E. (2008). Design and ownership of two-sided networks: Implications for internet platforms. *Journal of Management Information Systems*, 25(2), 171–202.
- Basavarajappa, C., & Chand, P. K. (2017). Digital platforms for mental health-care delivery. *Indian Journal of Psychological Medicine*, 39(5), 703–706. [https://doi.org/10.4103/IJPSYM.IJPSYM\\_209\\_17](https://doi.org/10.4103/IJPSYM.IJPSYM_209_17)
- Betancur, J., Hu, L. H., Commandeur, F., Sharir, T., Einstein, A. J., Fish, M. B., et al. (2019). Deep learning analysis of upright-supine high-efficiency SPECT myocardial perfusion imaging for prediction of obstructive coronary artery disease: A multicenter study. *Journal of Nuclear Medicine: Official Publication, Society of Nuclear Medicine*, 60(5), 664–670. <https://doi.org/10.2967/jnumed.118.213538>
- Bhatia, M., & Sood, S. K. (2016). Temporal informative analysis in smart-ICU monitoring: M-healthcare perspective. *Journal of Medical Systems*, 40(8), 190.
- Bhattacharya, A., Young, A., Wong, A., Stalling, S., Wei, M., & Hadley, D. (2017). Precision diagnosis of melanoma and other skin lesions from digital images. AMIA joint summits on translational science proceedings. *AMIA Joint Summits on Translational Science, 2017*, 220–226.
- Brown, E. A. (2016). The Fitbit fault line: Two proposals to protect health and fitness data at work. *Yale Journal of Health Policy, Law and Ethics*, 16(1), 1–49.
- Bush, J., & Fox, J. (2016). Bringing the power of platforms to healthcare. *Harvard Business Review*. Available from: <https://hbr.org/2016/11/bringing-the-power-of-platforms-to-health-care>. Accessed December 8, 2019.
- Cao, L., Tian, H., Zhang, Q., Zhu, X., Zhan, Y., Su, J., et al. (2014). (Effect of occupational stress on oxidation/antioxidant capacity in nurses). Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi = Zhonghua Laodong Weisheng Zhiyebing Zazhi = Chinese *Journal of Industrial Hygiene and Occupational Diseases*, 32(2), 100–103.
- Carroll, L. (2017). A comprehensive definition of technology from an ethological perspective. *Social Sciences*, 6(4), 126.
- Chambers, D., Cantrell, A. J., Johnson, M., Preston, L., Baxter, S. K., Booth, A., & Turner, J. (2019). Digital and online symptom checkers and health assessment/triage services for urgent health problems: Systematic review. *British Medical Journal Open*, 9(8), e027743. <https://doi.org/10.1136/bmjopen-2018-027743>
- Chaudhry, B., Wang, J., Wu, S., Maglione, M., Mojica, W., Roth, E., et al. (2006). Systematic review: impact of health information technology on quality, efficiency, and costs of medical care. *Annals of Internal Medicine*, 144(10), 742.
- Chen, X., Xu, Y., Wong, D. W. K., Wong, T. Y., & Liu, J. (2015). Glaucoma detection based on deep convolutional neural network. Conference Proceedings: Annual International Conference

- of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. *Annual Conference, 2015*, 715–718.
- Choi, P. J., Oskouian, R. J., & Tubbs, R. S. (2018). Telesurgery: Past, present, and future. *Cureus*, 10(5), e2716. <https://doi.org/10.7759/cureus.2716>
- Collste, G., Duquenoy, P., George, C., Hedström, K., Kimppa, K., & Mordini E. (2006). ICT in medicine and health care: Assessing social, ethical and legal issues. In J. Berleur, M. I. Nurminen, J. Impagliazzo (Eds.), *Social informatics: An information society for all? In Remembrance of rob kling. HCC 2006. IFIP international federation for information processing* (Vol. 223). Springer, Boston, MA. [https://doi.org/10.1007/978-0-387-37876-3\\_24](https://doi.org/10.1007/978-0-387-37876-3_24).
- Concannon, T. W., Meissner, P., Grunbaum, J. A., McElwee, N., Guise, J.-M., Santa, J., et al. (2012). A new taxonomy for stakeholder engagement in patient-centered outcomes research. *Journal of General Internal Medicine*, 27(8), 985–991.
- Copenhagen Business School, Eaton B, Elaluf-Calderwood S, London School of Economics and Political Science, Sørensen C, London School of Economics and Political Science, Yoo Y, Temple University. (2015). Distributed tuning of boundary resources: The case of apple's iOS service system. *MIS Quarterly*, 39(1), 217–243.
- Cresswell, K., Ali, M., Avery, A., Barber, N., Cornford, T., Crowe, S., et al. (2011). *The long and winding road: An independent evaluation of the implementation and adoption of the national health service care records service (NHS CRS) in Secondary Care in England*. <https://doi.org/10.13140/rg.2.1.2208.4966>
- Darkins, A., Ryan, P., Kobb, R., Foster, L., Edmonson, E., Wakefield, B., & Lancaster, A. E. (2008). Care coordination/home telehealth: The systematic implementation of health informatics, home telehealth, and disease management to support the care of veteran patients with chronic conditions. *Telemedicine and E-Health*, 14(10), 1118–1126.
- Dascal, J., Reid, M., IsHak, W. W., Spiegel, B., Recacho, J., Rosen, B., & Danovitch, I. (2017). Virtual reality and medical inpatients: A systematic review of randomized, controlled trials. *Innovations in Clinical Neuroscience*, 14(1–2), 14–21.
- De Rosis, S., & Seghieri, C. (2015). Basic ICT adoption and use by general practitioners: An analysis of primary care systems in 31 European countries. *BMC Medical Informatics and Decision Making*, 15(70). <https://doi.org/10.1186/s12911-015-0185-z>.
- Delgoshaei, B., Mobinizadeh, M., Mojdekar, R., Afzal, E., Arabloo, J., & Mohamadi, E. (2017). Telemedicine: A systematic review of economic evaluations. *Medical Journal of the Islamic Republic of Iran*, 31, 113.
- Dervishi, A. (2017). Fuzzy risk stratification and risk assessment model for clinical monitoring in the ICU. *Computers in Biology and Medicine*, 87, 169–178.
- Dijkstra, A. F. (2012). *The transition from extramural to intramural care of dementia patients: moving toward improved coordination* (Thesis). Tilburg University, The Netherlands, 50.
- Dimitrov, D. V. (2016). Medical internet of things and big data in healthcare. *Healthcare Informatics Research*, 22(3), 156.
- Doe, J. (2012). *Eurobarometer qualitative study on patient involvement in healthcare*. European Innovation Partnership, European Commission, Brussels: Report.
- Dupлага, M., & Zieliński, K. (2006). Evolution of IT-enhanced healthcare: From telemedicine to e-health. In K. Zieliński, M. Dupлага, & D. Ingram (Eds.), *Information technology solutions for healthcare. Health Informatics*. Springer, London. Doi:[https://doi.org/10.1007/1-84628-141-5\\_1](https://doi.org/10.1007/1-84628-141-5_1)
- Ekeland, A. G., Bowes, A., & Flottorp, S. (2010). Effectiveness of telemedicine: A systematic review of reviews. *International Journal of Medical Informatics*, 79(11), 736–771.
- European Commission. (2016). *Online Platforms. Digital Single Market*. Communication from the commission to the European parliament, the council, the European economic and social committee of the regions. Report. European Commission; Brussels.
- Fan, S., Xu, L., Fan, Y., Wei, K., Li, L. (2018). Computer-aided detection of small intestinal ulcer and erosion in wireless capsule endoscopy images. *Physics in Medicine & Biology* 63(16), 165001.

- Feldman, S. S., Schooley, B. L., & Bhavsar, G. P. (2014). Health information exchange implementation: Lessons learned and critical success factors from a case study. *JMIR Medical Informatics*, 2(2), e19. <https://doi.org/10.2196/medinform.3455>
- Finkelstein, J., Knight, A., Marinopoulos, S., Gibbons, M. C., Berger, Z., Aboumatar, H., et al. (2012). Enabling patient-centered care through health information technology. *Evidence Report/Technology Assessment*, 206, 1–1531.
- Futoma, J., Morris, J., & Lucas, J. (2015). A comparison of models for predicting early hospital readmissions. *Journal of Biomedical Informatics*, 56, 229–238.
- Gao, Y., Kong, D., Fu, X. J., & Pi, H. Y. (2018). Application and effect evaluation of infusion management system based on internet of things technology in nursing work. *Studies in Health Technology and Informatics*, 250, 111–114.
- Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep learning*. MIT Press.
- Ghazawneh, A., & Henfridsson, O. (2013). Balancing platform control and external contribution in third-party development: The boundary resources model. *Information Systems Journal*, 23(2), 173–192.
- Gillard, S., Simons, L., Turner, K., Lucock, M., & Edwards, C. (2012). Patient and public involvement in the coproduction of knowledge: Reflection on the analysis of qualitative data in a mental health study. *Qualitative Health Research*, 22(8), 1126–1137.
- Haggerty, J. L., Reid, R. J., Freeman, G. K., Starfield, B. H., Adair, C. E., & McKendry, R. (2003). Continuity of care: A multidisciplinary review. *BMJ: British Medical Journal*, 327(7425), 1219–1221.
- Haghi, M., Thurow, K., & Stoll, R. (2017). Wearable devices in medical internet of things: Scientific research and commercially available devices. *Healthcare Informatics Research*, 23(1), 4–15.
- Harzheim, E., Gonçalves, M. R., Umpierre, R. N., da Silva Siqueira, A. C., Katz, N., Agostinho, M. R., et al. (2016). Telehealth in Rio Grande do Sul, Brazil: Bridging the Gaps. *Telemedicine Journal and E-Health: The Official Journal of the American Telemedicine Association*, 22(11), 938–944.
- HealthIT.gov. (2018). *What is computerized provider order entry?* The Office of the National Coordinator for Health Information Technology (ONC), USA. ([www.HealthIT.gov](http://www.HealthIT.gov)).
- HealthIT.gov. (2019a). *What is HIE? | HealthIT.gov*. The Office of the National Coordinator for Health Information Technology (ONC), USA. ([www.HealthIT.gov](http://www.HealthIT.gov)).
- Hussain, A., Malik, A., Halim, M. U., & Ali, A. M. (2014). The use of robotics in surgery: A review. *International Journal of Clinical Practice*, 68(11), 1376–1382.
- Institute of Medicine (US) Committee on Quality of Health Care in America. (2001). *Crossing the Quality Chasm: A New Health System for the 21st Century*. National Academies Press (US). <https://doi.org/10.17226/10027>
- Iorfino, F., Cross, S. P., Davenport, T., Carpenter, J. S., Scott, E., Shiran, S., & Hickie, I. B. (2019). A digital platform designed for youth mental health services to deliver personalized and measurement-based care. *Frontiers in Psychiatry*, 10, 595. <https://doi.org/10.3389/fpsyg.2019.00595>
- Jagadeeswari, V., Subramaniyaswamy, V., Logesh, R., & Vijayakumar, V. (2018). A study on medical internet of things and big data in personalized healthcare system. *Health Information Science and Systems*, 6(1), 14. <https://doi.org/10.1007/s13755-018-0049-x>
- Jayadevappa, R., & Chhatre, S. (2011). Patient centered care—A conceptual model and review of the state of the art. *the Open Health Services and Policy Journal*, 4(1), 15–25. <https://doi.org/10.2174/1874924001104010015>
- Kim, J. R., Shim, W. H., Yoon, H. M., Hong, S. H., Lee, J. S., Cho, Y. A., Kim, S. (2017). Computerized bone age estimation using deep learning based program: Evaluation of the accuracy and efficiency. *AJR. American Journal of Roentgenology*, 209(6), 1374–1380.
- Kim, J.-W., Ryu, B., Cho, S., Heo, E., Kim, Y., Lee, J., et al. (2019). Impact of personal health records and wearables on health outcomes and patient response: Three-arm randomized controlled trial. *JMIR MHealth and UHealth*, 7(1), e12070.

- Krittanawong, C., Bomback, A. S., Baber, U., Bangalore, S., Messerli, F. H., & Wilson Tang, W. H. (2018). Future direction for using artificial intelligence to predict and manage hypertension. *Current Hypertension Reports*, 20(9), 75.
- Kruse, C. S., & Beane, A. (2018). Health information technology continues to show positive effect on medical outcomes: Systematic review. *Journal of Medical Internet Research*, 20(2), e41. <https://doi.org/10.2196/jmir.8793>
- Kuster, A. T., Dalsø, T. K., Luong Thanh, B. Y., Agarwal, A., Durand-Moreau, Q. V., Kirkehei, I. (2017). Computer-based versus in-person interventions for preventing and reducing stress in workers. *The Cochrane Database of Systematic Reviews*, 8, CD011899. <https://doi.org/10.1002/14651858.CD011899.pub2>.
- Kwon, J. M., Lee, Y., Lee, Y., Lee, S., & Park, J. (2018). An algorithm based on deep learning for predicting in-hospital cardiac arrest. *Journal of the American Heart Association*, 7(13), e008678. <https://doi.org/10.1161/JAHA.118.008678>
- Kyaw, B. M., Saxena, N., Posadzki, P., Vseteckova, J., Nikolaou, C. K., George, P. P., et al. (2019). Virtual reality for health professions education: systematic review and meta-analysis by the digital health education collaboration. *Journal of Medical Internet Research*, 21(1), e12959.
- Langley, P. (2011). The changing science of machine learning. *Machine Learning* 82(3), 275–279.
- Lee, H., Mansouri, M., Tajmir, S., Lev, M. H., & Do, S. (2018). A deep-learning system for fully-automated peripherally inserted central catheter (PICC) tip detection. *Journal of Digital Imaging*, 31(4), 393–402.
- Lee, H., Tajmir, S., Lee, J., Zissen, M., Yeshiwash, B. A., Alkasab, T. K., et al. (2017). Fully automated deep learning system for bone age assessment. *Journal of Digital Imaging*, 30(4), 427–441.
- Li, C., Jing, B., Ke, L., Li, B., Xia, W., He, C., et al. (2018a). Development and validation of an endoscopic images-based deep learning model for detection with nasopharyngeal malignancies. *Cancer Communications*, 38(1), 59.
- Li, C., Ren, J., Huang, H., Wang, B., Zhu, Y., & Hu, H. (2018b). PCA and deep learning based myoelectric grasping control of a prosthetic hand. *Biomedical Engineering Online*, 17(1), 107. <https://doi.org/10.1186/s12938-018-0539-8>
- Li, F., Tran, L., Thung, K.-H., Ji, S., Shen, D., & Li, J. (2015). A robust deep model for improved classification of AD/MCI Patients. *IEEE Journal of Biomedical and Health Informatics*, 19(5), 1610–1616.
- Lin, L.-F., Lin, Y.-J., Lin, Z.-H., Chuang, L.-Y., Hsu, W.-C., & Lin, Y.-H. (2018). Feasibility and efficacy of wearable devices for upper limb rehabilitation in patients with chronic stroke: A randomized controlled pilot study. *European Journal of Physical and Rehabilitation Medicine*, 54(3), 388–396.
- Manley, K., Martin, A., Jackson, C., & Wright, T. (2016). Using systems thinking to identify workforce enablers for a whole systems approach to urgent and emergency care delivery: A multiple case study. *BMC Health Services Research*, 16(a), 368.
- Markus, M. L., & Loebbecke, C. (2013). Commoditized digital processes and business community platforms: New opportunities and challenges for digital business strategies. *MIS Quarterly*, 37(2), 649–653.
- Mayo Clinic. (2019). *Robotic surgery—Mayo Clinic*. Available from: <https://www.mayoclinic.org/tests-procedures/robotic-surgery/about/pac-20394974>. Accessed August 6, 2019.
- Merriam-Webster. (2019). Definition of TECHNOLOGY. Merriam-webster.com/dictionary.
- Meskó, B., Drobni, Z., Bényei, É., Gergely, B., & Győrffy, Z. (2017). Digital health is a cultural transformation of traditional healthcare. *MHealth* 3. 10.21037/mhealth.2017.08.07.
- Mishra, R., Daescu, O., Leavey, P., Rakheja, D., & Sengupta, A. (2018). Convolutional neural network for histopathological analysis of osteosarcoma. *Journal of Computational Biology: A Journal of Computational Molecular Cell Biology*, 25(3), 313–325.
- Ghafur, S., & Schneider, E. C. (2019). Engaging Patients Using Digital Technology — Learning from Other Industries. *NEJM Catalyst*. <https://catalyst.nejm.org/doi/full/10.1056/CAT.19.0654>
- Noyce, P. R. (1990). Intramural and extramural healthcare in the United Kingdom. *Pharmaceutisch Weekblad*, 12(1), 19–22.

- O'Donovan, J., Bersin, A., & O'Donovan, C. (2015). The effectiveness of mobile health (mHealth) technologies to train healthcare professionals in developing countries: A review of the literature. *BMJ Innovations*, 1(1), 33–36.
- OECD. (2017). *New health technologies: Managing access, value and sustainability*. OECD Publishing, Paris. <http://dx.doi.org/https://doi.org/10.1787/9789264266438-en>.
- Oliver, K., Lorenc, T., & Innvær, S. (2014). New directions in evidence-based policy research: A critical analysis of the literature. *Health Research Policy and Systems*, 12(1), 34.
- Olsen, T. G., Jackson, B. H., Feeser, T. A., Kent, M. N., Moad, J. C., Krishnamurthy, S., et al. (2018). Diagnostic performance of deep learning algorithms applied to three common diagnoses in dermatopathology. *Journal of Pathology Informatics*, 9(1), 32.
- Palacholla, R. S., Fischer, N., Coleman, A., Agboola, S., Kirley, K., Felsted, J., et al. (2019). Provider- and patient-related barriers to and facilitators of digital health technology adoption for hypertension management: Scoping review. *JMIR Cardio*, 3(1), e11951.
- Park, Y.-T. (2016). Emerging new era of mobile health technologies. *Healthcare Informatics Research*, 22(4), 253–254.
- Prgomet, M., Li, L., Niazkhani, Z., Georgiou, A., & Westbrook, J. I. (2017). Impact of commercial computerized provider order entry (CPOE) and clinical decision support systems (CDSSs) on medication errors, length of stay, and mortality in intensive care units: A systematic review and meta-analysis. *Journal of the American Medical Informatics Association: JAMIA*, 24(2), 413–422.
- Pugatch, J., Grenen, E., Surla, S., Schwarz, M., & Cole-Lewis, H. (2018). Information architecture of web-based interventions to improve health outcomes: Systematic review. *Journal of Medical Internet Research*, 20(3), e97.
- Reis, Z. S. N., Maia, T. A., Marcolino, M. S., Becerra-Posada, F., Novillo-Ortiz, D., & Ribeiro, A. L. P. (2017). Is there evidence of cost benefits of electronic medical records, standards, or interoperability in hospital information systems? Overview of systematic reviews. *JMIR Medical Informatics*, 5(3), e26.
- Rivers, T. J. (2005). An introduction to the metaphysics of technology. *Technology in Society*, 27(4), 551–574.
- Rogers, M. A., Lemmen, K., Kramer, R., Mann, J., & Chopra, V. (2017). Internet-delivered health interventions that work: Systematic review of meta-analyses and evaluation of website availability. *Journal of Medical Internet Research*, 19(3), e90. <https://doi.org/10.2196/jmir.7111>
- Sa, R., Owens, W., Wiegand, R., Studin, M., Capoferri, D., Barooha, K., et al. (2017). Intervertebral disc detection in X-ray images using faster R-CNN. *Conference Proceedings: Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 2017, 564–567.
- Sadoughi, F., Nasiri, S., & Ahmadi, H. (2018). The impact of health information exchange on healthcare quality and cost-effectiveness: A systematic literature review. *Computer Methods and Programs in Biomedicine*, 161, 209–232.
- Sarikaya, D., Corso, J. J., & Guru, K. A. (2017). Detection and localization of robotic tools in robot-assisted surgery videos using deep neural networks for region proposal and detection. *IEEE Transactions on Medical Imaging*, 36(7), 1542–1549.
- Sassen, B., Kok, G., Mesters, I., Crutzen, R., Cremer, A., & Vanhees, L. (2012). A web-based intervention for health professionals and patients to decrease cardiovascular risk attributable to physical inactivity: development process. *JMIR Research Protocols*, 1(2), e21. <https://doi.org/10.2196/resprot.1804>
- Schiff, G. D., Amato, M. G., Eguale, T., Boehne, J. J., Wright, A., Koppel, R., et al. (2015). Computerised physician order entry-related medication errors: Analysis of reported errors and vulnerability testing of current systems. *BMJ Quality & Safety*, 24(4), 264–271. <https://doi.org/10.1136/bmqs-2014-003555>
- Schreieck, M., Wiesche, M., & Krcmar, H. (2016). *Design and governance of platform ecosystems. Key concepts and issues for future research*. Research Papers 76. [https://aisel.aisnet.org/ecis2016\\_rp/76](https://aisel.aisnet.org/ecis2016_rp/76).

- Schünemann, H. J., Wiercioch, W., Brozek, J., Etxeandia-Ikobaltzeta, I., Mustafa, R. A., Manja, V., et al. (2017). GRADE evidence to decision (EtD) frameworks for adoption, adaptation, and de novo development of trustworthy recommendations: GRADE-ADOLOPMENT. *Journal of Clinical Epidemiology*, 81, 101–110.
- Sengur, A., Akbulut, Y., Guo, Y., & Bajaj, V. (2017). Classification of amyotrophic lateral sclerosis disease based on convolutional neural network and reinforcement sample learning algorithm. *Health Information Science and Systems*, 5(1), 9. <https://doi.org/10.1007/s13755-017-0029-6>
- Shaw, J., Agarwal, P., Desveaux, L., Palma, D. C., Stamenova, V., Jamieson, T., et al. (2018). Beyond “implementation”: Digital health innovation and service design. *Npj Digital Medicine*, 1(1), 1–5.
- Spagnoletti, P., Resca, A., & Lee, G. (2015). A design theory for digital platforms supporting online communities: A multiple case study. *Journal of Information Technology*, 30(4), 364–380.
- Swan, M. (2012). Health 2050: The realization of personalized medicine through crowdsourcing, the quantified self, and the participatory biocitizen. *Journal of Personalized Medicine*, 2(3), 93–118.
- Takeuchi, T., Hattori-Kato, M., Okuno, Y., Iwai, S., & Mikami, K. (2019). Prediction of prostate cancer by deep learning with multilayer artificial neural network. *Canadian Urological Association journal = Journal de l'Association des urologues du Canada*, 13(5), E145–E150. <https://doi.org/https://doi.org/10.5489/cuaj.5526>.
- Tan, B., Pan, S., Lu, X., Huang, L. (2015). The role of IS capabilities in the development of multi-sided platforms: The digital ecosystem strategy of Alibaba.com. *Journal of the Association for Information Systems*, 16(4). <https://doi.org/10.17705/1jais.00393>.
- Tan, J., Huo, Y., Liang, Z., & Li, L. (2019). Expert knowledge-infused deep learning for automatic lung nodule detection. *Journal of X-ray Science and Technology*, 27(1), 17–35. <https://doi.org/10.3233/XST-180426>
- Tiwana, A., Konsynski, B., & Bush, A. A. (2010). Research commentary—Platform evolution: Coevolution of platform architecture, governance, and environmental dynamics. *Information Systems Research*, 21(4), 675–687.
- Vilallonga, R., Lecube, A., Fort, J. M., Boleko, M. A., Hidalgo, M., Armengol, M. (2013). Internet of things and bariatric surgery follow-up: Comparative study of standard and IoT follow-up. Minimally invasive therapy & allied technologies. *MITAT: Official Journal of the Society for Minimally Invasive Therapy*, 22(5): 304–311.
- Wachsmuth, I. (2018). Robots like me: Challenges and ethical issues in aged care. *Frontiers in Psychology*, 9, 10.3389/fpsyg.2018.00432.
- World Health Organization. (Ed.). (2010). *Telemedicine: Opportunities and developments in member states: Report on the second global survey on EHealth*. Geneva, Switzerland: World Health Organization.
- World Health Organization. (2019a). *What is a health technology? Resolution on health technologies* (WHA60.29). World Health Organization. [www.who.int](http://www.who.int).
- World Health Organization. (2019b). *World health organization guideline: Recommendations on digital interventions for health system strengthening*. World Health Organization. [www.who.int](http://www.who.int)
- Wiedemann, L. A. (2012). A look at unintended consequences of EHRs: The industry needs to focus on building EHRs that decrease medical errors and enhance patient care. *Health Management Technology*, 33(2), 24–25.
- Wilkerson, G. B., Gupta, A., & Colston, M. A. (2018). Mitigating sports injury risks using internet of things and analytics approaches. *Risk Analysis: An Official Publication of the Society for Risk Analysis*, 38(7), 1348–1360.
- van Wynsberghe, A. (2013). Designing robots for care: Care centered value-sensitive design. *Science and Engineering Ethics*, 19(2), 407–433.
- van Wynsberghe, A. (2016). *Healthcare robots: ethics*. Routledge, New York: Design and Implementation.
- Yetisen, A. K., Martinez-Hurtado, J. L., Ünal, B., Khademhosseini, A., & Butt, H. (2018). Wearables in medicine. *Advanced Materials*, 30(33), 1706910.

- Yi, J. Y., Kim, Y., Cho, Y.-M., & Kim, H. (2018). Self-management of chronic conditions using mHealth interventions in Korea: A systematic review. *Healthcare Informatics Research*, 24(3), 187–197.
- Yoo, T. K., Choi, J. Y., Seo, J. G., Ramasubramanian, B., Selvaperumal, S., & Kim, D. W. (2019). The possibility of the combination of OCT and fundus images for improving the diagnostic accuracy of deep learning for age-related macular degeneration: A preliminary experiment. *Medical & Biological Engineering & Computing*, 57(3), 677–687.
- Zanaboni, P., Ngangue, P., Mbemba, G. I. C., Schopf, T. R., Bergmo, T. S., & Gagnon, M.-P. (2018). Methods to evaluate the effects of internet-based digital health interventions for citizens: Systematic review of reviews. *Journal of Medical Internet Research*, 20(6), e10202.

# Chapter 10

## The Relationship Between Healthcare Staff Wellbeing and Patient Care: It's Not That Simple



Kevin Rui-Han Teoh, Gail Kinman, and Juliet Hassard

**Abstract** Expecting happier and healthier staff to provide better care may make intuitive sense, but this is not always the case. This chapter highlights the complexity of the relationship between healthcare staff wellbeing and patient care, and we introduce the “happy-productive worker” hypothesis which postulates that happy and healthy workers are more productive. Here, we initially review the evidence for this relationship among workers in various sectors and consider some of the limitations of our understanding of this association. We then examine the research looking at the links between healthcare staff wellbeing and the quality of patient care at both the individual and organisational level. This is followed by a reflection on the inconsistency of this relationship, and how measurement, moderators, and context influence the presence and strengths of this association. Finally, we consider the implications for research, practice, and policy—including the *Healthy Healthcare* concept.

**Keywords** Quality of care · Happy-productive worker hypothesis · Job performance · Burnout · Work engagement · Work-related stress

### 10.1 Introduction

Against a backdrop of having to provide better and safer care while facing reduced financial and staff resourcing, the European healthcare sector’s ability to recruit and retain workers that are motivated, effective, and efficient is paramount (European Commission, 2015). This is congruent with the *Healthy Healthcare* concept which

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emphasises the need for a systems-based understanding that links organisational structure, staff health, quality of care and patient safety (Chap. 1). In order to further our understanding of the healthcare system and of *Healthy Healthcare*, it is important to start exploring the relationships between these pillars. In this chapter, we focus on staff wellbeing and quality of care—two of the three core pillars of *Healthy Healthcare*. Chapters 2 and 3 discuss the definition and theories behind these constructs, and we go on to examine the relationship between staff wellbeing and quality of care from an occupational health psychology perspective.

Expecting happier and healthier staff to provide better care may make intuitive sense, but this is not always the case. This chapter aims to highlight the complexity of the relationship between the wellbeing of healthcare staff and patient care. We begin by defining wellbeing and quality of care. Next, we introduce the “happy-productive worker” hypothesis which postulates that happy and healthy workers are more productive. Here, we review the evidence for this relationship among workers in various sectors and consider some of the limitations of our understanding of this association. We then examine the research looking at the links between healthcare staff wellbeing and the quality of patient care at both the individual and organisational level. This is followed by a reflection of the inconsistency of this relationship, and how measurement, moderators, and context influence the presence and strengths of this association. Finally, we consider the implications for research, practice, and policy—including the *Healthy Healthcare* concept.

## 10.2 Revisiting Staff Wellbeing and Quality of Care

Both staff wellbeing (Chap. 3) and quality of care (Chap. 2) are explored in depth elsewhere in this book. We do not repeat this but provide a brief overview to define our understanding of these constructs and how they are used within this chapter.

For the purpose of this chapter, staff wellbeing is seen as a multidimensional concept that includes affect, motivation, behaviour, cognition, and psychosomaticism (van Horn, Taris, Schaufeli, & Schreurs, 2004; Warr, 1994). Wellbeing, therefore, offers a much broader perspective than physical or mental health. It does not merely represent the absence of illness or infirmity but exists on a continuum encompassing both negative and positive constructs (Bakker & Schaufeli, 2008). This includes depression, anxiety, and ill-health on one end, and happiness, flourishing and thriving on the other (Hall, Johnson, Watt, Tsipa, & O'Connor, 2016; Wallace, Lemaire, & Ghali, 2009). Within an occupational context, examples of the negative end of the continuum include work-related stress and burnout, with work engagement and job satisfaction representing positive manifestations of wellbeing.

The complexity around defining and assessing quality within the healthcare sector is reviewed extensively in Chap. 2. Building on that, we use the definition provided by the United Kingdom’s Department of Health (2008) which sees quality as comprising clinical excellence, patient safety, and patient experience. Clinical excellence (i.e., preventing premature deaths, enhancing quality of life, and assisting recovery) is

arguably the core performance outcome. Patient safety refers to a safe care environment without avoidable harm. Finally, patient experience encompasses the patient's experience of their personal care and treatment. These three aspects are respectively congruent with the performance dimensions of in-role performance, safety performance, and customer satisfaction. They also operate across different levels, such as a patient's satisfaction with a particular healthcare worker or the number of errors made by a healthcare professional. These could be aggregated to a group level (e.g., ward, hospital) alongside other indicators routinely collected, including hospital mortality rates, infection rates, and admission duration (Powell, Dawson, Topakas, Durose, & Fewtrell, 2014). However, while quality of care functions as a key performance indicator within the healthcare sector, there are distinct differences between quality of care and job performance. These include that: (i) positive patient outcomes are not always possible in the healthcare sector; (ii) that quality of care is a complex construct and the product of numerous factors beyond healthcare workers' control; and (iii) that the provision of care is interlinked with human suffering and emotions (Donabedian, 1988; Teoh, Hassard, & Cox, 2019). This means that quality of care is an emotive experience that can be both distressing and fulfilling for healthcare workers. As such, quality of care and its predictors need to be measured specifically, as measures of performance used in other sectors are likely to be less relevant to the healthcare context.

## 10.3 The Wellbeing and Performance Relationship

Prior to examining the relationship between the wellbeing of healthcare staff and the quality of care, it is useful to first understand this association within the wider context of work. The wellbeing and performance relationship, also known as the “happy-productive worker hypothesis”, is one of the most popular postulations investigated in the organisational psychology and management literature (Warr & Nielsen, 2018). It also forms the basis of numerous wellbeing and motivation theories, including the Job Demands-Resources Model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) and the Conservation of Resources Theory (Hobfoll, 2002). The basic premise of this relationship is simple - that happier and healthier workers are more productive in their work.

### 10.3.1 *The Rationale for the Wellbeing and Performance Relationship*

While the “happy-productive worker hypotheses” makes intuitive sense, it is important to understand the potential mechanisms that underpin this relationship. Broadly,

the rationale for this association can be advocated from a cognitive, psychological and motivation, and fatigue and exhaustion perspective.

### 10.3.1.1 Cognitive Perspective

Poor psychological wellbeing, and in particular negative affect, has a wide-ranging impact on an individual's recognition and recall, their episodic, working, and autobiographical memory, their attention and decision making capacities, and their executive functioning. All of these are key cognitive functions required not only for task performance, but for wider contextual performance (Calvo & Eysenck, 1992; Dalgleish et al., 2007; Ford, Cerasoli, Higgins, & Decesare, 2011). For example, anxiety has been shown to detrimentally influence working memory by reducing its capacity for processing and storage, which, in turn, impairs an individual's ability to carry out complex or concurrent tasks (Calvo & Eysenck, 1992). The experience of chronic stress places a cognitive burden on the individual, evidenced by stressed individuals demonstrating deficits in their learning related to episodic memory and by being unable to encode and retrieve information (Öhman, Nordin, Bergdahl, Birgander, & Neely, 2007). Individuals experiencing depression, a key feature of work-related stress, are less likely to focus on positive or neutral tasks (McCabe & Gotlib, 1995), more likely to make errors (Farrin, Hull, Unwin, Wykes, & David, 2003), and be slower at recalling information (Kizilbash, Vanderploeg, & Curtiss, 2002). Fatigue, which often accompanies stress and ill-health, also increases the cognitive difficulties that individuals face (Ford et al., 2011), making it more effortful for them to meet work goals. Recognising how cognitive functioning is impaired by a poor state of wellbeing, highlights one pathway through which workers' wellbeing influences their performance.

### 10.3.1.2 Psychological and Motivational Perspective

From a psychological perspective, wellbeing can be seen as the accumulation (or loss) of resources, such as those pertaining to energy and coping. For example, burnout is characterised by a depletion of emotional capacity and energy (Maslach, Schaufeli, & Leiter, 2001) while work engagement relates to psychological involvement with work (Bakker, Schaufeli, Leiter, & Taris, 2008). According to the Conservation of Resources Theory (Hobfoll, 2002), the collection of resources begets additional resources that continues in an upward spiral. The converse occurs where the loss of resources facilitates additional resource loss. Similarly, the positive affect an individual might experience (e.g., job satisfaction) is in part due to the provision of working conditions, content, and remuneration from the employer. According to Equity Theory (Adams, 1963), this could lead to a worker feeling obliged to reward their employer for these provisions through increased productivity.

There are at least four reasons why resources are important for job performance. First, is that resources (e.g., material resources, social support, information) are

required to complete work tasks (Bakker & Demerouti, 2017). Second, specific resources, such as social support, control, and meaning, are pivotal in meeting basic psychological needs. These include the need to belong, the need for competence, and the need for autonomy (Deci & Ryan, 1985). Meeting these needs facilitates intrinsic motivation and self-efficacy that translates to the individual investing additional effort and interest in the work being done. Third, resources have the potential to act as buffers against the detrimental effects that demands in the workplace can have on an individual (Karasek & Theorell, 1990). This means that difficult and challenging work environments are less taxing on an individual psychologically, physically, cognitively, and emotionally, freeing up additional effort that can be directed towards goals.

Finally, the Conservation of Resources Theory also postulates that where resources are either exhausted or stretched, an individual is likely to become irrational, defensive, or defensive (Hobfoll, Halbesleben, Neveu, & Westman, 2018)—all of which affect their performance. Therefore, summarising the research in this area we are able to understand the wellbeing- performance relationship through a motivational pathway.

### 10.3.1.3 Fatigue and Exhaustion

Another pathway through which wellbeing can impact on job performance is via physical, emotional, and psychological fatigue. Long working hours and sleep deprivation has strong potential to impair performance directly via negative affect, lack of alertness, and poor judgement (BMA, 2018; Wali et al., 2013). Affective rumination, where people worry about work problems when off duty, will also constrain opportunities to replenish mental and physiological resources (Copley & Zijlstra, 2011). This is evident in a study of intensive care interns that found that those working extended shifts (at least 24 h) had approximately 6 h less sleep per week, made twice the number of attention failures, and made 36% more serious medical errors than those working for shorter periods (Landrigan et al., 2004). A related risk factor is compassion fatigue. This is a salient issue within the healthcare sector as the provision of compassionate care to others is a major source of motivation and reward among helping professionals (Radey & Figley, 2007). However, high demands to provide care and support, particularly where job resources are low, is likely to deplete emotional resources. In turn, this can engender compassion fatigue, characterised by feelings of indifference to the suffering of others (Figley, 1995). Studies have also found strong relationships between compassion fatigue and irritability, low empathy and perceptions of reduced standards of care (Dasan, Gohil, Cornelius, & Taylor, 2015; Drury, Craigie, Francis, Aoun, & Hegney, 2014; Najjar, Davis, Beck-Coon, & Carney Doeppeling, 2009). In contrast, compassion satisfaction can protect against stress and burnout (Cosley, McCoy, Saslow, & Epel, 2010; Kinman & Grant, 2016). This highlights the importance of recovery, which according to the effort- recovery model (Meijman & Mulder, 1998) is vital when exposed to high demand and low

control conditions. Therefore, a lack of recovery opportunities will enhance the risk of health complaints and potentially impair job performance.

### ***10.3.2 The Evidence for the Wellbeing and Performance Relationship***

The sections above provide a rationale for a relationship between staff wellbeing and performance. In this section we review the corresponding evidence, drawing on a series of reviews and meta-analytical papers that have examined this relationship. These are separated according to how wellbeing has typically been measured in the literature—job satisfaction, work engagement, and burnout. These reviews not only allow a more comprehensive review of the “happy-productive worker hypothesis” but reflect the popularity of exploring aspects of this relationship. However, it is important to recognise that other aspects of wellbeing also exist that warrant examination.

Although job satisfaction is one of the most studied constructs in occupational health psychology there is still considerable discussion around how it is defined and measured (Christensen, 2017). Broadly, it can take two forms. Affective job satisfaction represents the general feelings that employees have about their work overall, while cognitive job satisfaction represents a more logical and objective consideration towards different facets of their work (Spector, 1997). An early meta-analysis of 74 studies found that cognitive job satisfaction had a small effect size (0.17) on job performance (Iaffaldano & Muchinsky, 1985). A subsequent meta-analysis of 312 studies, however, found a moderate effect size (0.30) (Judge, Thoresen, Bono, & Patton, 2001); moreover, general job satisfaction was also found to be a stronger predictor than cognitive job satisfaction. Stronger effect sizes were also found in jobs that were high in complexity and in cross-sectional studies. Similar findings were observed where time-lagged studies were meta-analysed. Providing support that job satisfaction functions as an antecedent to performance (Harrison, Newman, & Roth, 2006).

Work engagement has more recently emerged as an important facet of positive wellbeing. This generally refers to a psychological investment into work (Christian, Garza, & Slaughter, 2011), or more specifically as a positive work-related state of mind characterised by vigour, dedication, and absorption (Schaufeli & Bakker, 2003). A meta-analytical path model involving 90 studies (Christian et al., 2011) found that work engagement had a medium effect size with both task performance (0.36) and contextual performance (0.38). Crucially, work engagement had additional predictive value over other job attitudes such as job satisfaction, job involvement, and organisational commitment. However, while it is presumed that certain moderators may explain some of the variations in effect sizes, these were either not supported or untested due to the small number of relevant studies found.

In comparison, fewer studies have examined the relationship between ill-health and performance. Taris (2006) meta-analysed the findings of 16 studies that looked at

different burnout dimensions (i.e., emotional exhaustion, depersonalisation, reduced personal accomplishment) and three different performance measures: task performance, organisational citizenship behaviour, and customer satisfaction. All the outcomes were considered “objective” data sources that were either rated by others or obtained from existing performance indicators. As expected, emotional exhaustion had moderate to strong negative correlations with task performance ( $r = -0.22$ ), organisational citizenship behaviour ( $r = -0.19$ ), and customer satisfaction ( $r = -0.55$ ). Fewer studies looked at depersonalisation and reduced personal accomplishment as predictors of performance, however, and the results were generally inconclusive. This review lends weight to the notion that different wellbeing and performance measures differentially influence the hypothesised relationship, and that further work is needed to unpack why this may be the case.

Finally, Ford and colleagues (2011) conducted a meta-analysis of 111 samples to examine the differences between three aspects of health (psychological, physical, behavioural health) on work performance. The relationship between psychological health and performance differed depending on the measure used—overall psychological well-being (0.37), depression and anxiety (-0.18), symptoms of psychological disorders (-0.18), fatigue (-0.27), and life satisfaction (0.18). These had stronger relationships with performance than physical (0.15) and behavioural health (between 0.01 & -0.06). Closer examination of these relationships showed that there was little difference between wellbeing and self-rated and supervisor-rated performance, although both of these were stronger than objective measures of performance.

### ***10.3.3 Summary of the Wellbeing and Performance Relationship***

Considering the content presented thus far, it is evident that while the “happy-productive worker hypothesis” makes intuitive sense, the corresponding evidence is less consistent. Although the results outlined above demonstrate weak and moderate effect sizes, a diverse range of effect sizes have been found within the wider literature (Taris & Schreurs, 2009). This suggests that there are likely to be other factors that influence this association, with the reviews above providing some indication as to potential moderators. These include stronger effect sizes being found where measures are self-reported, studies are cross-sectional, and broader measures of wellbeing are used. What is not questioned, however, is the assumption that wellbeing influences performance (Judge et al., 2001), as it is equally plausible that higher performance leads to better wellbeing, that there is a third factor influencing both wellbeing and performance, or that this association is dynamic and mutually reinforcing.

Recognising the complexity and uncertainty of the relationship between wellbeing and performance in different settings, it cannot be certain how it manifests within

more specific contexts (e.g., the healthcare sector) or where performance is operationalised differently (e.g., using quality of care). Consequently, a more focussed review on the wellbeing and quality of care relationship is needed.

## 10.4 The Wellbeing—Quality of Care Relationship in the Healthcare Sector

It cannot be assumed that the wellbeing—performance relationship found in other working contexts is directly generalisable to the healthcare sector. Crucially, as described earlier, there are differences between the constructs of job performance and quality of care. This is particularly important given that the strength of the association between wellbeing and performance varied depending on the type of performance measured. This section provides an overview of the research on the wellbeing and quality of care relationship, first at the individual level and then at the organisational level.

### 10.4.1 Wellbeing and Quality of Care at the Individual Level

The vast majority of research that has examined this issue has focused at the individual level, considering how healthcare staff wellbeing relates to the quality of care that they themselves provide. In one of the largest reviews in this area (Salyers et al., 2016), the syntheses of 82 studies involving 210,669 healthcare workers found that higher levels of burnout were associated with lower levels of quality ( $r = -0.26$ ) and safety ( $r = -0.23$ ). These relationships were stronger for nurses (compared to doctors) and for emotional exhaustion (compared to depersonalisation, reduced personal accomplishment).

Similar findings were observed in a meta-analysis of 47 studies involving 42,473 physicians (Panagioti et al., 2018). A high level of burnout was associated with increased odds of patient safety incidents ( $OR = 1.96$ ), low professionalism ( $OR = 2.31$ ), and patient-reported satisfaction ( $OR = 2.28$ ). All three dimensions of burnout increased the odds of poor patient safety. However, unlike other reviews involving burnout, depersonalisation generally had the strongest impact on quality of care. This was attributed to findings showing depersonalisation to be linked with low professionalism. Where quality of care was self-reported by doctors the odds ratios were stronger than where they were recorded by the system. Stronger effect sizes were also observed among more junior doctors although no potential explanation for this is provided. A separate review of doctor burnout found moderate evidence that it related to patient safety measures, although the evidence for a relationship with other aspects of quality of care (e.g., patient satisfaction, physician attitudes) was weak (Dewa, Loong, Bonato, & Trojanowski, 2017).

Recognising the dominance of burnout, Scheepers and colleagues (2015) focused on links between positive wellbeing and patient care among doctors. In their review of 18 studies, the vast majority examined job satisfaction, but career satisfaction and work engagement were also considered. Consistent with the findings outlined above, evidence for the anticipated positive relationships varied according to the type of quality of care measure. Most relationships involving patient satisfaction and interpersonal aspects of patient care (e.g., frequency and quality of communication) were supported. However, only half the studies looking at technical measures of quality of care (e.g., medical errors and adequacy of treatment procedures) found positive relationships while the only study to look at actual patient health outcomes was not.

Focusing on patient safety as an outcome, a review of 46 studies found that 59% of relationships involving wellbeing as a predictor were supported (Hall et al., 2016). Wellbeing here encompassed a wide spectrum of measures ranging from symptoms of psychiatric morbidity to quality of life. Burnout was examined separately, as a general index rather than a multi-dimensional construct, with 70% of relationships examined predicting patient safety. A key finding here was that studies that did not observe significant findings were less likely to have used self-report outcome measures, indicating that how quality of care is measured matters.

#### ***10.4.2 Wellbeing and Quality of Care at the Group Level***

Quality of care at the group level ranges from teams to wards, departments, and hospitals. These are indicators of quality that are routinely collected (e.g., patient satisfaction, hospital mortality, infection rates) but can also be obtained from the aggregated perception of care provided by groups of individuals. Where studies have looked at both the individual and group level of this relationship, associations at the individual level are not only more likely to be significant but to have stronger effect sizes (Salyers et al., 2016; Teoh, 2018). However, few studies have examined the wellbeing and quality of care relationship at the group level, and, to our knowledge, no reviews or meta-analyses exist. As such, we instead consider individual studies examining this relationship.

A key indicator of quality in the healthcare sector is hospital mortality rates. In England, analysis of the National Health Service's Staff Survey has consistently found that staff wellbeing does not predict hospital mortality rates (Teoh, 2018; Topakas, Admasachew, & Dawson, 2010a, 2010b). Moreover, when this relationship was examined longitudinally, none of the staff wellbeing measures predicted patient mortality rates two years later (Powell et al., 2014). Hospital mortality was predicted in a Swiss study involving 54 intensive care units, but the emotional exhaustion of doctors and nurses was the only burnout component to account for standardised mortality ratios (Welp, Meier, & Manser, 2015). All three burnout components predicted workers' collective self-rated patient safety but did not have an influence on patients' length of stay. This lack of significant findings may be attributable to the

measurement of mortality rates. As a complex indicator, it is influenced by multiple factors and is possibly too blunt to measure quality of care effectively (Bottle, Jarman, & Aylin, 2011).

Focusing on infection rates, a study across six Finnish hospitals found that work-related stress (i.e., the imbalance between effort and reward), was associated with a 2.47 increase in infection within bed wards (Virtanen et al., 2009). However, the same study did not find job strain, when measured as high demands and low control, to predict infection rates. The authors attributed this to the effort-reward perspective representing a wider perspective of the work environment and wellbeing than the more restrictive demand-control model. Similarly, English hospitals with better staff wellbeing reported lower rates of MRSA infections than those with lower staff wellbeing (Boorman, 2009). Here, staff wellbeing was a composite measure consisting of work-related stress, job satisfaction, turnover intention, and injury rates. Where individual measures of staff wellbeing were used (e.g., work-related stress, job satisfaction, work engagement or presenteeism), none of them predicted MRSA or *C. difficile* infection rates two years later (Powell et al., 2014). These findings indicate that using multiple measures of different aspects of wellbeing are more likely to capture wellbeing levels within an organisation and to demonstrate an association with organisational-level care outcomes.

Patient experience is typically represented by patient satisfaction scores. The Boorman Review (2009) into healthcare workers' wellbeing in England found that healthcare organisations that had better wellbeing also had higher levels of patient satisfaction. As mentioned above, staff wellbeing consisted of a combination of work-related stress, job satisfaction, turnover intention, and injury rates. In general, stronger effect sizes were observed for nurses, followed by doctors. Looking specifically at poor wellbeing, the emotional exhaustion levels of staff from rehabilitation teams in the United States were associated with patient satisfaction on three out of four measured dimensions (Garman, Corrigan, & Morris, 2002). These were satisfaction with the rehabilitation environment, their treatment, and how patients were being prepared for autonomy. This was not the case for the other components of burnout. Similarly, a large study drawing on nurses from 617 American and 488 European hospitals reported that high levels of burnout were related to lower patient satisfaction (Aiken et al., 2012). This included patients being less likely to rate their hospital experience as good, less likely to recommend the hospital and to report less favourable communication from nurses. Apart from burnout, other studies have found that neither work-related stress, general health nor presenteeism were found to predict patient satisfaction from English hospitals (Powell et al., 2014; Teoh, 2018; Topakas et al., 2010b).

More consistent findings are observed for positive wellbeing. Here, further analysis of the findings of the National Health Service Staff Survey in England report that work engagement of all healthcare staff (Topakas et al., 2010a) and of doctors (Teoh, 2018) predicted patient satisfaction. Similar findings were observed for job satisfaction, where high levels were associated with higher levels of patient satisfaction on eight different aspects of care (Dawson, 2009). These included trust and

confidence in their doctors; having sufficient help with meals; getting answers that they understood from nurses; and being ignored by nurses.

Unlike any of the other studies at the group level, there is longitudinal evidence showing that work engagement and job satisfaction scores predicted the patient satisfaction scores of 347 healthcare organisations in England two years later (Powell et al., 2014).

#### ***10.4.3 Summary of the Wellbeing and Quality of Care Relationship***

From the research reviewed above, it is evident that there is support for a relationship between healthcare staff wellbeing and quality of care. However, the presence and strength of this relationship is even more tenuous than the wellbeing—performance relationship in the general occupational literature, suggesting that there are other factors involved. One key difference is the dominance of measures of ill-health, particularly burnout, within this occupational group. Fewer studies have examined positive wellbeing like work engagement, but the initial evidence suggests that negative aspects of wellbeing might have a stronger impact on patient care. While the reviews above did not examine more severe forms of ill-health, individual studies have found more consistent evidence involving depression and anxiety as predictors. (Shanafelt et al., 2010; Weigl, Schneider, Hoffmann, & Angerer, 2015; West, Tan, Habermann, Sloan, & Shanafelt, 2010). In contrast, the role of work-related stress, work engagement, and job satisfaction is more inconsistent and may mean that doctors continue to function and perform adequate levels of service when stress is high, and engagement and satisfaction are low. In addition, it is clear that relationships were weaker or less clear where quality of care was rated by patients or observers than when they are self-rated (Scheepers, Boerebach, Arah, Heineman, & Lombarts, 2015), raising questions about their sensitivity and the possible role of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). More importantly, there is a dearth of studies considering quality of care measures that are at the group level and/or that involve actual clinical outcomes (Garman et al., 2002). These are all serious issues that affect the validity of the staff wellbeing—quality of care relationship and are discussed in more detail below.

### **10.5 The Inconsistency of the Staff Wellbeing and Quality of Care Relationship Within the Healthcare Sector**

Concerns around the validity of the wellbeing and performance relationships are well established (Taris, 2006; Taris & Schreurs, 2009; Warr & Nielsen, 2018); they include concerns about how wellbeing is conceptualised, how studies are designed,

and the nature of the relationship between wellbeing and performance. In applying this relationship to the healthcare sector, these concerns are also present when trying to relate wellbeing and performance in the healthcare context. In addition, there are more context-specific issues that are discussed below.

### ***10.5.1 Measurement of Wellbeing and Quality of Care***

Fundamentally, the basis of establishing a relationship between wellbeing and quality of care requires the ability to operationalise and measure these constructs. Nevertheless, both constructs present challenges that are reviewed below.

The increasingly demanding work environment within the healthcare sector means that researchers have typically focused on negative aspects of wellbeing, particularly burnout (Teoh, Hassard, & Cox, 2018). However, while wellbeing exists on a continuum, it is important to recognise that positive (e.g., work engagement) and negative (e.g., burnout) constructs are not directly opposed. As such, research that has been carried out in the wider workforce which has predominately looked at job satisfaction (Judge et al., 2001) should be contrasted with that conducted in the healthcare sector which has mainly focused on burnout (Salyers et al., 2016). This fundamentally undermines the “happy-productive worker” hypothesis, which by its name focuses on positive wellbeing, and its accompanying research.

The measurement of wellbeing in itself is often problematic, but the healthcare sector offers additional challenges that make this particularly salient. Issues of stigma, particularly around mental health, means that healthcare workers are less likely to disclose poor wellbeing even when they are struggling (Cohen, Winstanley, & Greene, 2016). There is a perception that poor wellbeing might be seen as a failure on the part of the individual to cope with their work environment and this discourages them to seek help. A reluctance to disclose poor wellbeing clearly impacts self-reporting on research surveys. It also influences “objective” measures of wellbeing; for example, a tendency for healthcare workers to take annual leave or engage in presenteeism than take sick leave will result in inaccurate levels of sickness absence reporting (Kinman, 2019). This likely underestimates the true rate of poor wellbeing in the healthcare sector and, accordingly, undermines its statistical relationship with quality of care.

Equally, there are concerns around the validity of quality of care measures. For example, questions have been raised about the relevance of measuring patient satisfaction (Teoh et al., 2019) as satisfaction is strongly associated with how well a patient’s experience of care met their expectations (Crow et al., 2002). It may be the case that over time poor practice becomes the norm and lowers patient expectations (McKinstry et al., 2007). Similarly, when it comes to safety, incidents are often under-reported if workers see the process as irrelevant or where they fear reprisal (Probst & Estrada, 2010). This creates problems as safety incidents are already low-frequency events that skew data and subsequent analysis (Christian, Bradley, Wallace, & Burke, 2009). However, the complexity of measuring safety is compounded by higher rates

of reporting in mature safety environments where workers feel psychologically safe to do so (Raleigh, Hussey, Seccombe, & Qi, 2009). In such environments, more safety errors reported were in fact associated with higher levels of patient satisfaction (Raleigh et al., 2009) and lower infection rates (West, Dawson, Admasachew, & Topakas, 2011).

Quality of care outcomes at the individual level typically use self-reported measures that touch upon someone's belief, attitude, or perception (Teoh et al., 2019). While this provides an indication of the level of care, it does not represent actual clinical care outcomes (e.g., treatment effectiveness). This undermines the appropriateness of generalising the wellbeing and quality of care relationship to actual improvement in individual patient care, as intention and awareness do not necessarily lead to relevant behaviour change (Michie, Johnston, Francis, Hardeman, & Eccles, 2008). This is evident in the review studies above where weaker relationships were observed when outcomes were measured by others than where they were self-reported (Dewa et al., 2017; Hall et al., 2016).

As important measures of performance, quality of care indicators are scrutinised by various stakeholders including management, government, the media, and the public. This also, to a degree, extends to the measurement of staff wellbeing. Where this information is then used to evaluate performance and make decisions about resource allocation, it has been argued that this opens up the possibility of manipulation or gaming (Mears, 2014). Examples of such behaviour include the re-categorisation of patient deaths or the refusal to take on complex surgical cases to present more favourable mortality statistics (Mears, 2014; Omoigui et al., 1996), or recoding case severity to present more positive wait time statistics (Buchanan & Storey, 2010) or infection rates (Ider, Adams, Morton, Whitby, & Clements, 2011).

### ***10.5.2 The Role of Moderators***

From the research reviewed in this chapter, it is evident that a number of factors moderate the wellbeing and quality of care relationship. It is beyond the scope here to review all of these in any depth. Consequently, we focus on three factors that are particularly salient—*intrinsic motivation, occupational group, and job resources*.

For many, the motivation to work in the healthcare sector is intrinsic and lies in a desire to make a difference, help others and/or live by personal values. As a consequence, healthcare workers are more likely to exert additional effort and energy to provide patients with good quality care, although this can come at a cost to their own health (Groß et al., 2014; McGowan, Humphries, Burke, Conry, & Morgan, 2013). This often entails working longer hours or at a quicker pace, taking on additional workload, or even working when ill (i.e., *presenteeism*) (Groß et al., 2014; Oxtoby, 2015; Spiers et al., 2017; Tucker et al., 2010). Another mechanism by which the wellbeing of healthcare workers influences the quality of care is through emotional labour (Hochschild, 1983). This refers to the expectation that healthcare workers will regulate their 'true' emotions and present the appropriate emotional

response during patient encounters so that they still deliver, or at appear to deliver, good quality care. ‘Deep acting’ enables workers to become adept at expressing the appropriate emotions, even when they may feel frustrated or angry. Understanding this mechanism is important because it may explain instances where the wellbeing and quality of care relationship are weak or non-existent. In addition, the extra effort required to regulate emotions places a further burden on the individual that over time not only further damages their own wellbeing but also increases the likelihood of them exiting the workforce (Khan, Teoh, Islam, & Hassard, 2018; Mann, 2005).

Continuing the theme of professional identity, the occupational group of healthcare staff is also a potential moderator. Where this has been examined, results indicate a stronger relationship between staff wellbeing and quality of care for nurses, followed by inter-disciplinary samples, and then doctors (Salyers et al., 2016). Such findings have been attributed to nurses being the largest occupational group in healthcare and having a more prominent role in the day-to-day contact and management of patients (Buchan, Seccombe, & Charlesworth, 2016; Kieft, de Brouwer, Francke, & Delnoij, 2014). Therefore, poor behaviours and decisions made by nurses are likely to have a stronger and more cumulative influence on the care and the experience that the patient receives. Revisiting concerns about the objective or subjective measurement of quality of care, nurses are more likely to report errors than doctors and pharmacists (Antonow, Smith, & Silver, 2000), and nurses and pharmacists are more likely to disclose making patient safety incidents than doctors (Sarvadikar, Prescott, & Williams, 2010). This suggests that there are differences in how the various healthcare occupational groups interact with patients as well as their understanding of what good quality care is. However, little is known about these occupational differences.

The importance of resources has been covered in Sect. 10.3.1.2 above and there are resources that are particularly salient in the healthcare sector. These are instrumental in helping staff achieve work tasks and can mitigate the impact of the challenging work environments (Bakker & Demerouti, 2017; Karasek & Theorell, 1990). For example, healthcare workers generally report higher levels of social support than those from other sectors (Van den Broeck et al., 2017). This could be attributed to the interdependence of healthcare staff, where many roles are team-based and require collaboration (Groß et al., 2014). Social support functions as a job resource by providing both information and emotional support that are important for work processes and to meet a need for belonging (Haslam, O’Brien, Jetten, Vormedal, & Penna, 2005).

Additional resources are developed through the extensive training and qualifications required for many healthcare roles. The upside of this is the high level of competence and skills acquired by workers which help them complete work tasks (Cave et al., 2007; Cole & Crichton, 2006). In addition, the practical training, supervision, and continual professional development staff receive ensure that their skills remain relevant and up to date. This also enhances self-efficacy and is likely to contribute to the higher levels of resilience that has been reported in healthcare workers (Howe, Smajdor, & Stöckl, 2012; Murray, Cardwell, & Donnelly, 2017). These additional resources at the psychosocial (e.g., training, supervision) and individual (e.g., resilience, self-efficacy) level function to help healthcare workers better

manage their wellbeing and can mitigate the impact poor wellbeing might have on the quality of care they provide. It is plausible, however, that the high levels of resources reported might be the result of healthcare workers who are unable to cope, who have lower levels of resources, and who struggle with their wellbeing choose to exit the healthcare sector (Kinman & Teoh, 2018).

### ***10.5.3 Recognising the Wider Context***

This chapter so far has focused primarily on relationships between staff wellbeing and the quality of care provided, although there is some indication that the converse is also plausible (Judge et al., 2001). This neglects the fact that both staff wellbeing and quality of care are situated within a broader context and are influenced by factors from the wider system directly and indirectly. However, few studies reviewed so far have used research designs that account for this multilevel perspective. This is important for two reasons. Firstly, multilevel analyses allow for the examination of relationships across different levels, such as where a measure at the individual level (e.g., staff wellbeing) has an influence on organisational outcome measure (e.g., hospital mortality rates (Teoh, 2018). Second, healthcare staff are structured within teams, wards, hospitals and organisations that are situated within a wider geographical location (Byrne, 2012; Croon & van Veldhoven, 2007). Over time, this clustering results in staff becoming increasingly more like those around them, and less like those working in other groups (Croon & van Veldhoven, 2007). This violates many statistical tests' assumptions that individual data points (i.e., staff) are independent of each other and undermines the credibility of their findings (Sjetne, Veenstra, & Stavem, 2007).

The importance of recognising the wider system is evident in studies that have shown organisational factors (i.e., bed occupancy factors, staffing, number of patients) and group norms (i.e., culture) to influence staff wellbeing and patient care (Montgomery, Panagopoulou, Kehoe, & Valkanos, 2011; Powell et al., 2014; Teoh, 2018). Beyond the organisational level, austerity measures and lack of effective policies supporting healthcare staff have also been linked to poor staff wellbeing and compromised patient care (Kerasidou & Kingori, 2019; McGowan et al., 2013). Consequently, both staff wellbeing and quality of care are products of the decisions and policies made across multiple levels, including the organisation, the sector, and the national, and even international level. For example, the implementation of the European Working Time Directive at the European level led to substantial changes to the working condition of healthcare staff, although this has had both positive and negative impacts on staff wellbeing and the patient experience (Collum, Harrop, Stokes, & Kendall, 2010; Gnerre et al., 2017). All of these links directly with the concept of *Healthy Healthcare* discussed within this book, which advocates that healthcare systems, that are managed and financed consistently with the available resources have the potential to improve workers' health and patient care.

## 10.6 Agenda for the Future

Moving forward with the staff wellbeing and quality of care relationship, it is imperative to go beyond assuming that this association is simple. Instead, there must be a recognition that this is a complex relationship that is influenced by numerous factors in the wider system as postulated by the *Healthy Healthcare* concept. Implications for research, practice, and policy are reviewed in the sections below.

### 10.6.1 *Implications for Research*

The next step for researchers is to embrace the complexity of the staff wellbeing and quality of care relationship. This means using measures that represent key contextual factors at the team (e.g., leadership) and organisational (e.g., financial resourcing, bed occupancy) levels. There are numerous ways in which these factors might influence staff wellbeing and quality of care, including: (i) by directly affecting both constructs, (ii) where staff wellbeing mediates the relationship between contextual factors and quality of care, and/or (iii) where contextual factors operate as moderators within the relationship. Further research should, therefore, seek to test these pathways. This would help improve our understanding of the mechanisms by which staff wellbeing and quality of care are related. In addition to wider contextual factors, there is scope to test the moderators introduced earlier in the chapter (e.g., social support, emotional labour, training, self-efficacy, resilience). It is also crucial for future studies to recognise that healthcare workers are a heterogeneous group. The vast majority of research reviewed here has sampled doctors and nurses, neglecting other vital roles that include, but are not limited to—healthcare assistants, paramedics, porters, administrators, and laboratory technicians. The factors that influence quality of care for these different groups might be different and therefore warrant exploration. All of these issues are directly relevant to the *Healthy Healthcare* concept and shed light into the complexity and heterogeneity that exists within the healthcare sector.

From a methods perspective, future research should embrace multilevel analyses that are not only statistically more appropriate (Croon & van Veldhoven, 2007), but allow the modelling of relationships and measures across different levels. Within this, there is the need to consider the concerns and limitations highlighted in this chapter around how staff wellbeing and quality of care are operationalised. One such example is to move away from the popular discourse around ill-health (e.g., burnout) among healthcare workers and include more measures of positive wellbeing (e.g., work engagement). Similarly, researchers should use a broader range of quality of care measures—particularly those that measure clinical outcomes for patients. This will have additional benefit of informing the decisions made by organisations and policymakers.

### **10.6.2 Implications for Practice and Policy**

A shift in thinking by policymakers and practitioners is required to recognise the complexity of the relationship between staff wellbeing and quality of care. Both these constructs do not function independently within silos, nor do they operate independently of context. As such, a holistic approach could be considered (Leka, Jain, Zwetsloot, Andreou, & Hollis, 2016). While the *Healthy Healthcare* concept remains new, it has strong parallels to existing models. For example, there is relevance in drawing on existing programmes such as the *Total Worker Health Programme* (NIOSH, 2017) and *WHO Healthy Workplace Model* (WHO, 2010) that focus on improving the system by integrating health promotion with occupational safety and health protection to enhance staff wellbeing and safety. A multi-level perspective is required; crucially, interventions should focus on changes to the work environment and system, and not solely target change within the individual healthcare worker (West, Dyrbye, Erwin, & Shanafelt, 2016).

While there have been few attempts to develop such interventions, an evaluation of a patient safety initiative across four UK hospitals found an improvement on some clinical processes, and a reduction in the number of workers experiencing work-related stress (Benning et al., 2011). Therefore, more practical interventions that link improvements in the work-related wellbeing of staff and enhanced patient care are still needed. As described in the “implications for research” section above, there is a need to consider more positive responses (e.g., motivation, work engagement) within the wellbeing space. In addition to the ethical argument, there is evidence that happy and engaged healthcare workers provide better quality of care. Consequently, workplace interventions should not only look at managing and preventing ill-health but consider how work environments that facilitate positive wellbeing can be developed (Knight, Patterson, & Dawson, 2017).

## **10.7 Conclusion**

It is widely recognised that urgent intervention is required to safeguard the healthcare sector’s ability to cope with increasing demands with fewer resources (European Commission, 2015). However, to focus solely on staff wellbeing or quality of care neglects the fact that these are related, but constituent parts within a wider and more complex system. This chapter has demonstrated that while there is a relationship between healthcare staff wellbeing and the quality of patient care, the presence and strength of this relationship is influenced by numerous other factors. Crucially, there are limitations and gaps within the existing research that restrict the conclusions that can be drawn. All this provides a basis and impetus to inform future research and practice, recognising the need to fully embrace the systems perspective advocated by the *Healthy Healthcare* system.

## References

- Adams, J. S. (1963). Towards an understanding of inequity. *The Journal of Abnormal and Social Psychology*, 67(5), 422–436. <https://doi.org/10.1037/h0040968>
- Aiken, L. H., Sermeus, W., Van den Heede, K., Sloane, D. M., Busse, R., McKee, M., & Kutney-Lee, A. (2012). Patient safety, satisfaction, and quality of hospital care: Cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. *BMJ (Clinical Research Ed.)*, 344(March), e1717. <https://doi.org/10.1136/bmj.e1717>
- Antonow, J., Smith, A., & Silver, M. (2000). Medication error reporting: A survey of nursing staff. *Journal of Nursing Care Quality*, 15(1), 42–48.
- Bakker, A. B., & Demerouti, E. (2017). Job demands-resources theory: Taking stock and looking forward. *Journal of Occupational Health Psychology*, 22(3), 273–285. <https://doi.org/10.1037/ocp0000056>
- Bakker, A. B., & Schaufeli, W. B. (2008). Positive organizational behavior: Engaged employees in flourishing organizations. *Journal of Organizational Behavior*, 29(2), 147–154. <https://doi.org/10.1002/job.515>
- Bakker, A. B., Schaufeli, W. B., Leiter, M. P., & Taris, T. W. (2008). Work engagement: An emerging concept in occupational health psychology. *Work & Stress*, 22(3), 187–200. <https://doi.org/10.1080/02678370802393649>
- Benning, A., Ghaleb, M., Suokas, A., Dixon-Woods, M., Dawson, J. F., Barber, N., & Lilford, R. (2011). Large scale organisational intervention to improve patient safety in four UK hospitals: Mixed method evaluation. *BMJ*, 342(Feb03 1), d195–d195. <https://doi.org/10.1136/bmj.d195>.
- BMA. (2018). *Fatigue and sleep deprivation—The impact of different working patterns on doctors*. London, UK: BMA.
- Boorman, S. (2009). *NHS health and well-being review: Interim report*. London, UK: Department of Health.
- Bottle, A., Jarman, B., & Aylin, P. P. (2011). Strengths and weaknesses of hospital standardised mortality ratios. *BMJ (Clinical Research Education)*, 342, c7116. <https://doi.org/10.1136/bmj.c7116>
- Buchan, J., Seccombe, I., & Charlesworth, A. (2016). *Staffing matters; funding counts. Workforce profile and trends in the English NHS*. London, UK: The Health Foundation.
- Buchanan, D., & Storey, J. (2010). Don't stop the clock: Manipulating hospital waiting lists. *Journal of Health, Organisation and Management*, 24(4), 343–360. <https://doi.org/10.1108/14777261011064977LK->
- Byrne, B. M. (2012). *Structural equation modeling with Mplus*. New York, NY: Routledge.
- Calvo, M. G., & Eysenck, M. W. (1992). Anxiety and performance: The processing efficiency theory. *Cognition and Emotion*, 6(6), 409–434. <https://doi.org/10.1080/02699939208409696>.
- Cave, J., Goldacre, M. J., Lambert, T., Woolf, K., Jones, A., & Dacre, J. (2007). Newly qualified doctors' views about whether their medical school had trained them well: Questionnaire surveys. *BMC Medical Education*, 7, 38. <https://doi.org/10.1186/1472-6920-7-38>
- Christensen, M. (2017). Healthy individuals in healthy organizations: The happy productive worker hypothesis. In: *The positive side of occupational health psychology* (pp. 155–169). Cham: Springer International Publishing. [https://doi.org/10.1007/978-3-319-66781-2\\_13](https://doi.org/10.1007/978-3-319-66781-2_13)
- Christian, M. S., Bradley, J. C., Wallace, J. C., & Burke, M. J. (2009). Workplace safety: A meta-analysis of the roles of person and situation factors. *Journal of Applied Psychology*, 94(5), 1103–1127. <https://doi.org/10.1037/a0016172>
- Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology*, 64(1), 89–136. <https://doi.org/10.1111/j.1744-6570.2010.01203.x>
- Cohen, D., Winstanley, S. J., & Greene, G. (2016). Understanding doctors' attitudes towards self-disclosure of mental ill health. *Occupational Medicine*, 66(5), 383–389. <https://doi.org/10.1093/occmed/kqw024>

- Cole, E., & Crichton, N. (2006). The culture of a trauma team in relation to human factors. *Journal of Clinical Nursing, 15*(10), 1257–1266. <https://doi.org/10.1111/j.1365-2702.2006.01566.x>
- Collum, J., Harrop, J., Stokes, M., & Kendall, D. (2010). Patient safety and quality of care continue to improve in NHS North West following early implementation of the European Working Time Directive. *QJM: Monthly Journal of the Association of Physicians, 103*(12), 929–940. <https://doi.org/10.1093/qjmed/hcq139>
- Cosley, B. J., McCoy, S. K., Saslow, L. R., & Epel, E. S. (2010). Is compassion for others stress buffering? Consequences of compassion and social support for physiological reactivity to stress. *Journal of Experimental Social Psychology, 46*(5), 816–823. <https://doi.org/10.1016/j.jesp.2010.04.008>
- Croon, M. A., & van Veldhoven, M. J. P. M. (2007). Predicting group-level outcome variables from variables measured at the individual level: A latent variable multilevel model. *Psychological Methods, 12*(1), 45–57. <https://doi.org/10.1037/1082-989X.12.1.45>
- Cropley, M., & Zijlstra, F. R. H. (2011). Work and rumination. In J. Langan-Fox & C. L. Cooper (Eds.), *New horizons in management. Handbook of stress in the occupations* (pp. 487–501). Northampton, MA: Edward Elgar Publishing. <https://doi.org/10.4337/9780857931153.00061>.
- Crow, R., Gage, H., Hampson, S., Hart, J., Kimber, A., Storey, L., & Thomas, H. (2002). The measurement of satisfaction with healthcare: Implications for practice from a systematic review of the literature. *Health Technology Assessment, 6*(32).
- Dalgleish, T., Golden, A. M. J., Barrett, L. F., Au Yeung, C., Murphy, V., Tchanturia, K., & Watkins, E. (2007). Reduced specificity of autobiographical memory and depression: The role of executive control. *Journal of Experimental Psychology: General, 136*(1), 23–42. <https://doi.org/10.1037/0096-3445.136.1.23>
- Dasan, S., Gohil, P., Cornelius, V., & Taylor, C. (2015). Prevalence, causes and consequences of compassion satisfaction and compassion fatigue in emergency care: A mixed-methods study of UK NHS Consultants. *Emergency Medicine Journal, 32*(8), 588–594. <https://doi.org/10.1136/emermed-2014-203671>
- Dawson, J. F. (2009). *Does the experience of staff working in the NHS link to the patient experience of care? An analysis of links between the 2007 acute trust*. Birmingham, UK: Aston Business School.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York, NY: Plenum Publishing Co.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands- resources model of burnout. *Journal of Applied Psychology, 86*(3), 499–512. <https://doi.org/10.1108/02683940710733115>
- Dewa, C. S., Loong, D., Bonato, S., & Trojanowski, L. (2017). The relationship between physician burnout and quality of healthcare in terms of safety and acceptability: A systematic review. *British Medical Journal Open, 7*(6), e015141. <https://doi.org/10.1136/bmjjopen-2016-015141>
- Donabedian, A. (1988). The quality of care. How can it be assessed? *JAMA, 260*(12), 1743–1748. <https://doi.org/10.1001/jama.260.12.1743>
- Drury, V., Craigie, M., Francis, K., Aoun, S., & Hegney, D. G. (2014). Compassion satisfaction, compassion fatigue, anxiety, depression and stress in registered nurses in Australia: Phase 2 results. *Journal of Nursing Management, 22*(4), 519–531. <https://doi.org/10.1111/jonm.12168>
- European Commission. (2015). *Recruitment and retention of the health workforce in Europe*. Publications Office of the European Union. <https://doi.org/10.2818/430223>
- Farrin, L., Hull, L., Unwin, C., Wykes, T., & David, A. (2003). Effects of depressed mood on objective and subjective measures of attention. *The Journal of Neuropsychiatry and Clinical Neurosciences, 15*(1), 98–104. <https://doi.org/10.1176/jnp.15.1.98>
- Figley, C. R. (1995). Introduction. In *Compassion fatigue: Coping with secondary traumatic stress in those who treat the traumatized* (pp. xiii–xxii). New York, NY: Brunner/Mazel.
- Ford, M. T., Cerasoli, C. P., Higgins, J. A., & Decesare, A. L. (2011). Relationships between psychological, physical, and behavioural health and work performance: A review and meta-analysis. *Work & Stress, 25*(3), 185–204. <https://doi.org/10.1080/02678373.2011.609035>

- Garman, A. N., Corrigan, P. W., & Morris, S. (2002). Staff burnout and patient satisfaction: Evidence of relationships at the care unit level. *Journal of Occupational Health Psychology*, 7(3), 235–241. <https://doi.org/10.1037/1076-8998.7.3.235>
- Gnerre, P., Montemurro, D., Rossi, A. P., Troise, C., Palermo, C., Amati, et al. (2017). Lack of application of the European work time directive: Effects on workload, work satisfaction and burnout among Italian physicians. *Italian Journal of Medicine*, 11(2), 159–163. <https://doi.org/10.4081/itjm.2017.714>.
- Groß, S. E., Ernstmann, N., Jung, J., Karbach, U., Ansmann, L., Gloede, T. D., & Neumann, M. (2014). Can a stressed oncologist be good in a consultation? A qualitative study on the oncologists' perception. *European Journal of Cancer Care*, 23(5), 594–606. <https://doi.org/10.1111/ecc.12199>
- Hall, L. H., Johnson, J., Watt, I., Tsipa, A., & O'Connor, D. B. (2016). Healthcare staff wellbeing, burnout, and patient safety: A systematic review. *PLoS ONE*, 11(7), 1–12. <https://doi.org/10.1371/journal.pone.0159015>
- Harrison, D. A., Newman, D. A., & Roth, P. L. (2006). How important are job attitudes? Meta-analytic comparisons of integrative behavioral outcomes and time sequences. *Academy of Management Journal*, 49(2), 305–325. <https://doi.org/10.5465/amj.2006.20786077>
- Haslam, S. A., O'Brien, A., Jetten, J., Vormedal, K., & Penna, S. (2005). Taking the strain: Social identity, social support, and the experience of stress. *British Journal of Social Psychology*, 44(3), 355–370. <https://doi.org/10.1348/014466605X37468>
- Hobfoll, S. E. (2002). Social and psychological resources and adaptation. *Review of General Psychology*, 6(4), 307–324. <https://doi.org/10.1037/1089-2680.6.4.307>
- Hobfoll, S. E., Halbesleben, J., Neveu, J.-P., & Westman, M. (2018). Conservation of resources in the organizational context: The reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, 5(1), 103–128. <https://doi.org/10.1146/annurev-orgpsych-032117-104640>
- Hochschild, A. R. (1983). *The managed heart: Commercialization of human feeling*. Berkeley, CA: University of California Press.
- Howe, A., Smajdor, A., & Stöckl, A. (2012). Towards an understanding of resilience and its relevance to medical training. *Medical Education*, 46(4), 349–356. <https://doi.org/10.1111/j.1365-2923.2011.04188.x>
- Iaffaldano, M. T., & Muchinsky, P. M. (1985). Job satisfaction and job performance: A meta-analysis. *Psychological Bulletin*, 97(2), 251–273. <https://doi.org/10.1037/0033-2909.97.2.251>
- Ider, B.-E., Adams, J., Morton, A., Whitby, M., & Clements, A. (2011). Gaming in infection control: A qualitative study exploring the perceptions and experiences of health professionals in Mongolia. *American Journal of Infection Control*, 39(7), 587–594. <https://doi.org/10.1016/j.ajic.2010.10.033>
- Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction-job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, 127(3), 376–407. <https://doi.org/10.1037/0033-2909.127.3.376>
- Karasek, R., & Theorell, T. (1990). *Healthy work: Stress, productivity and the reconstruction of working life*. New York, NY: Basic Books.
- Kerasidou, A., & Kingori, P. (2019). Austerity measures and the transforming role of A&E professionals in a weakening welfare system. *PLoS ONE*, 14(2), e0212314. <https://doi.org/10.1371/journal.pone.0212314>
- Khan, A., Teoh, K. R.-H., Islam, S., & Hassard, J. (2018). Psychosocial work characteristics, burnout, psychological morbidity symptoms and early retirement intentions: a cross-sectional study of NHS consultants in the United Kingdom. *BMJ Open*.
- Kieft, R. A., de Brouwer, B. B., Francke, A. L., & Delnoij, D. M. (2014). How nurses and their work environment affect patient experiences of the quality of care: A qualitative study. *BMC Health Services Research*, 14(1), 249. <https://doi.org/10.1186/1472-6963-14-249>
- Kinman, G. (2019). Sickness presenteeism at work: Prevalence, costs and management. *British Medical Bulletin*, 129(1), 69–78. <https://doi.org/10.1093/bmb/lby043>

- Kinman, G., & Grant, L. (2016). Enhancing empathy in the helping professions. In D. F. Watt & J. Panksepp (Eds.), *Psychology and neurobiology of empathy* (pp. 297–319). Hauppauge, NY: Nova Biomedical Books.
- Kinman, G., & Teoh, K. R.-H. (2018). *What could make a difference to the mental health of UK doctors? A review of the research evidence*. London, UK, UK. Retrieved from [https://www.som.org.uk/sites/som.org.uk/files/What\\_could\\_make\\_a\\_difference\\_to\\_the\\_mental\\_health\\_of\\_UK\\_doctors\\_LTF\\_SOM.pdf](https://www.som.org.uk/sites/som.org.uk/files/What_could_make_a_difference_to_the_mental_health_of_UK_doctors_LTF_SOM.pdf).
- Kizilbash, A. H., Vanderploeg, R. D., & Curtiss, G. (2002). The effects of depression and anxiety on memory performance. *Archives of Clinical Neuropsychology*, 17(1), 57–67. <https://doi.org/10.1093/arcln/17.1.57>
- Knight, C., Patterson, M., & Dawson, J. F. (2017). Building work engagement: A systematic review and meta-analysis investigating the effectiveness of work engagement interventions. *Journal of Organizational Behavior*, 38(6), 792–812. <https://doi.org/10.1002/job.2167>
- Landrigan, C. P., Rothschild, J. M., Cronin, J. W., Kaushal, R., Burdick, E., Katz, J. T., & Czeisler, C. A. (2004). Effect of reducing interns' work hours on serious medical errors in intensive care units. *New England Journal of Medicine*, 351(18), 1838–1848. <https://doi.org/10.1056/NEJMoa041406>
- Leka, S., Jain, A., Zwetsloot, G. I. J. M., Andreou, N., & Hollis, D. (2016). Future challenges of occupational safety and health policy-making in the UK. *Policy and Practice in Health and Safety*, 14(1), 65–80. <https://doi.org/10.1080/14773996.2016.1231871>
- Mann, S. (2005). A healthcare model of emotional labour: An evaluation of the literature and development of a model. *Journal of Health Organization and Management*, 19(4/5), 304–317. <https://doi.org/10.1108/14777260510615369>
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397–422. <https://doi.org/10.1146/annurev.psych.52.1.397>
- McCabe, S. B., & Gotlib, I. H. (1995). Selective attention and clinical depression: Performance on a deployment-of-attention task. *Journal of Abnormal Psychology*, 104(1), 241–245. <https://doi.org/10.1037/0021-843X.104.1.241>
- McGowan, Y., Humphries, N., Burke, H., Conry, M., & Morgan, K. (2013). Through doctors' eyes: A qualitative study of hospital doctor perspectives on their working conditions. *British Journal of Health Psychology*, 18(4), 874–891. <https://doi.org/10.1111/bjhp.12037>
- McKinstry, B., Walker, J., Porter, M., Fulton, C., Tait, A., Hanley, J., & Mercer, S. W. (2007). The impact of general practitioner morale on patient satisfaction with care: A cross-sectional study. *BMC Family Practice*, 8(57). <https://doi.org/10.1186/1471-2296-8-57>
- Mears, A. (2014). Gaming and targets in the English NHS. *Universal Journal of Management*, 2(7), 293–301.
- Meijman, T. F., & Mulder, G. (1998). Psychological aspects of workload. In P. J. D. Drenth, H. Thierry, & C. J. De Wolff (Eds.), *Handbook of Work and Organizational Psychology* (pp. 5–33). Hove, UK: Psychology Press. <https://doi.org/10.2307/2392800>
- Michie, S., Johnston, M., Francis, J., Hardeman, W., & Eccles, M. (2008). From theory to intervention: Mapping theoretically derived behavioural determinants to behaviour change techniques. *Applied Psychology*, 57(4), 660–680. <https://doi.org/10.1111/j.1464-0597.2008.00341.x>
- Montgomery, A., Panagopoulou, E., Kehoe, I., & Valkanos, E. (2011). Connecting organisational culture and quality of care in the hospital: Is job burnout the missing link? *Journal of Health Organization and Management*, 25(1), 108–123. <https://doi.org/10.1108/14777261111116851>
- Murray, M. A., Cardwell, C., & Donnelly, M. (2017). GPs' mental wellbeing and psychological resources: A cross-sectional s. *British Journal of General Practice*, 67(661), e547–e554. <https://doi.org/10.3399/bjgp17X691709>
- Najjar, N., Davis, L. W., Beck-Coon, K., & Carney Doebling, C. (2009). Compassion fatigue. *Journal of Health Psychology*, 14(2), 267–277. <https://doi.org/10.1177/1359105308100211>
- Niosh. (2017). Total worker health. Retrieved August 30, 2017, from <https://www.cdc.gov/niosh/twh/totalhealth.html>.

- Öhman, L., Nordin, S., Bergdahl, J., Birgander, L. S., & Neely, A. S. (2007). Cognitive function in outpatients with perceived chronic stress. *Scandinavian Journal of Work, Environment and Health*, 33(3), 223–232. <https://doi.org/10.5271/sjweh.1131>
- Omoigui, N. A., Miller, D. P., Brown, K. J., Annan, K., Cosgrove, D., Lytle, B., & Topol, E. J. (1996). Outmigration for coronary bypass surgery in an era of public dissemination of clinical outcomes. *Circulation*, 93(1), 27–33. <https://doi.org/10.1161/01.CIR.93.1.27>
- Oxtoby, K. (2015). Doctors need to resist “presenteeism”. *BMJ: British Medical Journal*, 351(8037), 12–13.
- Panagioti, M., Geraghty, K., Johnson, J., Zhou, A., Panagopoulou, E., Chew-Graham, C., & Esmail, A. (2018). Association between physician burnout and patient safety, professionalism, and patient satisfaction. *JAMA Internal Medicine*, 178(10), 1317. <https://doi.org/10.1001/jamaintermmed.2018.3713>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Powell, M., Dawson, J. F., Topakas, A., Durose, J., & Fewtrell, C. (2014). Staff satisfaction and organisational performance: Evidence from a longitudinal secondary analysis of the NHS staff survey and outcome data. *Health Services and Delivery Research*, 2(50), 1–306. <https://doi.org/10.3310/hsdr02500>
- Probst, T. M., & Estrada, A. X. (2010). Accident under-reporting among employees: Testing the moderating influence of psychological safety climate and supervisor enforcement of safety practices. *Accident Analysis & Prevention*, 42(5), 1438–1444. <https://doi.org/10.1016/j.aap.2009.06.027>
- Radey, M., & Figley, C. R. (2007). The social psychology of compassion. *Clinical Social Work Journal*, 35(3), 207–214. <https://doi.org/10.1007/s10615-007-0087-3>
- Raleigh, V. S., Hussey, D., Seccombe, I., & Qi, R. (2009). Do associations between staff and inpatient feedback have the potential for improving patient experience? An analysis of surveys in NHS acute trusts in England. *Quality & Safety in Health Care*, 18(5), 347–354. <https://doi.org/10.1136/qshc.2008.028910>
- Salyers, M. P., Bonfils, K. A., Luther, L., Firmin, R. L., White, D. A., Adams, E. L., & Rollins, A. L. (2016). The relationship between professional burnout and quality and safety in healthcare: A meta-analysis. *Journal of General Internal Medicine*. <https://doi.org/10.1007/s11606-016-3886-9>
- Sarvadikar, A., Prescott, G., & Williams, D. (2010). Attitudes to reporting medication error among differing healthcare professionals. *European Journal of Clinical Pharmacology*, 66(8), 843–853. <https://doi.org/10.1007/s00228-010-0838-x>
- Schaufeli, W. B., & Bakker, A. B. (2003). *Utrecht work engagement scale*. Utrecht: Occupational Health Psychology Unit Utrecht University.
- Scheepers, R. A., Boerebach, B. C. M., Arah, O. A., Heineman, M. J., & Lombarts, K. M. J. M. H. (2015). A systematic review of the impact of physicians' occupational well-being on the quality of patient care. *International Journal of Behavioral Medicine*, 22(6), 683–698. <https://doi.org/10.1007/s12529-015-9473-3>
- Shanafelt, T. D., Balch, C. M., Bechamps, G. J., Russell, T., Dyrbye, L. N., Satele, D., & Freischlag, J. A. (2010). Burnout and medical errors among American surgeons. *Annals of Surgery*, 251(6), 995–1000. <https://doi.org/10.1097/SLA.0b013e3181bfdbab3>
- Sjetne, I. S., Veenstra, M., & Stavem, K. (2007). The effect of hospital size and teaching status on patient experiences with hospital care: A multilevel analysis. *Medical Care*, 45(3), 252–258. <https://doi.org/10.1097/01.mlr.0000252162.78915.62>
- Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, and consequences*. Thousand Oaks, CA: Sage.
- Spiers, J., Buszewicz, M., Chew-Graham, C. A., Gerada, C., Kessler, D., Leggett, N., & Riley, R. (2017). Barriers, facilitators, and survival strategies for GPs seeking treatment for distress: A qualitative study. *British Journal of General Practice*, 67(663), e700–e708. <https://doi.org/10.3399/bjgp17X692573>

- Taris, T. W. (2006). Is there a relationship between burnout and objective performance? A critical review of 16 studies. *Work & Stress*, 20(4), 316–334. <https://doi.org/10.1080/02678370601065893>
- Taris, T. W., & Schreurs, P. J. G. (2009). Well-being and organizational performance: An organizational-level test of the happy-productive worker hypothesis. *Work & Stress*, 23(2), 120–136. <https://doi.org/10.1080/02678370903072555>
- Teoh, K. R.-H. (2018). *Hospital working conditions, doctors' work-related wellbeing, and the quality of care provided: A multilevel perspective*. Birkbeck University of London.
- Teoh, K. R.-H., Hassard, J., & Cox, T. (2018). Individual and organizational psychosocial predictors of hospital doctors' work-related well-being. *Health Care Management Review*, 1. <https://doi.org/10.1097/HMR.0000000000000207>.
- Teoh, K. R.-H., Hassard, J., & Cox, T. (2019). Doctors' perceived working conditions and the quality of patient care: A systematic review. *Work & Stress*, 1–29. <https://doi.org/10.1080/02678373.2019.1598514>.
- Topakas, A., Admasachew, L., & Dawson, J. F. (2010a). *F - Outcomes of staff engagement in the NHS: A trust level analysis*. Birmingham, UK: Aston Business School.
- Topakas, A., Admasachew, L., & Dawson, J. F. (2010b). *J - Employee health and well-being in the NHS: A trust level analysis*. Birmingham, UK: Aston Business School.
- Tucker, P., Brown, M., Dahlgren, A., Davies, D., Ebden, P., Folkard, S., & Åkerstedt, T. (2010). The impact of junior doctors' worktime arrangements on their fatigue and well-being. *Scandinavian Journal of Work, Environment and Health*, 36(3), 458–465. <https://doi.org/10.3109/13625181003733178>
- Van den Broeck, A., Elst, T. V., Baillien, E., Sercu, M., Schouteden, M., De Witte, H., & Godderis, L. (2017). Job demands, job resources, burnout, work engagement, and their relationships. *Journal of Occupational and Environmental Medicine*, 59(4), 369–376. <https://doi.org/10.1097/JOM.0000000000000964>
- van Horn, J. E., Taris, T. W., Schaufeli, W. B., & Schreurs, P. J. G. (2004). The structure of occupational well-being: A study among Dutch teachers. *Journal of Occupational and Organizational Psychology*, 77(3), 365–375. <https://doi.org/10.1348/0963179041752718>
- Virtanen, M., Kurvinen, T., Terho, K., Oksanen, T., Peltonen, R., Vahtera, J., & Kivimäki, M. (2009). Work hours, work stress, and collaboration among ward staff in relation to risk of hospital-associated infection among patients. *Medical Care*, 47(3), 310–318. <https://doi.org/10.1097/MLR.0b013e3181893c64>
- Wali, S. O., Qutah, K., Abushanab, L., Basamh, R., Abushanab, J., & Krayem, A. (2013). Effect of on-call-related sleep deprivation on physicians' mood and alertness. *Annals of Thoracic Medicine*, 8(1), 22. <https://doi.org/10.4103/1817-1737.105715>
- Wallace, J. E., Lemaire, J. B., & Ghali, W. A. (2009). Physician wellness: A missing quality indicator. *The Lancet*, 374(9702), 1714–1721. [https://doi.org/10.1016/S0140-s-6736\(09\)61424-0](https://doi.org/10.1016/S0140-s-6736(09)61424-0)
- Warr, P. (1994). A conceptual framework for the study of work and mental health. *Work & Stress*, 8(2), 84–97. <https://doi.org/10.1080/02678379408259982>
- Warr, P., & Nielsen, K. (2018). Wellbeing and work performance. In E. Diener, S. Oishi, & L. Tay (Eds.), *e-Handbook of subjective wellbeing* (pp. 1–31). Online: NobaScholar. Weigl, M., Schneider, A., Hoffmann, F., & Angerer, P. (2015). Work stress, burnout, and perceived quality of care: A cross-sectional study among hospital pediatricians. *European Journal of Pediatrics*, 174(9), 1237–1246. <https://doi.org/10.1007/s00431-015-2529-1>
- Welp, A., Meier, L. L., & Manser, T. (2015). Emotional exhaustion and workload predict clinician-rated and objective patient safety. *Frontiers in Psychology*, 5(January), 1–13. <https://doi.org/10.3389/fpsyg.2014.01573>
- West, C. P., Dyrbye, L. N., Erwin, P. J., & Shanafelt, T. D. (2016). Interventions to prevent and reduce physician burnout: A systematic review and meta-analysis. *The Lancet*, 6736(16). [https://doi.org/10.1016/S0140-6736\(16\)31279-X](https://doi.org/10.1016/S0140-6736(16)31279-X)

- West, C. P., Tan, A. D., Habermann, T. M., Sloan, J. A., & Shanafelt, T. D. (2010). Association of resident fatigue and distress with perceived medical errors. *JAMA*, 30(4), 217. <https://doi.org/10.1001/jama.2009.1389>
- West, M., Dawson, J. F., Admasachew, L., & Topakas, A. (2011). *NHS staff management and health service quality: Results from the NHS Staff Survey and related data*. Birmingham, UK: Aston Business School.
- WHO. (2010). *Healthy workplaces: A model for action*. Geneva: Switzerland.

# Chapter 11

## Evidence-Based Design for Healthcare Work Environments



Johan Van der Zwart and Nirit Putievsky Pilosof

**Abstract** The chapter connects theories of healthcare architecture research to the three pillars of Healthy Healthcare—staff health and wellbeing, professional practices, and quality of care. The chapter describes the approach of Evidence-Based Design (EBD) that recognises the impact of the built environment on the performance of the healthcare facility and the wellbeing of its users, and questions: How does architecture of healthcare buildings impact healthcare workers' health and wellbeing, quality of care and professional practices? The chapter highlights how EBD shapes the context of organisational practices, reduces or increases stress, and facilitates or hampers good communication and teamwork in the work environment. In addition, the chapter describes the impact of EBD on patients' health outcomes, hence connecting the quality of place to the quality of care. This is further described from the perspective of usability and how tools for simulation modelling can enhance the role of professionals in designing effective and efficient healthcare workplaces.

**Keywords** Evidence-Based Design · Healthcare architecture · Professional practice · Quality of care · Usability · Healthcare work environment

### 11.1 Introduction

Healthcare workers spent a large part of their daily lives, approximately more than 90% of their time, inside buildings (Evans & McCoy, 1998). Consequently, the quality of the indoor physical work environment is extremely important for healthcare workers' overall health and wellbeing. Yet, there is little research on how the physical workplace affects healthcare professionals in their health and wellbeing; the way they

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organise their work as professionals and; the outcomes on the quality of care that they provide.

Healthcare is a labour-intensive sector, in which healthcare professionals play a crucial role. As dissatisfied healthcare staff will hardly contribute to excellent care, healthcare workers' job satisfaction, health, and wellbeing are important. Although many nonphysical working conditions—such as autonomy (O'Rourke, Allgood, VanDerslice, & Hardy, 2000), compensation (Best & Thurston, 2006), and professional performance (Douglas, Meleis, Eribes, & Kim, 1996)—have an impact on job satisfaction, a physical environment that does not support professional practices does not contribute to good qualitative care either (Ulrich et al. 2008). This asks for insight and knowledge on the potential impact of architecture on the health and wellbeing of healthcare workers, including their levels of stress, fatigue, safety, and job satisfaction. While many studies provide evidence on how architectural design that includes, e.g., view on nature, daylight and the use of art and natural materials can have a positive impact on patients' health outcomes (Ulrich et al., 2008), there is less available evidence on the impact of the work environment's architecture on healthcare workers' health and wellbeing outcomes.

In addition, the increasing burden on healthcare organisations, resulting from an increase in patient loads with a decrease in the healthcare workforce, requires special attention on how the physical work environment supports healthcare professionals in their work, i.e., how architectural design contributes to reducing the workload on staff while increasing the quality of care for patients. Healthcare is a very dynamic sector in which professional practices are constantly and rapidly changing. Yet, many hospital buildings have not been redesigned accordingly. As a result, obsolete hospital environments often reduce effective care delivery, increase staff stress, and impede the quality of care. Recent research shows that architecture can improve healthcare service delivery by modelling, analysing, optimising, and integrating professional practices in the design processes of new and renovated healthcare facilities.

This chapter connects some of the main principles and theories of healthcare architecture research to the three pillars of Healthy Healthcare—staff health and wellbeing, professional practices and quality of care—to find answers on the following question:

*How does architecture of healthcare buildings impact healthcare workers' health and wellbeing, quality of care, and professional practices?*

Looking into this question, this chapter describes research on healthcare architecture from the perspective of Healthy Healthcare. After a short general introduction into architecture for a Healthy Healthcare work environment, an overview is provided on Evidence-Based Design for quality of care, workers' health and wellbeing, and organisational practices. The research included in this chapter highlights how architecture reduces or increases stress and facilitates or hampers good communication and teamwork in the work environment. How architecture shapes the context for healthcare services is further elaborated by focussing on the interdependency between the built environment and healthcare workers' organisational practices and design methods and processes to include healthcare professionals in architectural Evidence-Based Design processes for Healthy Healthcare workplaces. Evaluation of the impact

of healthcare environments on professional practices is further described from the perspective of usability and how tools for simulation modelling can enhance the role of professionals in designing effective and efficient workplaces. Finally, the chapter summarises three perspectives towards a Healthy Healthcare workplace architecture.

## 11.2 Architecture for a Healthy Healthcare Work Environment

Healthcare activities take place in physical architectural environments that encompass both the spaces and characteristics of these spaces (Carayon et al., 2014; Liu et al. 2014). As such, the hospital building supports or hampers a specific set of activities and goals of the organisation and its users. In his book ‘A Pattern Language,’ Christopher Alexander et al. (1977) declared that spaces could not be conceived apart from the patterns of events that occur in them. Alexander (1979) further explained that every place is given its character by certain patterns of events that keep on happening there. These patterns of events are interlocked with certain geometric patterns in the space. This implies that the physical environment is made up of characteristics that serve as affordances, which are the perception of the environment that inevitably leads to some course of action (Gibson, 1977). From this perspective, interactions and behaviours that define professional practices are influenced by how the environment provides the cues and possibilities that support or inhibit these actions (Goffman, 1956; Hall, 1966).

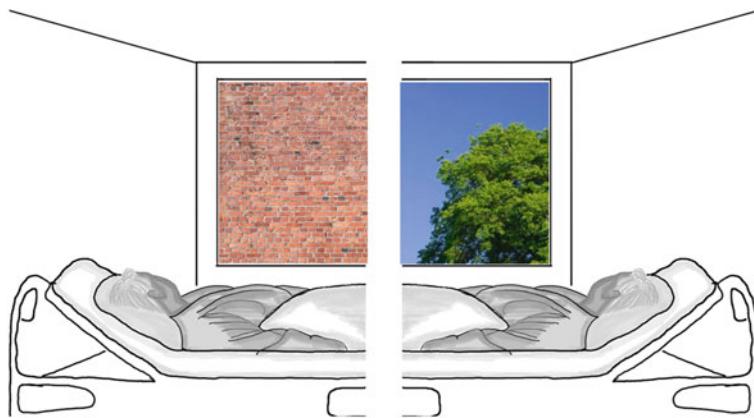
Research shows that the architecture of the work environment can have a positive and negative impact on productivity, efficiency, collaboration, job satisfaction and workers’ overall health and wellbeing. For example, the ward design influences staff’s structures, processes and outcomes (Hurst, 2005). In addition, good architectural design can have a major impact on clinical outcomes, safety and stress (Ulrich, 2006). Well-designed, well-laid out, spacious and attractively decorated wards significantly influence both patient welfare and staff performance (McCusker et al., 2004; Pattison and Roberston, 1996). In contrast, adverse effects of ill-designed ward environments have a negative impact on job satisfaction and staff turnover (Commission for Architecture and the Built Environment: CABE, 2004).

One of the first pioneers that recognised the impact of the physical environment on health and wellbeing was Florence Nightingale, known as the “*Lady with the Lamp*” (Holiday & Parker, 1997). Nightingale developed her theory on environmental health and wellbeing during her work in the Crimean field hospitals, where she noticed that the built environment can profoundly affect occupant’s wellbeing (Nightingale, 1863). Her systematic observations and notes provided the first scientific basis of how good building design reduced mortality rates by the proper use of fresh air, light, warmth, cleanliness, quiet, and the appropriate selection and administration of diet (Nightingale, 1863). Nightingale reinterpreted the word *nursing*, as the act of utilising the environment of the patient to assist in his or her recovery (Nightingale,

1861). This statement integrates quality of care and professional practices with the physical environment (O'Hara, 2014).

Nightingale's work embraced an emergent understanding of how infections spread. She introduced the principles for inpatient ward design, called the Nightingale ward, based on natural light, ventilation, and cleanliness that has been the leading standard in hospital architecture ever since. In addition, she recognised that efficient and effective hospital wards brought together all that was needed for patient care in one place, promoting patient-staff allocation in a layout that facilitated close day and night supervision, based on the patient's requirements (Metcalfe, 1978; Skretkowicz, 1992). Also, her pioneering work on using statistical infographics for visualisation and representation of information and data (Magnello, 2012) is recognised today by a growing academic community, including statisticians, quality managers, and public health specialists (Finch, 2010).

In 1984, Roger Ulrich's ground-breaking research '*view through a window may influence recovery from surgery*' showed statistical evidence that patients that had a view on nature instead of a brick wall, used less medication, were healing faster after comparable diagnosis and surgeries, needed less days to recover and therefore were sooner discharged from the hospital. Ulrich's research found for the first time empirical evidence that the design of the healthcare environment, in this case something as simple as the view outside your window, improve patients' health outcomes, hence the quality of care (Illustration. 11.1).



**Illustration 11.1** Illustration of the difference between the patient's view of a wall vs a view of a tree, referring to Ulrich (1984) 'View through a window may influence recovery from surgery.'

### 11.3 Evidence-Based Design for Quality of Care

Since Ulrich's eye-opening article, the research interest in the relationship between the physical environment and its possible significance for health and wellbeing has increased significantly (Lundin, 2019). Following the definition of Evidence-based Medicine (EBM), Hamilton (2009) and the Centre for Health Design (CHD) in the United States describe Evidence-Based Design (EBD) as '*the conscientious, explicit and judicious use of current best evidence from research and practice in making critical decisions, together with an informed client, about the design of each individual and unique project.*' EBD is, therefore, a process with the deliberate goal of improving patient outcomes by using the best available evidence from research and practice to inform the design of healthcare environments (Hamilton and Watson, 2008). Today, the field of EBD is regarded as best-practice among hospital architects in their effort to relate evidence on patient outcomes to architectural design interventions.

According to Ulrich et al. (2010), the purpose of applying EBD for the planning of healthcare environments is to provide possibilities to develop supportive environments for patients' health; improve clinical results; facilitate effective work and; reduce nurses' stress (Ulrich et al., 2010). This requires an architectural design process that incorporates both the application of evidence from previous projects and research to find new evidence. Therefore, EBD uses design hypotheses to predict outcomes of design interventions and, after the design is completed and taken into use, tries to measure the impact on patient outcomes. A case example of an EBD design process is further described in Chap. 23, on how the Dublin Methodist Hospital in Ohio used evidence to inform their design process for a new hospital, and evaluated the outcomes to provide more evidence on how the design improved safety, quality of care and organisational practices. To date, the repository of the Centre for Health Design includes more than 4600 articles on EBD, contributing to the evidence on the impact of healthcare architectural design (<https://www.healthdesign.org/knowledge-repository>).

Ulrich, Zimring, Quan, Joseph, and Choudhary (2004) conducted a first literature review of EBD in Hospitals. An updated and extended version of this research was published in the journal Health Environment Research and Design (HERD) in 2008 (Ulrich et al., 2008). The search resulted in more than 600 papers that alluded or referred in the title or abstract to the physical environment of healthcare. One of the results of this literature review is the acknowledgment of a growing number of rigorous studies that support the establishment of the relation between the physical design of hospitals and the outcome on patient and staff objectives. Most studies focus on reducing the frequency of infections acquired in the hospital, medical errors, and patient injuries. The authors state that '*it is now widely recognised that well designed physical settings play an important role in making hospitals less risky and stressful, promoting more healing for patients and providing better places for staff to work*' (Ulrich et al., 2008, p. 63). A recent review of EBD research from the period 2010–2018 (Marcheschi et al., 2019) found an additional 668 papers. This review confirms

the growing body of investigation of EBD for healthcare architecture. Specifically, more evidence appears to be available on the topic of health and safety, resulting from users' perception of environmental quality of specific layout and interior design solution (Marcheschi et al., 2019). According to these reviews on EBD, important aspects of healthcare architecture are: (1) view on nature; (2) daylight; (3) use of materials; (4) reducing noise levels; (5) wayfinding; (6) visibility of patient areas from reception desks; (7) single patient bedrooms and; (8) ensuring privacy and good communication (Ulrich et al., 2008).

## 11.4 Evidence-Based Design for Workers' Health and Wellbeing

One of the topics of EBD research that is directly connected to the concept of Healthy Healthcare is the way architecture reduces or increases stress in the work environment. The proposition that stress significantly contributes to physical health is well established (Cohen et al., 1997). Stress occurs when there is an imbalance of environmental demands and human resources (Evans and Cohen, 1987). Several studies indicate that high workplace stress contributes to employee burnout and an intention to leave the job (Barrett & Yates, 2002). Of all healthcare professionals, nurses experience the highest level of work stress, which is mainly a problem in situations that nurses approach the age of retirement and choose to retire earlier. Despite convincing evidence on the negative impact of stress on healthcare workers, relatively few studies have examined how the physical environment contributes to the stress of healthcare professionals (Ulrich et al., 2008). However, studies of workplaces outside the healthcare sector, such as commercial offices, have found that environmental factors associated with stress on the workplace include noise, crowding, and poor ambient conditions such as light, air quality, and temperature (Ulrich et al., 2008).

Although the situation for a patient is generally stressful considering the unpredictability and uncertainty of the situation in addition to the unfamiliar environment one is in, there are also many stress factors for employees relating to tasks and keeping track of patients. Moreover, lack of control over the work environment increases stress, especially the inability to regulate social conditions and achieve privacy when desired (Evans & Cohen, 1987). For this purpose, one of the most frequently studied environmental factor related to stress in healthcare work environments are approaches to reduce noise levels (Ulrich et al., 2008).

Ulrich (1991) mentions three mechanisms that support mitigation of stress: social support, sense of control, and positive distractions. These are all aspects of healthcare workers' health and wellbeing that can be influenced by the architecture of healthcare buildings. The role of architectural design in reducing stress is further elaborated by Evans and McCoy (1998), who described five architectural dimensions that

contribute to stress reduction. These five architectural dimensions are stimulation, coherence, affordance, control, and restorative.

*Stimulation* refers to the amount of information a person receives from the architectural design (Evans & McCoy, 1998). People function optimally with moderate levels of stimulation. Therefore, a good balance of stimuli is important, so that a person is not overwhelmed by too much impressions, neither bored by too little architectural articulation. Elements of architectural design that influence stimulation are people's perception of patterns, spaciousness and congestion, but also include factors such as light, sound, colour, and smell (Evans & McCoy, 1998). In hospitals, architectural stimuli that can have a positive effect are the use of daylight, colours, and art. In EBD research, sound and light are mentioned explicitly as important elements to consider when it comes to stimuli (Ulrich, 2006), but also too many people in small spaces and little privacy creates large stimulus loads. High noise levels coming from people, medical equipment, alarms, and ambulances create discomfort. Architectural design can reduce sound and improve comfort by using materials for floors and ceilings that naturally absorb sound, for example, with wooden surfaces or sound-absorbing ceilings (Ulrich, 2006).

*Affordance* is the interaction between perception and action, coming from the information that is available in the architectural design (Greeno, 1994). A classic example of affordance is if a door is designed in a manner that reveals to you that it will open in the direction that you expect it to turn. At a more detailed level, good labelling is important to avoid ambiguity and misinterpretation of proper use. However, affordance relates also to clearly communicating the purpose of a space, for example, in a hospital setting: is a specific space for patients to meet their relatives, or is it a room for the professionals to have their lunchbreak? People rely on the information and clues that the architecture gives about proper utilisation, to use in their turn these spaces according to how they perceive the functions that the environment can provide to them (Evans & McCoy, 1998). People often react with frustration, annoyance and occasionally helplessness or even hostility (Evans & McCoy, 1998), when they do not understand how to use the space or get conflicting architectural clues about the proper use.

*Coherence* is about the ability to simultaneously understand the architectural spaces at a holistic and a more detailed level. To achieve coherence in architectural design, creating an overview is an important aspect to avoid ambiguity. For patients, orientation points and clear signage are important to prevent helplessness and help with easier access. For healthcare professionals, coherence in the architecture of the workplace is generally about getting an overview of the department due to a design that facilitates a good physical and visual connection. This overview makes it easier to see patients who need help, as well as prevent clashes with other people when you walk out of a room or around a corner (Ulrich, 2006).

*Control* as an architectural dimension is defined as the ability to either alter the physical environment or regulate the exposure to one's surroundings (Evans & McCoy, 1998) and has a positive effect by enabling adaptation of the available space on a personal level. For individual adjustments, Evans and McCoy (1998) mention choices between rooms with different ambiances or the possibility to exchange

furniture. Alteration of space to personal or professional preferences can also be supported by including flexible spaces in the architectural design that can be adapted when circumstances or working processes change (Evans & McCoy, 1998). For healthcare professionals, perceived control and the adaptability of the architectural design to their working processes is mostly determined by the spatial hierarchy of the rooms and the structure of the layout, which defines distance and time. Therefore, placing rooms and important services close together is instrumental in creating control by architectural design that increases efficiency and improves patient flow (Ulrich, 2006).

*Restorative* in architectural design is the dimension that enables mitigation of stress and reduction of cognitive fatigue by retreat, fascination, and exposure to nature (Evans & McCoy, 1998). A case example of the restorative dimension of architecture is visible in the way a little pavilion on the roof of St Olav University hospital in Norway provides a place to escape the hospital environment (see FRIrom in Chap. 24). More general, EBD research refers to the integration of natural elements and art in architectural design as stress-reducing and health-promoting measures (Evans & McCoy, 1998; Ulrich, 2006). Examples of natural materials in hospital architecture are gardens, moving water, and views of greenery, but also art objects that provide associations with nature. When choosing art for restorative purposes, careful consideration of the pattern's complexity is crucial (Evans & McCoy, 1998). Abstract art often consists of more complicated forms. It is, in general, perceived as more stressful (Ulrich, 2006), compared to art that represents nature or people with positive expressions, which is easier for persons to relate to (Ulrich, 2006).

Although most EBD research in hospitals aims at patients' outcomes, there is a growing and convincing body of evidence suggesting that conscious hospital design can make the work of staff easier (Ulrich et al., 2008). One example of organisational practices in healthcare that architecture can contribute to is good communication between staff, patients, and their relatives by creating the physical and social context for effective and successful communication. This includes communication between staff and patients, staff and relatives, among healthcare professionals, and; spontaneous informal interaction between all of them. Places for communication are, for example, patient rooms, consult rooms, offices, nurse stations, team rooms, break rooms, and unique places to escape the hospital environment.

Relating to organisational practices, the architectural design is also an important part of a system that facilitates teamwork. Teamwork is defined as '*a set of interrelated thoughts, actions and feelings of each team member that are needed to function as a team and that combine to facilitate coordinated, adaptive performance and task objectives resulting in value-added outcomes*' (Salas, Sims, and Burk 2005, p. 562). Teamwork has been shown to be effective at improving healthcare outcomes and is associated with greater staff satisfaction, retention, and lower burnout (Kalisch, Lee & Rochman, 2010; Rafferty, Ball & Aiken, 2001).

Peavey and Cai (2018) found in their literature review 34 articles examining architectural impact on clinical teamwork, resulting in consistent evidence on how hospital architecture facilitates or hampers teamwork. Architectural characteristics relating

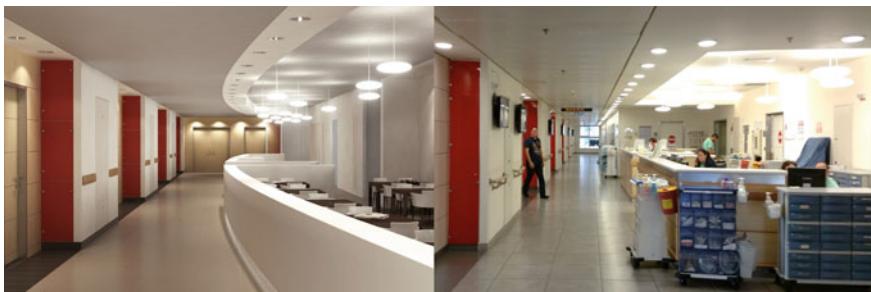
to teamwork that emerged are proximity, visibility, territoriality, and sufficient space (Peavey and Cai, 2018).

*Proximity* is the degree to which people are near to one another in the physical space (Hall, 1966). Mejia et al. (2009) found that approximately 55% of observed staff interactions are unplanned and spontaneous, influenced by proximity when the need for this arises. However, when staff feels separated, they report lacking a sense of belonging linked to the team orientation (Oandasen et al., 2009). *Visibility* is the ability or degree of ease with which professionals can see one another within a given space or area (Rashid, Wineman & Zimring, 2009). Visibility among peers is especially critical in high-stress, high-acuity situations when nonverbal cues become increasingly essential (Pati et al., 2015). *Territoriality* is the degree to which a physical area or space is perceived, recognised or assigned to a particular group rather than the public domain (Fernando et al., 2016; Goffman, 1956). Groups of staff use spatial boundaries to reinforce or challenge the hierarchy's domain (Fernando et al., 2016), whereas neutral spaces such as corridors, which are traditionally not owned by one user-group, were reported to facilitate interprofessional teamwork (Carthey, 2008). *Sufficient space* is the perceived or actual amount of space and its density to comfortably work (Hignett et al., 2013).

According to the review of Peavy and Cai (2018), design strategies that can support teamwork as part of professional practices are: colocation of interprofessional staff, unit configuration, dedicated team space, workstation design, variety of spaces, and; the size of spaces. This also includes nonclinical areas and flex spaces that are designed to cover all patient profiles and can be used as a space for communication between nurses and medical staff (Illustration 11.2).

### Evidence-Based Design Process in Dialogue with Healthcare Workers

Although approximately 35% of nurses linked hospital design to nursing recruitment and retention (CABE, 2004), most medical staff and nurses still feel a lack of involvement in the hospital architectural design, resulting in complaints about cramped workspace, non-functional elements, inflexible rooms, impeded patient observation, shortage of storage, and poor layout which increases nurse walking



**Illustration 11.2** Left: Design illustration of an internal medicine ward at the Sammy Ofer Heart Building in Sourasky Tel-Aviv Medical Center in 2018 by Ranni Ziss Architects and Sharon Architects. Right: the internal medicine ward in use in 2015

distances, time and work fatigue (CABE, 2004). Marcheschi et al. (2019) found that the majority of recent EBD research stresses the importance of integrating users' experience into the evaluation of healthcare architectural quality. Thus, rather than report medical and physiological responses, the focus of EBD research appears to shift to the psychosocial experience of place, i.e., overall impression, beliefs, attitudes, perceived quality of care, and social support (Marcheschi et al., 2019). This notion reflects a contemporary discussion in healthcare architecture research, a paradigm-shift from Patient-centred towards Human-centred approaches, recognising the need to evaluate the impact of the hospital environment, simultaneously on patients' outcomes and healthcare workers' outcomes.

Another recent discussion in healthcare architecture is about the notion of Evidence-Based Design and Practice-Based Design. Wagenaar (2006) asks if healing by architecture implies that architecture should adopt the scientific approaches of medicine? Noteworthy, in medicine, it is also permitted to use best practices in healthcare in addition to the evidence. The Swedish legislation, for example, states that '*Members of the healthcare staff shall perform their work in accordance with science and best practices*' (Lundin, 2019). Theoretically oriented research with a focus on finding evidence is often conducted based on data and statistics, while the more practical craft professions, such as both nursing and architecture, are learned through direct contact between master and apprentice (Lundin, 2019). An experienced nurse, for example, demonstrates her professional practices to their less experienced colleagues merely through uncommented actions and without any reasoning, transferring their knowledge and know-how on treating patients, (Lundin, 2019). This analogy also applies to the practice of architecture. Moreover, Lundin (2015) argues that the design qualities for which EBD research has found evidence, have long since been assumed and applied by experienced architects.

This discussion also questions whether the process of EBD limits the creativity, innovation, and intuition of architects. Moreover, the focus on evidence could obscure other important aspects of architectural practices that are also needed to create healing architecture within today's health and care practices (Lundin, 2019). Verderber et al. (2014) believes that intuitive dimensions of design creativity can be further advanced by means of a well-timed and thoughtful injection of quantitatively based knowledge pertaining to patients, family, staff, and organisational concerns and priorities. Also, Hamilton (2017) states that the ideal solution is to test architects' intuition with analytics, validating the intuition born out of the architect's experience, through the use of data and evidence from reliable sources.

An EDB process is very different from technical specifications as architects have to combine and negotiate the different objectives through a holistic design process with different contexts, stakeholders, and goals. Therefore, EBD processes should calibrate with, and inform, many important parameters in hospital design. Accordingly, the healthcare design industry adopted participatory and co-design methods, resulting in an interdisciplinary design team to enhance collaboration between all hospital project team members, including healthcare planners, architects, hospital directors, medical practitioners, nurses, technological and clinical scientists, cost consultants, engineers, contractors, and end-users.

To activate user-experiences on the interaction between architecture and professional practices that are hidden in the way healthcare workers perform their tasks, Lundin (2019) describes a design-driven dialogue to transfer this tacit knowledge through the design process itself. ‘*Something should be shaped, and it is through this actual shaping and through the reflections on the created that knowledge grows and becomes innovative*’ (Lundin, 2019). Often, this design-driven dialogue leads to a gradual shift from architectural design questions to overall organisational practices. All members of the project team should participate in the design work and the creation of the design artifacts, to achieve the best knowledge-transfer in this design-driven dialogue. For the architect’s role, traditionally solely responsible for performing the design work and proposals, this means a complementary paradigm shift at the beginning of the design work. In a design-driven dialogue, the architect should initially refrain from making their proposals, as these are based on their understanding and thus can lead the project team’s thinking in an undesirable direction (Lundin, 2019).

## 11.5 Evidence-Based Design for Healthcare Workplace in Practice

Usability is the degree to which something—a service, facility, or product—is easy to use and a good fit for the people who use it (Alexander, 2008), i.e., deriving from the ISO standard, usability is the ‘*effectiveness, efficiency and satisfaction with which a specified set of users can achieve a specified set of tasks in a particular environment*’ (ISO, 1998). The concept of usability is often applied in healthcare architecture to understand the impact of architectural design on effectiveness, efficiency, and user satisfaction. This requires a balanced approach between the concepts of *people-process-place* (Duffy, 1992): *people* (professionals and patients); *process* (organising the interaction between patients, professionals, and technologies) and *place* (the space provided for healthcare services).

Connecting the concept of usability and people-process-place, three perspectives on hospital architecture can be formulated (1) the hospital as a social construct where people meet and interact; (2) the hospital’s infrastructure in which processes must be effective and efficient and; (3) the hospital’s architectural quality, i.e., how architecture provides the physical place in which people and process come together (Van der Zwart & Evjen, 2018). Usability relates the architectural design to the healthcare’s organisational outcomes, i.e., how the hospital building enhances productivity, efficiency, collaboration, and user satisfaction.

During the design process, one of the main challenges that architects face is the assessment of how well a proposed design will meet the needs of its intended users. Professional practices by healthcare workers require a complex choreography of different tasks related to effective, efficient and satisfactory direct patient care, critical communications, charting, deploying technology, and accessing information

(Ulrich et al., 2008). Therefore, the increasingly appreciated value of nurses' knowledge of organisational practices and quality of care makes them critical members in architectural design process.

To expand the role of healthcare professionals up to leading members of the design team when it comes to integrating the clinical, operational and architectural expertise, several design tools can be applied. These design tools can feed the design decision-making process with visualisations on how healthcare practices will play out in the new physical environment (O'Hara, 2014). Using mock-up rooms is already common practise in the design of hospitals. Mock-ups are real-size physical models of the new rooms or departments to practice processes in spaces that have the same layout and dimensions of the rooms or units of the future design.

Another design tool to inform the design process with the healthcare workers' knowledge of organisational practices is computer-aided simulation modelling. A simulation model reflects a real-world system in a digital virtual environment, so that computer-aided experiments can be executed. Simulations aim to mimic the behaviour of an object and learn more about the characteristics of the system as a whole (Mielczarek & Uziałko-Mydlikowska, 2010). Simulation modelling allows us to test, visualise and analyse how professional practices perform in the current state of the physical environment and predict the outcomes of various scenarios. Simulation modelling guides the design team through a more efficient planning process by offering opportunities to predict the impact of future changes to professional practices and adds to more dynamic solutions that mirror the changing climate of healthcare (O'Hara, 2014). With increasing accuracy in the data of healthcare processes, hospitals can benefit from simulations to determine which design interventions attain pre-defined performance objectives (Kaushal et al., 2015). It is proven to be a cost-effective way to test new designs, processes, staffing models, and future programming of healthcare services (O'Hara, 2014).

The most commonly known tools for architectural simulations are Agent-based Modelling (ABM) in which agents apply a specific set of responses based on the architectural layout. However, in these agent-based models, the agents more or less randomly choose their way, which does not reflect the tasks that define healthcare workers' professional practices. To overcome these limitations, Schaumann et al. (2016) developed a simulation model based on the notion of event: a computational structure that combines actors, activities, and spaces into a single holistic unit. *Actors* (People) in these event simulations are capable of low-level decision making to perform activities such as pathfinding and walking towards a target. To reflect professional practices, the *activities* (processes) provide a set of actions and procedures that direct agents towards the accomplishment of individual or group tasks. *Spaces* (place) represent the physical surrounding that defines the behaviour-setting of the agents: the context in which patterns of behaviour are performed (Schaumann et al., 2016).

A recent case study (see Chap. 22) evaluated outpatient clinic designs by digital simulations and found that simulation modelling enabled stakeholders to communicate practical knowledge and to discuss the trade-offs between the stakeholder's objectives. The simulations contributed to the validation or reconsideration of the

design team's assumptions regarding the outcomes of the chosen model of care on the quality of care and supported the development of innovative solutions to obtain efficient organisational practices optimal for workers and quality of care.

## 11.6 Towards a Healthy Healthcare Workplace Architecture

This book defines Healthy Healthcare as a balanced state where the organisation of healthcare services and workers' health and wellbeing are optimal to maximise the quality of patient care (Løvseth & de Lange, 2021). Healthy Healthcare implies a system-based understanding of the trinity of the different perspectives—organisational practices, workers' health and wellbeing, and the quality of care—but what do we see when we use each one of these three perspectives as a lens to look to the healthcare work environment and consider at the same time the impact on the other two perspectives?

### 11.6.1 *Organisational Practices—Shaping Architectural Patterns for Healthy Work Behaviour*

The healthcare build environment is the physical setting that shapes the behaviour of both patients and the healthcare professionals by the patterns of events that occur in these places. As a consequence, the organisational practices are influenced by these patterns of events and the affordances of space that are interlocked in the geometry of the design. This means that architecture creates the physical context for teamwork and productive and successful communication, which is essential to organisational practices in providing high-quality care.

The architectural dimensions affordances, coherence, and control have an impact on organisational practices as they contribute to an effective and efficient work environment, but also wayfinding, visibility of patients, and ensuring good communication are examples of how the building supports the healthcare professionals in their work. Therefore, the participation of healthcare professionals in the integration of people's perspectives on organisational practices into the design of places is crucial. Especially testing new organisational practices and models in real-size mock-ups and simulation modelling tools that are capable of visualisation of healthcare practices in a digital environment can contribute to a better layout of the healthcare workplaces to support the healthcare professionals in their daily work.

### ***11.6.2 Workers' Health and Wellbeing—Reducing and Mitigating Workplace-Related Stress***

The architecture of the physical environment can have both positive and negative effects on workers' health and wellbeing. Reducing stress invoked by the physical environment upon the healthcare workers is one of the ways to improve their health and wellbeing. Stress occurs in both the situations when there is a disbalance of environmental demands and human resources, as well as a disbalance of human demands and environmental resources.

Architectural dimensions that are associated with an increase or reduction of stress are stimulation, affordances, coherence, control, and restorative. In addition, noise reduction and increased privacy contribute to avoiding, reducing, and mitigating stress in workplace architecture. Perceived control over the environment and the adaptability of the design to professional practices contribute to mitigating workplace stress, hence both enhancing workers' health and wellbeing, and the quality of care. The dimensions of stimulation and restorative are closer to aspects of a healing environment for patient's health-promoting measures such as view on nature, daylight, and use of natural materials. These design features are often beneficial for both patients and professionals.

### ***11.6.3 Quality of Care—Balancing Professionals' Healthy Workplace and Patients' Care Outcomes***

Organisational practices, as well as the health and wellbeing of the staff, impacts the quality of care that is provided in the healthcare environment. The impact of healthcare architecture on organisational outcomes, like productivity, efficiency, collaboration, and user satisfaction, defines the usability of place. In addition, Evidence-Based Design relates architectural design to patients' health outcomes, hence connecting the quality of place to the quality of care.

Although most aspects of a patient healing environment are also beneficial for a healthy staff work environment, there are also conflicting values that have to be considered and balanced in the design. This requires a conscious reflection on process-centred, patient-centred and human-centred design approaches, hence activating user-experiences on the interaction between architecture and professional practices. To enhance a balance between the different approaches and user-objectives, a design-driven dialogue can support communication in the design team to transfer practical knowledge on the trade-off between organisational practices, health and wellbeing, and quality of care for both patients and healthcare professionals.

## 11.7 Implications for Future Research and Design

Reviewing the literature on healthcare architecture research from the perspective of Healthy Healthcare shows the quest for a holistic approach in research and design. As Evidence-Based Design contributes first and foremost to the patients' health outcomes and quality of care, simulation modelling helps to understand and analyse the organisational practices in existing and new buildings. However, to reach an optimisation of Healthy Healthcare in which organisational practices are attuned to healthcare workers' health and wellbeing for the delivery of high quality of care, including healthcare professionals in the design of their work environments is of utmost importance. This inclusion empowers healthcare workers and contributes to a sense of ownership and responsibility to create their own Healthy Healthcare work places. This can both be done in designing the places and processes for new buildings, but also in the adaptation of spaces in existing buildings by better aligning the organisational practices and available spaces. A positive impact of the built environment on staff health and wellbeing seems to benefit most from this sense of ownership and feeling responsible for one's work environment. For this, the approach of a design-driven dialogue seems most promising, which searches for the tacit knowledge embedded in healthcare workers' understanding of the quality of care. As such, participatory Evidence-Based Design-driven dialogue can be perceived as a design process of continuous user involvement creating ownership by healthcare workers for their healthy working environment.

## References

- Alexander, C. (1979). *The timeless way of building*. Oxford University Press.
- Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., & Shlomo, A. (1977). *A pattern language: Towns, buildings, construction*. USA: Oxford University Press.
- Alexander, K. (2008). *Usability: Philosophy and concepts* (p. 2). Phase: Usability of workplaces.
- Barrett, L., & Yates, P. (2002). Oncology/haematology nurses: A study of job satisfaction, burnout, and intention to leave the specialty. *Australian Health Review: A Publication of the Australian Hospital Association*, 25(3), 109–121.
- Best, M. F., & Thurston, N. E. (2006). Canadian public health nurses' job satisfaction. *Public Health Nursing*, 23(3), 250–255.
- Carayon, P., Wetterneck, T. B., Rivera-Rodriguez, A. J., Hundt, A. S., Hoonakker, P., Holden, R., & Gurses, A. P. (2014). Human factors systems approach to healthcare quality and patient safety. *Applied Ergonomics*, 45(1), 14–25.
- Carthey, J. (2008). Reinterpreting the hospital corridor: «Wasted space» or essential for quality multidisciplinary clinical care? *HERD: Health Environments Research & Design Journal*, 2(1), 17–29.
- Cohen, S., Kessler, R. C., & Gordon, L. U. (Eds.). (1997). *Measuring stress: A guide for health and social scientists*. Oxford University Press on Demand.
- Commission for Architecture and the Built Environment (CABE). (2004). *The role of hospital design in the recruitment, retention and performance of NHS Nurses in England*. CABE: [www.cabe.org.uk](http://www.cabe.org.uk)

- Douglas, M. K., Meleis, A. I., Eribes, C., & Kim, S. (1996). The work of auxiliary nurses in Mexico: Stressors, satisfiers and coping strategies. *International Journal of Nursing Studies*, 33(5), 495–505.
- Duffy, F. (1992). *The changing workplace*. Phaidon Press, University of Michigan.
- Evans, G. W., & Cohen, S. (1987). Environmental stress. In D. Stokols and I. Altman, (Eds.), *Handbook of environmental psychology*.
- Evans, G. W., & McCoy, J. M. (1998). When buildings don't work: The role of architecture in human health. *Journal of Environmental Psychology*, 18(1), 85–94.
- Finch, E. (2010). Florence nightingale: pioneer of facility management. In *W070-Special Track 18th CIB World Building Congress May 2010* Salford, United Kingdom (p. 132).
- Fernando, O., Coburn, N. G., Nathens, A. B., Hallet, J., Ahmed, N., & Conn, L. G. (2016). Interprofessional communication between surgery trainees and nurses in the inpatient wards: Why time and space matter. *Journal of Interprofessional Care*, 30(5), 567–573.
- Gibson, J. J. (1977). *The theory of affordances*. Hilldale, USA, 1(2).
- Goffman, E. (1956). *The presentation of self in everyday life (Monograph no. 2)*. Edinburgh, UK: University of Edinburgh Social Sciences Research Center.
- Greeno, J. G. (1994). Gibson's affordances. *Psychological Review*, 101(2), 336–342. <https://doi.org/10.1037/0033-295X.101.2.336>
- Hall, E. T. (1966). *The hidden dimension* (Vol. 609). Garden City, NY: Doubleday.
- Hamilton, K. (2009). All designers use evidence. In B. Esser, K. Hamilton, B. Hansen, S. De Hoogh, J. Nauta, P. M. Schaap, M. Verweij & H. De Wijn (Eds.), *All designers use evidence, Utrecht: Innovative platform architecture in health*.
- Hamilton, D. K., & Watkins, D. H. (2008). *Evidence-based design for multiple building types*. Wiley, New York.
- Hamilton, D. K. (2017). Evidence, best practice, and intuition. *Health Environments Research & Design Journal*, 10(4), 87–90.
- Hignett, S., Carayon, P., Buckle, P., & Catchpole, K. (2013). State of science: Human factors and ergonomics in healthcare. *Ergonomics*, 56(10), 1491–1503.
- Holliday, M. E., & Parker, D. L. (1997). Florence Nightingale, feminism and nursing. *Journal of Advanced Nursing*, 26(3), 483–488.
- Hurst, K. (2005). Relationships between patient dependency, nursing workload and quality. *International Journal of Nursing Studies*, 42(1), 75–84.
- Kalisch, B. J., Lee, H., & Rochman, M. (2010). Nursing staff teamwork and job satisfaction. *Journal of Nursing Management*, 18(8), 938–947.
- Kaushal, A., Zhao, Y., Peng, Q., Strome, T., Weldon, E., Zhang, M., & Chochinov, A. (2015). Evaluation of fast track strategies using agent-based simulation modeling to reduce waiting time in a hospital emergency department. *Socio-Economic Planning Sciences*, 50, 18–31.
- Liu, W., Manias, E., & Gerdzt, M. (2014). The effects of physical environments in medical wards on medication communication processes affecting patient safety. *Health & Place*, 26, 188–198.
- Løvseth L. T. & de Lange A. H. (2021). Evidence-based design for healthcare work environments. In L. Tevik Løvseth, & A. H. de Lange (Eds.), *Integrating the organization of health services, worker wellbeing and quality of care* (pp. 245–262). Switzerland: Springer Nature Switzerland AG.
- Lundin, S. (2015). *Healing architecture: Evidence,intuition*. Dialogue: Chalmers University of Technology, Sweden.
- Lundin, S. (2019). *A consciously applied design-driven dialogue can improve healing architecture*. Paper presented at the Architecture Research Care & Health (ARCH19) Conference 'Building for Better Health', June 12–14, Trondheim, Norway.
- Magnello, M. E. (2012). Victorian statistical graphics and the iconography of Florence Nightingale's polar area graph. *BSHM Bulletin: Journal of the British Society for the History of Mathematics*, 27(1), 13–37. <https://doi.org/10.1080/17498430.2012.618102>
- Marcheschi, E., Sigurjónsson, A., Ulrich, R.S., & Elf, M. (2019). *The physical environment and its effect on health outcomes—A systematic review*. Paper presented at the Architecture Research Care & Health (ARCH19) Conference 'Building for Better Health', June 12–14, Trondheim, Norway.

- McCusker, J., Dendukuri, N., Cardinal, L., Laplante, J., & Bambonye, L. (2004). Nursing work environment and quality of care: differences between units at the same hospital. *International Journal of Health Care Quality Assurance Incorporating Leadership in health services*, 17(6), 313–322. <https://doi.org/10.1108/09526860410557561>.
- Mejía, D. A., Favela, J., & Morán, A. L. (2009). Understanding and supporting lightweight communication in hospital work. *IEEE Transactions on Information Technology in Biomedicine*, 14(1), 140–146.
- Metcalfe, C. (1978). Owed to nightingale—But what about the future? *Nursing Times*, 79, 1476.
- Mielczarek, B., & Uziałko-Mydlikowska, J. (2010). Application of computer simulation modeling in the health care sector: A survey. *Simulation*, 88(2), 197–216. <https://doi.org/10.1177/0037549710387802>
- Nightingale, F. (1861). *Notes on nursing*. New York: Appleton and Company.
- Nightingale, F. (1863). *Notes on hospitals* (3rd ed.). London: Longman, Green, Longman, Roberts, and Green.
- Oandasan, I. F., Conn, L. G., Lingard, L., Karim, A., Jakubovicz, D., Whitehead, C., & Reeves, S. (2009). The impact of space and time on interprofessional teamwork in Canadian primary health care settings: Implications for health care reform. *Primary Health Care Research & Development*, 10(2), 151–162.
- O’Hara, S. (2014). Planning intensive care unit design using computer simulation modeling: Optimizing integration of clinical, operational, and architectural requirements. *Critical Care Nursing Quarterly*, 37(1), 67–82.
- O’Rourke, K., Allgood, C., VanDerslice, J., & Hardy, M. A. (2000). Job satisfaction among nursing staff in a military health care facility. *Military Medicine*, 165(10), 757–761.
- Pati, D., Harvey Jr, T. E., Redden, P., Summers, B., & Pati, S. (2015). An empirical examination of the impacts of decentralized nursing unit design. *HERD: Health Environments Research & Design Journal*, 8(2), 56–70.
- Pattison, H. M., & Robertson, C. E. (1996). The effect of ward design on the wellbeing of post-operative patients. *Journal of Advanced Nursing*, 23(4), 820–826.
- Peavey, E., & Cai, H. (2018). A systems framework for understanding the environment’s relation to clinical teamwork: A systematic literature review of empirical studies. *Environment and Behavior*. <https://doi.org/10.1177/0013916518815535>
- Rafferty, A. M., Ball, J., & Aiken, L. H. (2001). Are teamwork and professional autonomy compatible, and do they result in improved hospital care? *BMJ Quality & Safety*, 10(suppl 2), ii32–ii37.
- Rashid, M., Wineman, J., Zimring, C. (2009). Space behavior, and environmental perception in open plan offices: A prospective study, environment and planning. *Planning and Design*, 36, 432–449. <http://dx.doi.org/doi:10.1068/b33034><http://dx.doi.org/doi:10.1068/b33034>.
- Salas, E., Sims, D. E., & Burke, C. S. (2005). Is there a “big five” in teamwork? *Small Group Research*, 36(5), 555–599.
- Schaumann, D., Pilosof, N. P., Date, K., & Kalay, Y. E. (2016). A study of human behavior simulation in architectural design for healthcare facilities. *Annali Dell’ Istituto Superiore Di Sanità*, 52(1), 24–32.
- Skretkowicz, V. (Ed.). (1992). *Florence Nightingale’s Notes on Nursing*. London: Scutari.
- Ulrich, R. S., Zimring, C., Joseph, A., Quan, X., & Choudhary, R. (2004). *The role of the physical environment in the hospital of the 21st century: A once-in-a-lifetime opportunity*. Concord, CA: The Center for Health Design.
- Ulrich, R., Quan, X., Zimring, C., Joseph, A., & Choudhary, R. (2008). A review of literature on evidence-based healthcare design (Part 1). *HERD*, 1, 27–38.
- Ulrich, R. S. (2006). Essay: Evidence-based healthcare architecture. *The Lancet*, 368, S38–S39.
- Ulrich, R. (1984). View through a window may influence recovery. *Science*, 224(4647), 224–225.
- Ulrich, R. S. (1991). Effects of interior design on wellness: Theory and recent scientific research. *Journal of Health Care Interior Design*, 3(1), 97–109.

- Van der Zwart, J., & Eyjen, T. A. (2018). Data driven simulation model for hospital architecture, modelling and simulating clinical processes, architectural layout and patient logistics in a hospital's Building Information Model. In D. L. Viana, F. Morais, & J. V. Vaz, (Eds.), *Formal methods in architecture and urbanism*. Cambridge Scholars Publishing.
- Verderber, S., Jiang, S., Hughes, G., & Xiao, Y. (2014). The evolving role of evidence-based research in healthcare facility design competitions. *Frontiers of Architectural Research*, 3(3), 238–249.
- Wagenaar, C. (2006). *The architecture of hospitals*. NAI Publishers.

# Chapter 12

## Healthy Healthcare: A Workplace Learning Perspective



Eghe R. Osagie, Tjerry Verhoeven, Sarah Detaille, Sam Cuomo,  
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**Abstract** Lifelong learning, and workplace learning (WPL) in particular, offers healthcare professionals the opportunity to keep their knowledge up-to-date and learn new competencies, which is essential for a Healthy Healthcare. However, healthcare organizations struggle to successfully employ WPL, and informal learning in particular. In this chapter we aim to provide healthcare professionals and their employers with practical guidelines to realize WPL, in order to improve patient care and ensure a Healthy Healthcare. We do so by complementing theoretical insights with insights from exemplary initiatives of WPL. The literature and lessons learned from these initiatives show us that WPL should be facilitated rather than managed. We describe how healthcare organizations can go about facilitating WPL and show how a multi-level (with interventions at the level of the professional, teams, organizations and the professional field) and multi-faced approach show promising results in terms of WPL.

**Keywords** Healthcare professionals · Workplace learning · Informal learning · Formal learning · Non-formal learning · Lifelong learning · Practical guidelines

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## 12.1 Introduction

Lifelong learning at work as a means for professional development has been recognized by many (e.g., governments, employers, and educational institutes) to be one of the most significant competence that people must possess (Tuijnman & Boström, 2002). It offers one the opportunity to keep one's knowledge up-to-date, learn new competencies, and pursue a wide variety of interests through competencies and intellectual growth. Moreover, lifelong learning is associated with higher productivity and improved employability which helps to improve one's position on the labor market (Berntson, Sverke & Marklund, 2006; Wittekind, 2007). In fact, lifelong learning is a necessity for healthcare organizations and healthcare professionals for several reasons. For one, it helps prevents the deterioration of current medical knowledge and the decline of the quality of healthcare over time (Li & Burke, 2010). Second, healthcare professionals learn new competencies and improve old ones through lifelong learning and as such improves healthcare organization's capability to provide good patient care (Bowie, Skinner, & de Wet, 2013). That is, the healthcare organization's capability to provide good quality care stems, at least in part, from the individual competencies of its employees. Individuals within the organization utilize, adjust, and improve their competencies through feedback processes. Furthermore, they share their competencies with others to embed the competencies within the organization and make it an organizational capability (Heugens, 2006). Third, lifelong learning is also associated with greater psychological and subjective wellbeing and subjective health, because competence growth provides employees with the opportunity to pursue new challenges, more autonomy at work, and career advancements (Narushima, Liu, & Diestelkamp, 2016). This in turn can improve the quality of care as healthier and happier employees perform better at work. Thus, to provide safe and effective patient care and realize a Healthy Healthcare, healthcare professionals need to engage in lifelong learning and continuously update their competencies. This can be challenging due to the ever-changing field of healthcare. Changes that are instigated for example by advances in medicine and changing governmental regulations.

Workplace learning (WPL) offers healthcare professionals the means to engage in lifelong learning and actively work on their employability. By far most competencies that employees acquire during their career are acquired at the workplace (Kyndt & Baert, 2013; WWR, 2013). However, in the Netherlands, as in many other countries, there are identifiable factors in the healthcare sector that hinder WPL. These include increasing personnel shortages, high workload and the increasing absenteeism among healthcare professionals (AZWinfo, 2019). Moreover, many healthcare professionals are also double duty caregivers (e.g., in the Netherlands about 44% of the healthcare professionals) which greatly decreases their leisure time and recovery time after work (SCP, 2016). Consequently, these professionals view 'learning'—which they mainly associate with formal and non-formal learning—as an additional task and therefore as a burden. As part of WPL, informal learning may offer a way to tackle this issue. Unfortunately, many healthcare organizations struggle to implement and

manage WPL, and informal learning in particular. As such, in this chapter we aim to provide healthcare professionals and their employers with practical guidelines to realize WPL in their organizations, in order to improve patient care and ensure a Healthy Healthcare. We do so by complementing theoretical insights with insights from exemplary initiatives of WPL.

This chapter is structured as follows: we will first provide some background information on the concept of WPL in the healthcare sector. Following this, we describe three good practices of WPL, one on the organizational level and two on the level of the health professional (i.e., the individual level). We conclude the chapter with a summary of the lessons learned from theory and these exemplary initiatives, which can be used to improve one's learning or to improve WPL within one's organization.

## 12.2 The Concept of Workplace Learning

### 12.2.1 *Theories on Workplace Learning*

Workplace learning is a relatively new notion or in scientific terms ‘concept’. Its background stems from learning theories that in turn are based on older theories from different scientific disciplines. These theories about learning at work evolved over time. At first learning was seen as a process that is located outside the learner, as observable behaviour, and as a process that occurs within the mind of the learner (influenced by psychological theories; Hager, 2011). Next, learning was perceived as a process that occurs through participating in activities with others (socio-cultural theories; Hager, 2011). More recently learning is also perceived as ‘something’ that is not controllable but rather emerges suddenly from the context (post-modern theories; Hager, 2011).

Among the (learning) theories that stem from psychology, behaviourism was one of the most influential theories that still inspires learning policies to date (Hager, 2011). Within behaviourism, learning is viewed as a ‘thing’ or ‘entity’ that is observable. Learning is aimed at observable behaviour instead of what is happening in the mind (e.g., thinking and understanding). This observability ensures that learning can be tested and managed, which makes it useful in practice. Thus, using this behavioural perspective for learning, job requirements are described as observable and simply specified behaviours that can be taught and acquired through training (Neumann, 1979). However, this perspective has been criticized for being too mechanistic. Most jobs are too complex to codify in atomized behaviours or are not predictable at all. Furthermore, being able to perform a list of simple behaviours in a learning context does not necessarily indicate whether the person is able to accomplish the job effectively in practice or in a different context (Cheetham & Chivers, 1996; Eraut, 1994). As a response to these criticisms a second perspective on WPL that is based on cognitive psychology became increasingly popular. Cognitive psychology is a branch of psychology that, contrary to behaviourism, focusses on unobservable behaviour or

in other words ‘mental processes’ such as thinking and memory. According to these theories, people learn by practicing; through spontaneous processes of noticing and seeing. Learners reflect on their actions (reflecting-in-action) and consciously or unconsciously adjust their behaviour accordingly (Knowing-in-action; Schön, 1987).

Psychological learning theories tend to put too much emphasis on human consciousness and intentions and tend to underestimate the role of social, cultural, and organizational factors influencing learning as later studies on WPL have shown (Hager, 2011). Following the learning theories derived from psychological theories, socio-cultural theories became very influential in the WPL literature. These socio-cultural theories, which were inspired by sociology and social anthropology, differ from psychological learning theories in that they:

1. Include social elements of learning, which shows the importance of learning with and from others;
2. Learning is not seen as a product that can be acquired, but rather is an ongoing process of participating in suitable activities. In fact, interest in WPL as a separate topic stems from the fact that researchers started to realize the importance of learning after initial education; and
3. Learning is seen as strongly contextualized, meaning that “learning is significantly shaped by social, organizational, cultural, and other contextual factors”.

Influential work from this line of theories are that of Fuller and Unwin (2004) and Lave and Wenger (1991) and. Lave and Wenger showed that learning is a situated social process that does not occur inside one’s mind and body but rather through activities performed with others which they named ‘communities’. The workplace can be seen as community of practices, which according to Fuller and Unwin (2004) can either expand one’s learning or restrict one’s learning; Expansive workplaces stimulate participation in multiple communities and provide many learning opportunities to its members, whilst restrictive workplaces do not. However, not only others influence one’s learning also one’s personal characteristics seem to play an essential role according to Eraut (2004a, b) and Billett (2004a, b). They argue that the extent to which employees are proactive and engage in learning activities influences the expansiveness or restrictiveness of workplaces in terms of learning, and vice versa. In fact, personal characteristics like one’s orientation towards learning and internal motivation affect the manner and the effort employees put into learning (Kyndt & Baert, 2013; Osagie et al. 2017). Moreover, the importance of employee’s self-confidence in and control of learning (i.e., self-regulated learning or self-management in learning) for effective learning, have been emphasized in the WPL literature (e.g., Maurer, 2001; cf. Billett’s [2001] notion of ‘agency’). For example, research has found that one’s beliefs about one’s ability to succeed in a given task (which is a central part in self-management) influences the goals people choose, their aspirations, how much effort they will exert in a task, whether a person experiences self-hindering or self-aiding thought patterns and how well a person responds to threatening circumstances and changes at the workplace (Bandura, 1991; Detaille, 2012).

However, managing one’s own learning does not come naturally for most people. Which means that these competencies have to be taught. Competencies like choosing

the right learning goals and self-aiding instruments that facilitate reflective learning at the workplace are essential in this respect (Detaille & De Lange 2018). Billett (2004a, b) stresses that the role of individuals in WPL should not be ignored or diminished. In fact, the individual and the social context interact and influence one another (Hodkinson & Hodkinson, 2004). So, these sociocultural theories do not replace the idea of ‘individual learning’ proposed in the psychological theories, but rather add the notion of its reciprocal relationship with the social context.

Psychological and sociocultural learning theories are modernist theories (Hager, 2011); they aim to define, explore, understand and explain WPL. Conditions that stimulate WPL can be identified and acted upon by organizations and learners. In other words, they aim to control WPL. Recent learning theories, however, question the idea of controlling WPL. Like the socio-cultural theories, learning in postmodernist theories is viewed as an ongoing process. However, in the modernist view learning is to some extent predictable and controllable. The post-modernist view sees learning as “emergent from its context in unanticipated and unpredictable ways”, making it difficult if not impossible to manage (Hager, 2011, p. 28). The theories and research in this third group of learning theories, however, are still in their infancy and much is still unknown in relation to WPL (Hager, 2011). As such, based on the above exploration of learning theories, WPL refers in this chapter to “*processes and activities by which employees acquire new and develop further their existing competencies through engaging in workplace participatory practice*” (Nikolova et al., 2014, p. 3). It results from the interaction between the (social) environment, or the conditions of the workplace (e.g., the learning climate or the learning policy of the organization; Eraut, 2004a, b; Hager, 2005; Nikolova et al., 2014) and the characteristics of the learner (Billett, 2004a, b; Kyndt & Baert, 2013; Osagie et al., 2017).

### **12.2.2 Types of Workplace Learning: Formal, Nonformal, and Informal Learning**

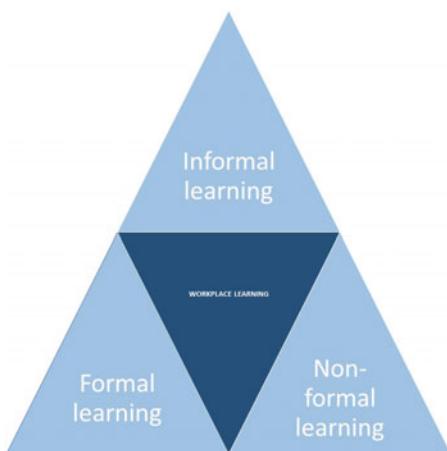
WPL can have different forms which can be divided in three categories: formal, nonformal, and informal learning (see Fig. 12.1).

*Formal learning* refers to pre-structured and highly organized learning arrangements that often take place ‘off-the-job’ in a scholastic setting (e.g., Adult education). When completed, such learning is rewarded with an accredited diploma or certificate (Tjepkema, 2011). Examples are trainings for palliative care, aggression trainings or courses to learn certain medical techniques.

In cases where learning in a scholastic setting does not lead to an accredited diploma or certificate it is referred to as *nonformal learning* (e.g., internal training and courses). Examples are internal trainings on giving feedback, time-management and learning to work with new equipment or software.

*Informal learning*, includes all learning activities related to work one conducts to gain knowledge, understanding and competencies, that is not carried out in a formally

**Fig. 12.1** Three categories of workplace learning 2018  
Adapted from Osagie,  
Verhoeven, & Detaille,



organized context (i.e., on-the-job learning). Examples are learning from colleagues how to lift and turn patients in a way that is noninvasive and better for one's own physical health. Informal learning can be intentional (e.g., reading medical journals and reflecting on one's own actions in relation to patient care; Van der Krogt, 2008), but also reactive (e.g., suddenly finding a solution to a problem after hearing something from someone that gives you an idea). Informal learning is often spontaneous and implicit (e.g., getting better at your job without being able to pinpoint what causes this improvement; Baars & Van der Werf, 2007; Eraut, 2000). The latter is an important reason why informal learning (activities) is often not recognized as real learning, as it is part of a professional's daily routine and is ignored or taken for granted (Tjepkema, 2011). Yet, studies show that learning occurs most frequently through informal learning activities (Berg & Chyung, 2008; Tynjälä, 2008). However, because informal learning is often not recognized and is difficult to document, many organizations (including healthcare organizations) are still struggling to adequately identify, organize, and reward such learning.

There are four different learning activities that can stimulate WPL including informal learning (Bolhuis & Simons, 2001):

1. Learning through experience;

Focus on one's job and is a form of informal learning. By performing one's job, being exposed and being part of the work context, gaining experience one gains competence through processes of experimentation, socialization (e.g., through contact with patients and colleagues), and observation (e.g., observing more experienced colleagues; Nikolova et al., 2014).

2. Learning by critical reflection;

Involves asking oneself and other questions about one's own behaviour, situation, learning experience, or learning process. This can be before, during, and/or after a specific action (e.g., one's handling of a patient in crisis). By thinking these things

through, one can learn new ways of acting and working and thereby improve one's competencies (Tynjälä, 2008).

### 3. Learning through theory;

Focus on (non)formal learning. They are often limited to simple competencies and are often aimed at the learning needs of most of the workforce (e.g., patient lifting trainings, reading job-specific journals, and attending healthcare congresses; Poell, Chivers, & Van der Krog, 2000).

### 4. Learning through social interactions;

This is a form of informal learning and focusses on learning from and with each other through active participation in the interaction. Healthcare professionals have a social network at work and outside their jobs. As active actors in such networks they have access to people or can co-create networks through which they can learn (i.e., learning networks). The type of learning networks that professionals co-create and use in order to develop their competencies depends to a large extent on the way in which their work and position are organized and on the dynamics between the various actors within each network (Van der Krog, 1998).

Formal learning activities, such as trainings, are often the first thing many managers and employees think of when competence development is needed (Arets & Heijnen, 2008). Moreover, it remains the preferred way for competence development in many organizations, as their effects are measurable and easily documented. However, the limited learning gains and limited transferability to practice of what is learned through (non)formal learning activities—due to the fact that theory and practice often do not match well - have led many organizations to seek other ways to stimulate competence development (McGuire & Gubbins, 2010). A combination of (non)formal and informal learning activities that suits the healthcare organization's learning culture appears to lead to the best results for organizations (Choudhry, 2005), as will also be shown in the good practices described below.

## 12.3 Learning in the (Dutch) Healthcare Sector

Quality of care starts by having a good educational system. Every caretaker follows a certain minimum years of healthcare-related education after finishing high school. Depending on the specialization, this formal initial education for healthcare professionals can add up to more than a decade. After the initial education, healthcare professionals must continue their professional development. That is, the healthcare sector, perhaps more than many other sectors, is subject to many changes. They are often instigated by advances in knowledge through research, the introduction of new technologies, changing governmental regulations and changing patient needs and wishes. To ensure safe, up-to-date, and effective patient care, healthcare professionals have to develop their competencies. In the Netherlands, the healthcare sector even has a leading role in professional development. A role that in part is due to

Dutch legislations and inspections by the Ministry of Healthcare aiming to ensure high-quality healthcare. Opportunities for competence development mostly involves formal trainings. In fact, to ensure a high-quality care, healthcare professionals have a range of mandatory formal trainings they have to complete (annually) after their initial education. In the Netherlands, one such training is instigated by the act ‘Wet BIG’, which states that only healthcare professionals with a certain education level and a certain amount of experience may perform restricted care actions (e.g., administering injections and medications). Having a BIG-registration is now mandatory in certain occupations (e.g., nurses).

In addition to the job-specific professional development, healthcare organizations are paying increasing attention to personal development to stimulate healthcare professionals’ employability in the broadest sense (e.g., with courses such as ‘mindfulness’ and ‘stress management’). Yet, challenges arise from the growing shortages in healthcare professionals and everchanging job requirements. The healthcare sector and employers will have to find new ways of working and ensure lifelong learning for healthcare professionals to safeguard a healthy healthcare. Workplace learning may offer them a way to realize this. It appears, however, to be difficult for care organizations to implement and manage WPL, and informal learning in particular.

## **12.4 Guidelines for Successful WPL in the Healthcare Sector**

To inspire and provide healthcare employers with some guidelines for an effective WPL policy, we present insights from three good practices. We interviewed the project leaders from each of these initiatives to gain insights into the program, its implementation process, and added value for a Healthy Healthcare.

### ***12.4.1 The First Good Practice***

This involves Evolva workplace learning 3.0, a collaboration between different healthcare organizations and research groups. The collaboration is aimed at increasing knowledge on and the application of WPL. Knowledge is gained through different applied research projects and results are shared via an online learning community. Based on their research and insights, from both modernist and post-modernist views on WPL, Evolva formulated 10 design principles for WPL that can support healthcare organizations in facilitating WPL. These are:

1. Show educational leadership by having a clear organizational, team, and individual vision on learning (including WPL) and communicate this to the employees and other external stakeholders.

2. Focus WPL on employees' strength (i.e., strengthen employee's self-confidence and self-efficacy) and not on the errors made by employees.
3. Set teams free and support learning by doing.

Often healthcare policies are introduced and implemented top down. We argue for a bottom-up team approach. Through experiments in practice in which teams were invited to create things/develop their own policies that will help them in their jobs. We learned that such a bottom-up approach also resulted in the intended changes. WPL mainly had the form of learning through social interaction in which different ideas of teams were visible (e.g., teams with students and healthcare professionals and external learning networks including others than one's own team members). A key success factor in this guideline is the acceptance by the management of the input of the teams as innovation, as what they have learned will improve team members' working situation. Such experiences of success are important for implementing future changes and will create ownership among employees. (Jan Valkenborgh, project leader Evolva).

4. Ensure that learning is relevant and urgent for one's job. As such, let teams define and set their own learning needs.
5. Employees engage in learning because they are intrinsically motivated, therefore, ensure that team members' personal learning needs are covered in what is learned.
6. Focus on developing a sustainable learning trajectory. Aim for specific and limited learning goals within one learning trajectory.
7. Stimulate an active and safe learning climate where mistakes are allowed and shared with each other.
8. Invite teams to invest in essential learning skills such as reflecting, learning together and giving and receiving constructive feedback. Particular the latter has been shown to be challenging in most healthcare teams.
9. To identify learning possibilities in a normal work setting, invest in a learning coach from within the organization such as an HR professional, former team manager or team leader.
10. To stimulate sustainable learning on the job, realize a visibly active collaboration between educational institutions and the healthcare practice.

The ten design principles are primarily focused on informal learning (learning by doing, learning by social interactions, and learning by critical reflections; Bolhuis & Simons, 2001). However, because teams are facilitated in defining their own learning needs and choosing their own learning paths, formal and non-formal ways of learning are also possible.

#### **12.4.2 *The Second Good Practice***

This practice involves a learning trajectory in which a Vocational Education and Training (VET) institution and a healthcare organization (Pleyade) collaborate and formal, non-formal, and informal learning are combined to realize effective WPL.

Instead of a couple of years of school-based education followed by an apprenticeship, students receive education in the healthcare organization at the workplace. The education consists of 50% internship and 50% formal education, which ensures that students are emerged in the healthcare practice from day one.

The implementation of the trajectory involves a change process, in which both the management and employees may need a shift in mindset and behaviour. For a successful implementation of the new trajectory, support, the willingness to change, and a sense of ownership needs to be present at all levels in the organization. To ensure such conditions, several steps can be taken:

1. To ensure sufficient money and time is available for the intervention, secure management support and active involvement.
2. Assemble an innovation team with representatives from all levels within the organization and employees of the educational institution.
3. Select a pilot department and form two sub-teams. One team can communicate the why and how of the project and another can make the didactic and tactical decisions.
4. Monitor, evaluate, and adjust the intervention accordingly.
5. After the pilot phase (including an evaluation and adjustment) scale up the intervention to other departments.
6. Form a learning community with others involved within the intervention or with those who have implemented the trajectory so members can learn from each other through social interaction.

The first evaluations of this trajectory show positive effects for patients, employees, and the organization:

*Patients:* There is always a teacher and between five and twenty interns present at different departments within the organization. The fact that there are more employees (healthcare professionals, teachers, and student employees) present means that more time is available for patient care and needs. Moreover, one can pay more attention to welfare activities like playing a game or taking walks.

*Employees:* There is more time for professionals to take up other/more (challenging) tasks, because the interns support them in a lot of tasks. Besides this obvious result one may notice that WPL is more often initiated by the professionals themselves. By sharing ideas, asking each other questions, and interacting with the teachers and student employees, professionals learn to discuss and tackle dilemmas openly (i.e., learning through social interaction; Bolhuis & Simons, 2001). Moreover, as the professionals also teach in this trajectory, learning becomes more central and evident in their work, which stimulates them to actively renew and update their own knowledge of things (i.e., learning through theory and learning through experience; Bolhuis & Simons, 2001).

*The organization:* The increase in workers reduces personnel shortage. It also allows the organization to improve its performance through competence development of its professionals; the fact that so many students are present, working and learning

beside healthcare professionals means that every employee has to help the students. Students' questioning and learning stimulates 'learning through critical reflection' and 'learning through theory' among employees. Only by investing in healthcare professionals, will patients receive the best care.

The learning trajectory is being praised in the Dutch healthcare sector as a good example of how to transform a workplace into a learning environment. Not surprisingly, the learning trajectory is being implemented by an increasing number of healthcare organizations.

### **12.4.3 *The Third Good Practice***

The last of the good practices involves the 'Online Knowledge Base Self-Management Support', which is an online tool developed by a knowledge institution for long lasting care (van Hoof, Dwarswaard & van Staa, 2015). The tool can aid healthcare professionals in their work and in learning to support patients with a chronic disease to apply self-management tools in practice. The Knowledge Base integrates both formal and non-formal types of learning and stimulates the use of specific support techniques that strengthen not only healthcare professionals' own self-management behaviour but also that of patients. As is the case for professionals, self-management for patients is important too because it helps them to have co-ownership of their treatment which can improve patients' satisfaction and the outcomes of treatments (Bodenheimer, Lorig, & Holman, 2002).

The Knowledge Base provides healthcare professionals with up-to-date and practical information about what patients in long-term care need, what competencies are required of healthcare professionals and what self-management techniques one can apply. Healthcare professionals can choose on an online platform which theme and chapter they want to learn more about. Each chapter starts with a theoretical part about the theme or concept (e.g. pain management, healthy lifestyle management, daily lifestyle management) and includes practical tools to help the professional and the patient put self-management competencies into practice. Over 100 exercises were developed as teaching materials. These encourage reflection, group work, and discussion. Various methodologies and instruments are provided that can be used before, during, or after contact with the patient. As such the professional can self-manage their learning by choosing what theme to learn, how to learn (by choosing and performing specific exercises) and by monitoring and redirecting their own learning through reflection exercises. Topics covered in the Knowledge Base are among others, communication about self-management with patients, joint decision-making, family-oriented support and self-management support as teamwork (van Hoof, Dwarswaard & van Staa, 2015). The Knowledge Base self-management support may be a useful tool to empower the wellbeing of the professional and the patient.

To illustrate the use of the Knowledge Base, we present an exemplary case of nurse Martha:

Martha is a diabetes specialist nurse at a university hospital in the Netherlands. She uses the Knowledge Base to learn more about which skills she can use to motivate patients to live in a healthy way and take better care of themselves. Diabetic patients need to have healthy meals at regular times, need to take their insulin at regular times, and need to have regular physical exercise. However, in practice Martha sees that many patients have difficulty to abide by such a lifestyle. She decided she needed additional competencies to have effective conversations with patients on this subject. Yet, because of her busy work schedule, workload and her situation at home (double duty caregiver), she struggled to have sufficient time to follow a course. She decided to make use of the Online Knowledge Based program as it allows her to integrate the learning into her daily tasks. Martha made use of the following instruments:

- *Conversation card Boss about your own health: An instrument which provides questions that trigger conversations between aid healthcare professionals and their patients and aids their conversations about personal care. It includes information on nutrition and exercises that can support the conversation.*
- *Target goals self-management form: A form to document a patient's own life and health goals. The form also triggers and aids patients and healthcare professionals in discussing and reflecting on these goals and the progress made.*

Employing an online learning tool such as the Online Knowledge Base Self-Management Support, might be a promising way to help healthcare professionals gain more knowledge about, and competencies in, self-management and to support patients' self-management in the healthcare sector; it is easily accessible and can be customized to one's own learning needs.

## 12.5 Lessons Learned

After obtaining their initial diploma, healthcare professionals must engage in continuous learning in order to deliver the best quality of care and remain employable. As such, workplace learning (WPL) is an essential part of healthcare professionals' careers. The aim of this chapter was to provide healthcare professionals and their employers with practical guidelines to realize WPL in their organizations, in order to enhance patient care and ensure a Healthy Healthcare. Based on the consulted literature and the exemplary initiatives, we can formulate some conclusions about WPL in the healthcare sector.

1. Workplace learning offers healthcare professionals the possibility to learn additional competencies after their initial education and has already been implemented by healthcare organizations to ensure good quality of care and a Healthy Healthcare.
2. Recent theoretical insights question whether WPL can and should be managed because of its emerging features. Instead, good practices show that WPL should and can be facilitated rather than managed.

3. The success of WPL depends on (social) contextual factors as well as personal factors. As such, a multi-level and multi-faced approach is needed when facilitating WPL. Such an approach involves formal, nonformal and informal learning opportunities for healthcare professionals. Moreover, it includes initiatives and actions on the organizational, the department and team level, as well as the individual level (the level of the professional).
4. There are design principles for WPL that may help healthcare organizations implement such a multi-level approach to WPL. In this chapter we described the 10 design principles postulated by Evolva, a leading organization in WPL.
5. On the team and department level, theoretical insights on community of learning, among others, and good practices show that learning from and with others is essential for WPL.
6. On the individual level, self-management is stressed for both patient and healthcare professionals; it ensures that patients have co-ownership of their treatments. Moreover, self-management also ensures that healthcare professionals self-regulate their learning, which is not only beneficial for transfer of knowledge and skills, but also allows them to fit their learning process in their busy work schedule and personal life. In this chapter, a practical tool was introduced that may aid healthcare professionals in mastering the competencies needed for effective self-management in learning.
7. Finally, sustainable workplace learning requires close collaborations between education and the professional field. The Pleyade case and the Knowledge Base case are good examples of how such collaboration may help realize a Healthy Healthcare.

## References

- Arets, J., & Heijnen, V. (2008). *Kostbaar misverstand. Van training naar business improvement (Costing misunderstanding: From training to business improvement)*. Academic Service, SDU, Den Haag.
- AZWinfo. (2019). *Update en highlights AZW StatLine en job market analysis*. Retrieved on June 28, 2019 via: <https://www.azwinfo.nl/documents>.
- Baars, M., & Werf, M. (2007). *Anders leren, beter werken (Learn differently, work better)*. Houten: Bohn Stafleu van Loghum.
- Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behaviour and Human Decision Processes*, 50, 248–287.
- Berg, S. A., & Chyung, S. Y. (2008). Factors that influence informal learning in the workplace. *Journal of Workspace Learning*, 20, 229–244.
- Berntson, E., Sverke, M., & Marklund, S. (2006). Predicting perceived employability of human capital or labour market opportunities. *Economic and Industrial Democracy*, 27, 223–244.
- Billett, S. (2001). Knowing in practice: Re-conceptualising vocational expertise. *Learning and Instruction*, 11, 39–58.
- Billett, S. (2004a). Learning through work: Workplace participatory practices. In H. Rainbird, A. Fuller, & A. Munro (Eds.), *Workplace learning in context* (pp. 109–125). London: Routledge.

- Billett, S. (2004b). Workplace participatory practices: Conceptualising workplaces as learning environments. *Journal of Workplace Learning*, 16, 312–324.
- Bodenheimer, T., Lorig, K., & Holman, H. (2002). Patient self-management of chronic disease in primary care. *Journal of the American Medical Association*, 288(19), 2469–2475.
- Bolhuis, S., & Simons, P. R. J. (2001). Naar een beter begrip van leren (Towards a better understanding of learning). In J. W. M. Kessels & R. F. Poell (Eds.), *Human resource development: Organiseren van leren* (pp. 37–39). Alphen a/d Rijn, The Netherlands: Samsom.
- Bowie, P., Skinner, J., & de Wet, C. (2013). Training healthcare professionals in root cause analysis: A cross-sectional study of post-training experiences, benefits and attitudes. *BMC Health Services Research*, 13, 50.
- Choudhry, N.K., Fletcher, R.H., & Soumerai, S.B. (2005). Systematic review: the relationship between clinical experience and quality of health care. *Annals of Internal Medicine*, 142(4), 260–273. <https://doi.org/10.7326/0003-4819-142-4-200502150-00008>.
- Cheetham, G., & Chivers, G. (1996). Towards a holistic model of professional competence. *Journal of European Industrial Training*, 20(5), 20–30.
- Detaille, S. I. (2012). *Building a Self-management intervention for workers with a chronic somatic disease*. Enschede, The Netherlands: Ipskamp Drukkers. Universiteit van Amsterdam.
- Detaille, S., & De Lange, A. H. (2018). *Fit for the future. Handvatten voor toekomstbestendig HRM-beleid* (Fit for the future. Guidelines for a future-proof HR policy). Alphen aan de Rijn, The Netherlands: Vakmedianet.
- Eraut, M. (1994). *Developing professional knowledge and competence*. London, UK: The Falmer Press.
- Eraut, M. (2000). Non-formal learning and tacit knowledge in professional work. *British Journal of Educational Psychology*, 70, 113–136.
- Eraut, M. (2004a). Informal learning in the workplace. *Studies in Continuing Education*, 26(2), 173–247.
- Eraut, M. (2004b). Transfer of knowledge between education and work settings. In H. Rainbird, A. Fuller & A. Munro, (Eds.), *Workplace learning in context* (pp. 201–220). London, UK: Routledge.
- Fuller, A., & Unwin, L. (2004). Expansive learning environments. Integrating organizational and personal development. In H. Rainbird, A. Fuller, & A. Munro (Eds.), *Workplace learning in context* (pp. 126–144). London, UK: Routledge.
- Hager, P. (2005). The importance of contextuality in learning. Paper presented at the researching work and learning, RWL04, Conference, Sydney, Australia.
- Hager, P. (2011). Theories of workplace learning. In M. Malloch, L. Caimes, K. Evans, & B. N. O'Connor (Eds.), *The SAGE handbook of workplace learning* (pp. 17–31). London: Sage Publication Ltd. <https://doi.org/10.4135/9781446200940.n2>.
- Heugens, P. P. M. A. R. (2006). Environmental issue management: Towards a multi-level theory of environmental management competence. *Business Strategy and the Environment*, 15, 363–376.
- Hodkinson, P., & Hodkinson, H. (2004). The significance of individuals' dispositions in workplace learning: A case study of two teachers. *Journal of Education and Work*, 17(2), 167–182(2004b). doi.org/<https://doi.org/10.1080/13639080410001677383>.
- Kyndt, E., & Baert, H. (2013). Antecedents of employees' involvement in work-related learning: A systematic review. *Review of Educational Research*, 83(2), 273–313.
- Lave, J., & Wenger, E. (1991). *Situated learning*. Cambridge: Cambridge University Press.
- Li, S. T., & Burke, A. E. (2010). Individualized learning plans: Basics and beyond. *Academic Pediatrics*, 10(5), 289–292.
- Maurer, T. J. (2001). Career-relevant learning and development, worker age, and beliefs about self-efficacy for development. *Journal of Management*, 27(2), 123–140. <https://doi.org/doi.org/10.1177/014920630102700201>
- McGuire, D., & Gubbins, C. (2010). The slow death of formal learning: A polemic. *Human Resource Development Review*, 9, 249–265.
- Narushima, M., Liu, J., & Diestelkamp, N. (2016). Lifelong learning in active ageing discourse: Its conserving effect on wellbeing, health and vulnerability. *Ageing and Society*, 38(4), 1–25.

- Neumann, W. (1979). Educational responses to the concern for proficiency. In G. Grant, P. Elbow, T. Ewens, E. Gamson, W. Kohli, W. Neumann, et al. (Eds.), *On competence, a critical analysis of competence-based reform in higher education* (pp. 66–94). San Francisco, CA: Jossey-Bass.
- Nikolova, I., Van Ruyseveldt, J., De Witte, H., & Van Dam, K. (2014). Learning climate scale: Construction, reliability and initial validity evidence. *Journal of Vocational Behaviour*, 85, 258–265.
- Osagie, E. R., Verhoeven, T., & Detaille, S. (2018). Werkplekleren moet je niet managen! Een praktische uitwerking van werkplekleren in de zorgsector (Do not mange workplace learning: A practical guidance for workplace learning in the healthcare sector). In S. Detaille & A. H. De Lange. *Fit for the future. Toekomstbestendig HRM beleid*. Handboek Vakmedianet, Alphen aan de Rijn.
- Osagie, E. R., Wesselink, R., Runhaar, P., & Mulder, M. (2017). Unraveling the competence development of corporate social responsibility leaders. The importance of peer learning, learning goal orientation, and learning climate. *Journal of Business Ethics*, 1–16.
- Poell, R. F., Chivers, G. E., van der Krogt, F. J., & Wildemeersch, D. A. (2000). Learning network theory: Organizing the dynamic relationships between learning and work. *Management Learning*, 31(1), 25–49.
- Schön, D. A. (1987). *Educating the reflective practitioner*. San Francisco: Jossey-Bass.
- SCP. (2016). *Aanbod van Arbeid* (labor supply). Retrieved on March 1, 2018 via: [www.scp.nl/Publicaties/Alle\\_publicaties/Publicaties\\_2016/Aanbod\\_van\\_arbeid\\_2016](http://www.scp.nl/Publicaties/Alle_publicaties/Publicaties_2016/Aanbod_van_arbeid_2016).
- Tjepkema, S. (2011). *Zelfsturende teams inrichten als rijke leeromgeving* (Organize self-managing teams as a rich learning environment). In J. Kessels & R. Poell (Eds.) *Handbook: Human resource development* (2e herziene druk, pp. 395–416). Houten: Bohn Stafleu van Loghum.
- Tynjälä, P. (2008). Perspectives into learning at the workplace. *Educational Research Review*, 3, 130–154.
- Tuijnman, A., & Boström, A. K. (2002). Changing notions of lifelong education and lifelong learning. *International Review of Education*, 48, 93–110.
- van Hooft, S., Dwarswaard, J., & van Staa, A. (2015). Ondersteunen van zelfmanagement. *Nederlands Tijdschrift voor Evidence Based Practice*, 13(1), 17–20.
- Van der Krogt, F. J. (1998). Learning network theory: The tension between learning systems and work systems in organizations. *Human Resource Development Quarterly*, 9(2), 157–177.
- Van der Krogt, F. J. (2008). *Organiseren van leerwegen: Strategieën van werknemers, managers en leeradviseurs in dienstverlenende organisaties* (Organizing learning paths: Strategies of employees, managers and learning advisors in service organizations). Houten: Bohn Stafleu van Loghum.
- Wittekind, A. (2007). *Employability: An empirical analysis of its antecedents and its relevance for employees in Switzerland*. Dissertation. Zürich, Switzerland: ETH.

## Chapter 13

# New Integrated Management Reporting and Control Systems in Healthcare: Moving to Multiple Values and Key Performance Indicators of Healthy Healthcare



Koos Wagensveld

**Abstract** Healthy Healthcare organizations can improve the communication to their stakeholders and improve their decision-making processes by deciding to prepare an integrated report. The most important aspects of integrated reporting are value creation over time (considering the short as well as the long-term consequences), integrated thinking and connectivity. However, one cannot expect an improvement in corporate reporting without improving strategy execution, managerial thinking and decision making supported by a useful Management Control System (MCS). This chapter proposes to fill in MCS by the Levers of Control (LOC) framework of Simons because this framework is best suited for dynamic environments where innovation and multi-capital strategies aimed at different stakeholders become crucial factors for Healthy Healthcare organizations to survive.

**Keywords** Integrated reporting · Six capitals · Control systems in healthcare · Multiple value creation · Literature review

### 13.1 Introduction

As a result of increasing globalization, diversity, mobility and interconnectivity, complexity in profit and non-profit (e.g. healthcare) organizations increases. Because of this, there is a call from multiple stakeholders for increasingly more information. Information that is no longer limited to just the financial means, but information that stretches to strategy, risk management, governance and the broader impact that a company has on society (IIRC, 2013; NBA, 2013).

Novo Nordisks report on integrated reporting has been widely recognized as one of the most influential reports on this topic (Eccles & Krzus, 2010; Demartini & Trucco, 2017). It is one of the few descriptions of a management control system that is used to support the implementation of an organizational strategy based on

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integrated thinking and reporting using values for different levels and stakeholders (Morsing & Oswald, 2009) emphasized in the system perspectives of Healthy Healthcare. Surprisingly, hardly any healthcare organization have adhered to this methodology and implemented an integrated management control system and published an integrated report. One of the notable exceptions is KPJ Healthcare (2018). The current chapter introduces new perspectives on integrated reporting focusing on the importance of multiple value-creation of healthcare institutes, including outcomes for patients, healthcare staff as well as system-based outcomes concordant with the three pillars of Healthy Healthcare (see Chap. 1).

## 13.2 The Importance of Integrated Reporting

We start this chapter with a brief history of the concept of integrated reporting beginning in 1995 when Novo Nordisk in Copenhagen, Denmark started issuing an environmental report along with the annual financial report. In the following years, it continued to disclose environmental and social information in a specific report. In 2001, it included reports on the Triple Bottom Line (TBL) (Elkington, 1994), and from 2004 it has issued integrated reports. Founded on the TBL approach it introduced a new managerial philosophy called: “The Novo Nordisk Way of Management” (Demartini & Trucco, 2017; Morsing & Oswald, 2009), where financial performance combines with social and environmental performance. The company’s way of management is made up of eight specific topics ranging from leadership, innovation, Integrated Reporting (hereafter, IR), ethics, and engagement. In 2015, the Novo Nordisk way of management turned into the corporate strategy titled “Novo Nordisk way” (see Annual Report Novo Nordisk), which describes the company’s business model and considers the resources used to create value for a variety of stakeholders (Demartini & Trucco, 2017). Continuously developments in reporting standards is important to answer the call for more information from stakeholders as a response to for example public, media and governmental accountability.

The report from Novo Nordisk can be traced to incidents that created negative media coverage (Dey & Burns, 2010). On a global level, the International Integrated Reporting Council (hereafter, IIRC) developed the *six capitals* framework (being financial, manufactured, intellectual, human, social & relational and natural) on strategy, governance, performance and prospects, aims to establish long term standards for reporting long term value creation in an integrated report (IIRC, 2013.) On a policy level, increasingly more legislation is enacted to change reporting standards. This leads to a practical importance for companies all over the world to prepare for these developments. In the EU the Directive 2014/95/EU aims to aid investors, consumers, policy makers and other stakeholders in over 6000 large companies and groups in the EU to publish regular reports on environmental protection, social responsibility and the treatment of employees (European Commission, 2014). This is a clear step in the direction of non-financial indicators aimed at long term value

creation on multiple dimensions that the six capitals model of the IIRC aims to incentivize.

These developments in practice also affect the activities of accounting scholars, with research on integrated reporting becoming an increasingly popular topic. A recent paper by Villiers, Venter, and Kelly Hsiao (2017) shows the amount of emerging research in integrated reporting. Academic documentation of integrated reporting developments, combined with a range of insights into aspects of integrated reporting can provide a solid foundation upon which future research can be built (Villiers, Rinaldi, & Unerman, 2014).

Another insightful paper by Flower (2015), assertively called ‘The International Integrated Reporting Council: A story of failure’ and claimed that the IIRC has failed in its objectives and abandoned sustainability accounting. This led to notable reactionary papers by Adams (2015) and Thomson (2015) and sparked the academic debate on the future, objectives and merit of IR. Adams (2015) rebuked the claim of Flower (2015) that the IIRC failed in its objective to promote sustainability reporting, and that it was up to accounting scholars to engage in the process of further developing IR. Other researchers, notably Milne and Gray (2013), point out that IR as a concept has moved on from sustainability reporting, that it is exclusively investor focused, with nothing of substance to be said about either accountability or sustainability. In this paper we reflect on this debate, especially in relation to possible implications for a ‘healthy’ healthcare sector.

The practical importance and academic interest in IR lead to this paper’s literature review on the current state of the debate on integrated reporting and control in academics as well as in practice. The paper aims to address the state of the debate on IR through a literature review and reflects on the implications for Healthy Healthcare. In so doing, it aims to answer *two research questions*. First, it investigates how a management control system based on integrated thinking and reporting can be constructed. The second research question investigates what the arguments for and against integrated reporting as set out by the IIRC are, according to the literature. In answering both questions, we examine the implications of IR for Healthy Healthcare.

Human capital is important for the Healthy Healthcare pillar *worker wellbeing* and Intellectual capital is important for the Healthy Healthcare pillar *quality of care*. On an organizational level, all the six capitals of integrated reporting, and the trade-offs between them are important to steer the Healthy Healthcare services holistically as a value ecosystem aimed at sustainable long-term value creation for all stakeholders involved. In the next section integrated thinking and reporting will be discussed from a management control perspective.

### 13.3 Introduction of Integrated Thinking and Reporting from a Management Control Perspective

#### 13.3.1 *Integrated Thinking on Different Values*

Research on Integrated Reporting has identified today's financially oriented business reporting, and the associated processes and techniques, as a significant constraint to focusing on long-term value creation. Integrated reporting is based on integrated thinking. *Integrated thinking* is defined as “The active consideration by an organization of the relationships between its various operating and functional units and the capitals that the organization uses or affects” (IIRC, 2013). In addition, Integrated thinking leads to integrated decision-making and actions that consider the creation of value over the short, medium and long term. (IIRC, 2013). In other words, it involves organizational change to require everyone in the organization to increase their contribution to a much broader, and longer term, concept of value creation through a better understanding of how value is created (IFAC, 2015).

The need for a more comprehensive ('holistic') and compelling management-driven approach to value creation is recognized in the literature (e.g. CIMA, 2016). Sustainability is no longer a separate agenda item for management and supervisory boards of enterprises; it is embedded in strategy discussions and discussions on risk management, performance management and external reporting. So, truly integrated reporting should be part of the strategy and operations, where the value is communicated through effective performance and information management. Those performances are created by using different types of resources (capital). Embedding integrated thinking into an organisation's activities enables joined-up information to flow more naturally into management reporting, analysis and decision making. It also leads to better integration of the information systems that support internal and external reporting and communication, including preparation of the integrated report (CIMA, 2016).

Integrated Reporting (IR) seeks to contribute to the more *holistic* view on organizations and tries to change the way organizations think about creating and sustaining value (IFAC, 2015). The desire to promote financial and social stability, sustainable development and Corporate Social Responsibility (CSR) by better linking investment decisions, organizational behaviour and reporting has become a global need (IIRC, 2013). In our view this stretches out to healthcare organizations, but surprisingly hardly any healthcare organization has followed the example of Novo Nordisk.

#### 13.3.2 *Guiding Principles and Content Elements*

The International Integrated Reporting Framework is principles-based, instead of founded on a rules-based approach, so it can obtain a balance between flexibility and prescription (IIRC, 2013, p. 7). The IIRC describes several *guiding principles*

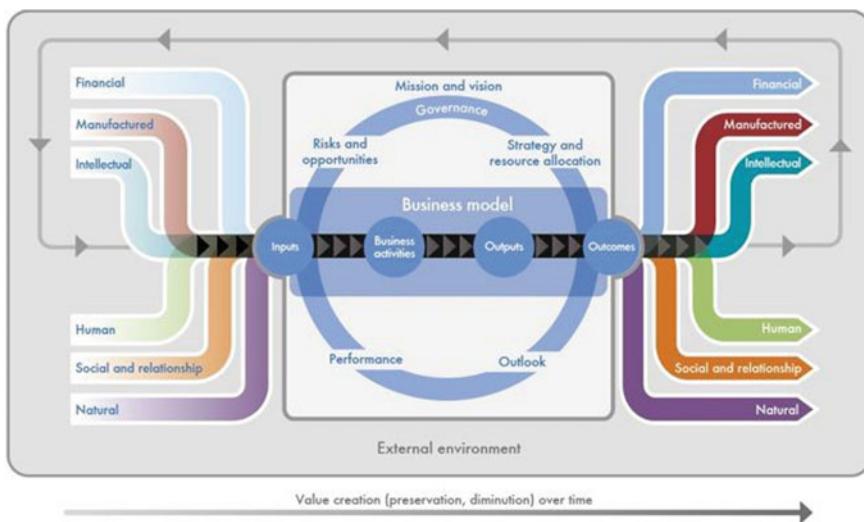
for an integrated report which underpin the preparation of an integrated report by informing the content of the report and how the information in it is presented. These guiding principles are strategic focus and future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability and completeness and consistency and comparability. The IIRC also describes eight *content elements* of an integrated report that are fundamentally linked to each other and are not mutually exclusive. These are: organizational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, and basis of presentation (IIRC, 2013, p. 5).

The most important aspects of integrated reporting are value creation of the multiple capitals (see next section) over time (considering the short as well as the long-term consequences), integrated thinking and connectivity.

### 13.3.3 Types of Capitals

One of the fundamentals of the IR Framework is that all organizations depend on various forms of capital for their success. In this Framework, the capitals (“stocks of value”) comprise financial, manufactured, intellectual, human, social and relationship, and natural. Although organizations preparing an integrated report are not required to adopt this categorization (see Fig. 13.1).

The capitals are stocks of value that are increased, decreased or transformed through the activities and outputs of the organization. For example, an organization’s



**Fig. 13.1** The value creation process according to the IR Framework (IIRC, 2013)

financial capital is increased when it makes a profit, and the quality of its human capital is improved when employees become better trained.

*Financial capital* refers to the pool of funds that is available to an organization for use in the production of goods or the provision of services and is obtained through financing, such as debt, equity or grants, or generated through operations or investments.

*Manufactured capital* refers to manufactured physical objects (as distinct from natural physical objects) that are available to an organization for use in the production of goods or the provision of (medical) services, including: (hospital) buildings, (medical) equipment and infrastructure (such as roads, ports, bridges, and waste and water treatment plants, diagnostic molecular imaging). Manufactured capital is often created by other organizations, but includes assets manufactured by the reporting organization for sale or when they are retained for its own use.

*Intellectual capital*: refers to organizational, knowledge-based intangibles, including intellectual property, such as patents, copyrights, software, rights and licenses and “organizational capital” such as tacit knowledge, systems, procedures and protocols (e.g. healthcare quality policies, procedures and standards).

*Human capital* refers to people’s competencies, capabilities and experience, and their motivations to innovate, including their alignment with and support for an organization’s governance framework, risk management approach, and ethical (healthcare) values. It also comprises people’s ability to understand, develop and implement an organization’s strategy; motivations for improving processes, goods and (medical) services, including their ability to lead, manage and collaborate.

*Social and relationship capital* refers to the relationships within and between communities, groups of stakeholders and other networks, and the ability to share information to enhance individual and collective well-being. Social and relationship capital includes shared norms, and common values and behaviours, but also key stakeholder relationships (e.g. doctor relationships and healthcare funder relationships). It also refers to the trust and willingness to engage that an organization has developed and strives to build and protect with external stakeholders and the social license to operate of the (healthcare) organization.

*Natural capital* refers to all renewable and non-renewable environmental resources and processes that provide goods or services that support the past, current or future prosperity of an organization. It includes air, water, electricity, gas, land, minerals, forests, biodiversity and eco-system health.

Human capital is important for the Healthy Healthcare pillar *worker wellbeing* and Intellectual capital is important for the Healthy Healthcare pillar *quality of care*. On an organizational level, all the six capitals of IR and the trade-offs between them are important to steer the *organization of healthcare services* holistically as a value ecosystem aimed at sustainable long-term value creation for all stakeholders (KPI Healthcare, 2018, p. 14–27).

## 13.4 Management Control: Moving to Multiple Values

Tillema (2013) states that Management Control has evolved in the past decades, however there is a great potential in relation to the complexity of society and organisations. Management Control is strongly built up from the *inside out* perspective, whereas the rapidly changing environment requires an *outside in* perspective. Integrated thinking and reporting offer a great opportunity to think differently about the decisions that organizations (like healthcare organizations) make. It can help organizations make decisions based on more than financial criteria and the bottom line to consider socio-economic impacts, governance and accountability, sustainability, and more.

According to EY (2014) three layers of value can be distinguished:

- Value captured by the organization;
- Shared value;
- Externalities (value for society and the environment).

The only layer of value currently measured consistently by organizations is financial and manufactured capital—usually through the annual reports. This value is translated into dividends for shareholders or stock price gains. The second layer encompasses shared values that benefit other stakeholders that are directly related to the organization, like employees, customers, suppliers, public treasury, etc. Shared value depends extensively on factors such as employee performance, operating permits and consumer confidence (EY, 2014). The third layer describes the value that an organization generates for society at large, even if it is not directly linked to its organizational purpose. These externalities may be either positive or negative. An integrated report is broader than traditional approaches in terms of scope and time horizon. It should tell each organization's unique value creation story for each of these areas and include how:

- It creates value and for whom;
- It measures and quantifies the layers of value;
- It identifies the value created at each level and how it may affect future performance.

Integrated management control systems aligned with an organisation's sustainable strategy is the foundation of integrated reporting (PWC, 2015). Therefore, the relationship between MCS and IR is an interesting topic for further research. We found one case study in the literature where this relationship was studied in the healthcare sector. The case study of the AOU, an Italian hospital group that prepared an IR inspired by the IIRC Guidelines, by Gatti, Chiucchi and Montemari (2018) shows the multiple roles and functions ascribable to the management accountant and to the MCS with reference to the design and implementation of an IR system. As their empirical evidence has shown, adopting an IR (*note*: the adoption was initiated by the General manager and not by the management accountant!) requires constant support from the management accountant who is called to go beyond the mere production

of information or the calculation of indicators. Rather, he must take care of aspects which are more connected to the design process, increase the level of involvement and motivation of the employees involved in the project, and intervene with reference to the best IR configuration that can express the way in which the hospital creates value. In other words: he is much more than a so-called ‘bean counter’ and must embrace new dimensions (“the six capitals”) in the goal of allowing the effective implementation of a complex tool with enormous information potential. This is particularly relevant in the context of Healthy Healthcare organizations because there is a need to show how Healthy Healthcare organizations can contribute to generate value. The adoption of IR and the presence of a competent management accountant and a good MCS can be fundamental since, by communicating what Healthy Healthcare organizations do and how they do it, their public image could improve (Gatti, Chiucchi, & Montemari, 2018).

Another interesting potential avenue of research is focusing on the work of Harvard professor Robert Simons. Simons’ (1995) levers of control framework (hereafter LOC), which is fundamentally concerned with strategic renewal like IR and simultaneously exerting control over how strategic objectives are achieved. Next to that its focus is on how managers ensure that intended strategies are implemented successfully while also remaining open to strategies that emerge from other areas of the business. Also, the LOC framework is an analytical tool for investigating how managers use MCS to deal with strategic uncertainty e.g. by introducing IR.

The LOC framework identifies four key processes—*beliefs*, *boundaries*, *diagnostic*, and *interactive*—as a way of analysing how organizations leverage their MCS in order to implement business strategies. The full potential of the four levers of control is realized when they are mobilized together so that they facilitate the implementation and attainment of an organization’s strategic objectives (Widener, 2007).

*Belief systems* consist of an explicit and formal set of organizational statements that managers use in order to communicate the organization’s values and provide a coherent strategic agenda (Simons, 1995). They are “created and communicated through such documents as credos, mission statement, and statements of purpose.” (Simons, 1995, p. 34). Their purpose is to secure the commitment of employees towards common goals while also inspiring them to search for organizational opportunities. Belief systems help to foster a sense of stability and continuity but can also enable organizational change when managers use them to introduce new priorities or values (Simons, 1995). Any MCS that incorporates explicit information about the organization’s values and purpose can be leveraged as a beliefs system. Within an IR context, belief systems can be expected to incorporate a broad set of values based around an agenda that garners the commitment of an organization’s employees and other stakeholders to its long-term sustainability objectives. Belief systems underpin the way that the other levers of control operate and are therefore central to the way that all four work together (Widener, 2007). Managers also use MCS to establish boundaries that restrict employees in their search for strategic opportunities.

The *boundary* lever of control is represented by an explicit set of organizational definitions and parameters, commonly expressed in negative or minimum terms that

support managers in their attempts to identify risks that must be avoided if the organization's objectives are to be achieved (Simons, 1995). Risk management processes thus play an important role in the attainment of strategic objectives (Tessier & Otley, 2012). Managers use strategic boundaries to communicate to employees those activities deemed acceptable and those considered off limits so that employees do not waste the organization's resources. For example, environmental threats and the potential liabilities associated with ignoring Corporate Social Responsibility (CSR) activities can be included in regular internal reports, and environmental audits can be used to remind employees about major risks to the business (Schaltegger & Burritt, 2010). A second type of boundary, business conduct boundaries, is formed by drawing on external and internal frameworks, such as voluntary guidelines, codes of conduct, and legal standards.

*Diagnostic* use of MCS occurs when managers compare performance against targets in order to identify critical exceptions and deviations from plans (Simons, 1995). Progress on strategic initiatives is evaluated against performance measures that incorporate a combination of short-term and long-term measures, financial and non-financial objectives, and comparative data on competitors (Ittner & Larcker, 2003). Feedback on performance enables managers to adjust their actions when results are below expectations. Diagnostic processes make tangible and visible the activities that employees must undertake in order to achieve the organization's strategic goals (Bhimani and Langfield-Smith, 2017).

Finally, *interactive controls* are formal processes that managers use to manage strategic uncertainties and to identify opportunities. Strategic uncertainties are contingencies that could threaten or invalidate the assumptions underlying an organization's strategy (Simons, 1995). Interactive processes enable managers to identify challenges to their strategic agenda (Schaltegger & Burritt, 2010). They enable senior managers to gain a richer understanding of potential opportunities and capabilities while simultaneously signalling to junior managers the organization's strategic priorities (Simons, 1995). Interactive use of a control is characterized by three elements: intensive use by superiors, intensive use by subordinates, and frequent personal communication between the two groups (Tessier & Otley, 2012). Senior managers use interactive processes to facilitate debate about the underlying action plans that drive an organization's activities and to obtain access to local knowledge about strategic uncertainties that can be used to develop strategic plans (Tessier & Otley, 2012). Interactive processes to support CSR strategy usually incorporate the views of a range of external stakeholders, such as NGOs, local communities, and investors, so that managers can uncover strategies that have not been previously considered by internal groups and receive feedback on current CSR initiatives (cf. Gond et al., 2012). Interactive processes thus play a crucial role in stimulating and guiding the emergence of new initiatives that provide the impetus for strategic change and renewal (Simons, 1995). Any MCS that facilitates processes of debate around strategic uncertainties, such as formal strategy reviews, budget planning meetings, and strategic risk management processes can be used interactively (Ittner & Larcker, 2003). Finally, interactive processes are critical when performance measures are multi-dimensional, such as in

CSR strategy, because they enable senior managers to support junior managers in their attempts to deal with conflicting goals.

One could argue that integrated thinking and reporting is a more comprehensive view on sustainability, focussing not only on the *financial* and *environmental* performance (Henri & Journeault, 2010), but also on the *social* impact of organisations. This paper stresses the importance of linking integrated thinking and reporting with solid, innovative and multiple capital focused MCS's in healthcare contexts.

### 13.5 Combining Integrated Reporting and Levels of Control

Although one of the primary aims of IR is to “support integrated thinking, decision-making and actions that focus on the creation of value over the short, medium and long-term” (IIRC, 2013, p. 4), relatively few academic articles are focusing on Management control in relation to integrated thinking and reporting (Dumay, Bernardi, Guthrie, & Demartini, 2016).

In accordance with Trébucq and Magnaghi (2017) there is an opportunity to complement management control systems (MCS's) adjusted to the concept of integrated thinking and reporting. We agree with Trébucq and Magnaghi (2017) that one cannot expect an improvement in corporate reporting without improving strategy execution, managerial thinking and decision making supported by a useful Management Control System. By distinguishing three different layers, Trébucq and Magnaghi (2017) emphasize that improvements in corporate (external) reporting cannot be realized without any changes in managerial thinking and decisions supported by a useful management control system. An important assumption here is that without integrated thinking, it would be difficult to produce an integrated report (Trébucq & Magnaghi, 2017).

The current chapter propose to implement MCS into the LOC framework for the following reasons that are especially relevant in the dynamic healthcare sector. First, LOC is fundamentally concerned with the use of control systems to drive strategic renewal while simultaneously exerting control over how strategic objectives are achieved (Kober et al., 2007; Simons, 1995). Managers use MCSs to manage strategy based on sustainability and multiple capitals and to support the renewal of mainstream business strategy through the development of sustainability reporting (Arjaliès & Ponssard, 2010). Second, a central element of the LOC framework is its focus on how managers ensure that intended strategies are implemented successfully while also remaining open to strategies that emerge in the new economy from other areas of the business (Kober et al., 2007; Simons, 1995). Third, the LOC framework is an analytical tool for investigating how managers use MCS to deal with strategic uncertainties (Simons, 1995). Integrated reporting is accompanied by strategic uncertainty because it introduces into the business new sets of risk and opportunities in the new and circular economy that must be managed (Schaltegger & Burritt, 2010). Gond

et al.'s (2012) conceptualization of eight configurations of diagnostic and interactive uses of MCS, that each produce a different level of integration of sustainability within organizational strategy, is another illustration of the relevance of the LOC framework to address these questions.

In summary, the focus of the LOC framework on the different uses of MCS is designed to shed insights into the influence of MCS on a multi-capital strategy in health care contexts.

## **13.6 State-of-the-Art of the Debate on Integrated Reporting: A Systematic Review of Literature**

In its framework document, the IIRC (2013) explains the process of long-term value creation: the six capitals form an input for the business model of the organization. Business activities then transform the input into internal and external consequences. Within this process, the external environment, defined as the economic and technological conditions, social and environmental challenges set the context in which the organization operates. The environment requires constant monitoring to identify risks and opportunities that are relevant for the organization. It is important to note that this process is not static, it requires regular review of each component and its interaction with other components of the model. Contrary to traditional financial statements, integrated reports do not limit to past events and transactions, but also give forward looking information (Cheng et al., 2014). This prospective, forward looking approach is very appealing, and seems to be a necessity for a dynamic sector like healthcare (KPJ Healthcare, 2018, p. 3). However, the current chapter aim to give a more nuanced picture of the arguments for and against integrated reporting by answering the second research question by a literature review.

### **13.6.1 Methodology**

The purpose of the literature research in accounting literature is to aggregate different visions from academics on Integrated Reporting. Selected papers were processed and analysed, and information was synthesized to evaluate the research question what the arguments for and against integrated reporting are. Levy and Ellis (2006) propose a systematic process: "Sequential steps to collect, know, comprehend, apply, analyse, synthesize, and evaluate quality literature in order to provide a firm foundation to a topic and research method" (Levy & Ellis, 2006 p. 182). These steps, elaborated on below, were followed in this paper in order to reach the research goal. To clarify, this review has all the aspects of a *systematic review*, other than a subjective relevance check (see Jesson, Matheson, & Lacey, 2011) to filter articles that don't participate in the ongoing debate on integrated reporting.

The following list of top accounting journals were selected for review:

- Abacus
- Accounting and Business Research
- Accounting, Auditing and Accountability journal
- Accounting, Organizations and Society
- Critical Perspectives on Accounting
- Contemporary Accounting Research
- European Accounting Review
- Financial Accountability and Management
- Journal of Cleaner Production
- Journal of Management and Governance.

Not an accounting journal per se, the “Journal of cleaner production” was added to this list because of their history of publishing excellent papers on sustainability reporting. These journals were hand-picked because of their relatively larger expected likelihood to contain papers relevant to the subject. The selection of journals follows the strategy of a local PhD project in sustainability and management control.

All the literature was obtained from peer-reviewed, highly rated journals. Databases used to obtain the papers were Emerald, Taylor & Francis, Wiley and ScienceDirect. Papers were searched for in April 2019. Years that were covered were (January) 2013, up to the search date. The decision to cover the last six years, is based upon the importance of finding articles that focus on more recent, post-IIRC framework developments. The search words used were ‘Integrated Reporting’, ‘Integrated thinking’, ‘Six Capitals (being financial, manufactured, intellectual, human, social and relational and natural),’ and ‘Multiple Value Creation’, to cover the breadth of the subject. Boolean operator “OR” was used in the database, when available. Lastly, papers that weren’t in English were discarded.

Test searches showed some differentiation in the search strategy was required for every database. Two search methods were used. With the ScienceDirect database, a generic search was applied and yielded relevant papers, while keywords searches omitted crucial papers. For instance, Flower (2015) has keywords sustainability, environmental, stakeholder and capitalism yet can be found with generic searches using the keywords in conjunction with Boolean operator ‘OR’. With the second search strategy, used for Emerald, Wiley and Taylor & Francis, keywords searches were a necessity to filter papers that had an entirely different topic, because generic searched yielded too many articles. The amount of papers retrieved initially, before relevance review, is shown below. Some journals published no articles that fit the keywords.

Below the inclusion and exclusion criteria are summarized.

Inclusion criteria	Exclusion criteria
Paper was included in the selected journals	Paper is outside of the selected journals
Fitting keywords for Emerald, Wiley and Taylor & Francis	Any keywords other than 'Integrated Reporting', 'Integrated thinking', 'Six Capitals' and 'Multiple Value Creation'
Contains argument(s) for or against IR	Thesis of the paper irrelevant for this review: paper does not contain noteworthy arguments for or against IR

After retrieving the papers, they were skimmed for relevance. Relevance was achieved when insights were offered on arguments for, or against integrated reporting. Papers that did not aim to offer insights relevant to the academic debate were discarded.

### ***13.6.2 Analysis, Synthesis and Evaluation***

Regarding the analysis, the main goal was to identify why the information that was presented is of importance. This involved activities such as separating, connecting, comparing and explaining. The essence of synthesis was to assemble the literature being reviewed for a given concept into a whole that exceeds the sum of its parts (Levy & Ellis, 2006). This was done by highlighting similarities, forming discussion points and synthesizing the different aspects of the discussion points with viewpoints of different scholars (Jesson, Matheson, & Lacey, 2011). Following Levy and Ellis (2006), the last step of a (systematic) literature review is evaluation. The goal of evaluation was to distinguish opinions, theories, and empirically established facts. This proved difficult. Since many papers are discussion papers, the argumentation of opinions is generally based on deductive reasoning using underlying economic theories, as little empirical research has been done that can be used for an inductive approach. There have been attempts however to change that, causing a growing body of empirical evidence (Barth, Cahan, Chen, & Venter, 2017; Bommel, 2014; Reuter & Messner, 2015; Zhou, Simnett, & Green 2017).

Using the literature, several key discussion points can be identified. The discussion topics that were identified were: legislative, economic, political and financial-operational.

#### ***13.6.2.1 Legislative***

Critics of the IIRC, notably Flower (2015) reinforced by Thomson (2015), show a distinct lack of faith in IR developments. Flower (2015) noted that the meaning of the word value is ambiguous. A question that could be asked is, for whom is

value created? This is open to interpretation. The IIRC (2013) framework explicates that value is created for the organization itself and subsequently its shareholders. A later section of the IIRC framework further explicates that providers of financial capital are not just interested in the value the organization creates for itself, but also the value creation it enables for others that will affect the value of the organization again. Additionally, shareholders appreciate value creation for stated objectives of the organization, which, could be argued, are social in nature. The IIRC's emphasis on shareholders is emphasized by for example Dumay, Bernardi, Guthrie, and Demartini (2016): "according to the IIRC, the main goal for IR is to support financial performance, i.e. financial information used for investing".

This leads to the question, does the IIRC allow for improvements in the quality of reporting and help to solve the current social and environmental crises? Flower (2015) argues, that the IIRC shows its true colours with the fact that, if it doesn't have a subsequent effect on the company, the IIRC places no obligation to report on harm inflicted on entities outside of the firm. Bommel (2014) elaborates on that: It can be argued that IR is foremost a sustainability cloak, for a practice that "helps the capitalist market to incorporate the critique that was meant to destabilize it" (Reinecke, 2010, p. 578).

Bommel gets acclaim from Stacchezzini, Melloni, and Lai (2016). Their content analysis revealed that firms have a limited number of quantitative indicators and forward-looking information about their actions and performance related to sustainability. This means that IR adopters are not sufficiently informing stakeholders about how the organization makes decisions. They claim this is contrary to the IIRC's emphasis on integrating information systems to support internal and external reporting. This could be explained by being in the early stages of sustainability management, lacking quantifiably performance indicators. They draw the pessimistic conclusion that "firms with weak social and environmental records use IR disclosure to detract attention from these results. These findings strengthen the idea of the use of the IR as means to opportunistically manage public impression on corporate behaviour." (p. 108) They say it appears that IR allows for a corporate veil to form over disclosures as an attempt to hide internal strategic information and to stop threats to corporate legitimacy when disclosing a lack of sustainability. Cho, Laine, Roberts, and Rodrigue (2015) argue that contradictory societal and institutional pressures essentially require firms to form facades. This makes it difficult for sustainability to ever take the form of a substantive disclosure. Corporate sustainability reporting's role in transitioning towards a more sustainable society remains unclear. The paper suggests that organized hypocrisy, caused by contradictory societal and institutional pressures, plays a large role in hindering the development of sustainability reports into substantial disclosures. Further evidence on this was obtained by Reuter and Messner (2015), in a content analysis on comment letters sent to the IIRC. Notably EY remarked that IR can be the catalyst that harmonizes and simplifies existing frameworks. IR includes some elements of intellectual capital (IC) reporting. The primary purpose of an integrated report is to explain to providers of financial capital how an organization creates value over time (Villiers & Sharma, 2019, p. 11): "if IC, human capital, or relationship capital is set to play an important value creation role

in the future of an organization, then this value creation story, with IC at its core, has to be told in the integrated report” So far this isn’t being done enough.

According to Flower (2015) integrated reports are no longer single reports. Rowbottom and Locke (2016) argue that the IIRC adjusted its position on the format of the report, it can now also be a separate report or communication. The IIRC, however, does not admit this directly. According to Flower (2015) this signals a significant retreat, with the IR losing its status as a primary, all-included report. Tweedie (2018) sees no problem with the IIRC’s change of heart: “it is unclear why the IIRC must perpetually adhere to its original agenda. It might be argued that the IIRC is normatively obliged to change its agenda should its founding members so decide.” (Tweedie, 2018, p. 2).

### 13.6.2.2 Economical

As stated by Flower (2015), the IIRC implies there is no conflict of interest between well-being of the organization and that of the whole society. Quotes by founding members of the IIRC further denoted how making a profit is the key to ethical behaviour. The roots of the council’s reasoning can be found in the theory of the firm. In neoclassical economics, the theory of the firm assumes actors to be profit maximizing agents, and that such behaviour is ultimately best for the whole society (Durlauf & Blume, 2008).

Several scholars disagree with the dominance of the so-called business case framings (Brown & Dillard 2017; Flower 2015; Thomson 2015) The IIRC’s emphasis on companies’ profit being ultimately best for society, Thomson (2015) elaborates:

“Integrated Reporting’s implied pathway to ‘sustainability’ is that, if profitable (‘value-creating’) corporations, investors’ wealth and capitalism are sustained through better risk management, then beneficial social transformations will follow. This is an extension of the much critiqued ‘trickle down’ theory, where any benefits accruing to a large corporation will eventually pass down to smaller businesses and consumers. This ‘trickle-down’ social and environmental change is dependent on the assumed power of individuals to control large corporations and governments.” (p. 20).

Thomson claims that the IIRC expects enlightened self-interest, managerialism and the market are enough to persuade organizations to publicize integrated reports. Perhaps the business case formula is a necessary “evil” with other scholars claiming that the market is adequate to enforce the publication of integrated reports. Adams (2015) agrees and goes on to claim that the application of the theory of the firm is a necessary component of reporting, with changes in disclosure generally being motivated by profit maximization. Bommel (2014) confirms this in his interviews, where most of the employees that support IR, are persuaded by foremostly financial reasons like cost reductions and profit.

Deegan (2013) hypothesizes it is possible that capital markets consider how companies account for aspects of social and environmental performance (See Barth et al., 2017). However, he claims that for externalities in the truest sense there are

no resource streams for most forms of externalities. This means that even when the hypothesis is true, capital markets aren't very likely to account for externalities. When it doesn't concern externalities, capital markets use financial reporting information for contractual arrangements. Internalization of externalities is unlikely to occur as there is no incentive for most parties to suffer the negative consequences of reporting on subjectively determined externalities. Deegan sees a parallel example of a market solution for externalities: emission rights trading in Europe. This method was to many observers an odd way to solve a problem: using a market instrument to solve an issue created by the market. As a result of this market solution, the price of polluting rights fluctuated widely, creating uncertainty and riskier investment decisions.

Brown and Dillard (2017) claim the IIRC needs to broaden up its perspective, because limiting their view to dominance of the business case which leads to subordination or even omission of important inputs. Stakeholder engagement from a business case perspective is about stakeholder management over being accountable to stakeholders. The multiple capitals approach promotes sustainability as a business opportunity that can be profitable to the organization, with little critical reflection on how that interacts with existing social structures and how these capitalist logics have affected current crises. Adams (2015), offers a different perspective on this matter. The notion of market thinking, profit maximization, aligned with the well-being of society and the environment does have shift in longer term thinking for organizations as a result, due to the emphasis and encouragement of theorizing about value, its creation and how that interacts with the business model. Adams sees this in South African integrated reports, which even though they don't follow the IIRC's framework, do provide a similar holistic view. Later, Adams (2017) interviewed South African companies, and revealed that they believed businesses had a role in resolving social issues without sacrificing value creation, via a variety of ways, like education to increase productivity and social investments by corporations. An alternative approach to the theory of the firm is the stakeholder theory of the firm. Flower (2015) differentiates two forms: normative, and instrumental stakeholder theory. Normative follows Kantian ethics, that human beings should never be treated as a means but as valuable on its own. Instrumental stakeholder theory argues for the importance of stakeholder interests for the success of the firm. The paper goes on to claim that IR as proposed by the IIRC follows the theory of the company based on the aspects of capital allocation, focus on investors and neglect of other stakeholders. Shareholders most likely simply translate non-financial know-how obtained through reported multiple value creation into discounted cashflows. The primary way to get shareholders' attention to multiple value creation is to ascertain its effect on finance. Non-financial longevity is aimed at the long term, so it's about long versus short term.

We emphasize the importance of holistic thinking, befitting stakeholder theory, when multiple value creation is concerned. Profit maximization and market mechanisms should not be central concepts within integrated thinking and reporting. Idealistically, organizations (and also Healthy Healthcare organizations!) should think holistically, how they can serve all their stakeholders (that is more than just their

shareholders!) across the different capitals in a balanced way. The IIRC framework seems to be very compatible with this line of thinking.

### 13.6.2.3 Political

Industry involvement appears to be crucial for forming the IR framework, noting the participating of many companies and academic involvement in the debate. Humphrey et al. (2017) mention the importance of involvement from a broad spectrum of parties, finding that the IIRC may only be a success depending on the influence of professional groupings and specialisms and how they manage the involved process. It is up to the IIRC to engage with these groups, to inspire and control these groups which should prove a challenging task.

Reuter and Messner (2015) provided industry insights in their content analysis of public comment letters written in reaction to IIRC. Among participants in the process of creating the IR framework, there was often agreement on the importance of integrated thinking applied to reporting, but disagreement on the purpose and operationalization. The IR standard-setting process features more pluralism than the financial accounting standard-setting process. There were many participants from different sectors, only 32.9% directly from the accounting profession in the 2011 public commentary in preparation for the 2013 framework. However, it was unclear if the parties were still involved in the later stages of creating the framework. The influence of accountants directly within the IIRC is the reason Flower (2015) states the IIRC has been a victim of regulatory capture, the organization aiding shareholders, to control the agenda of wealth creation for investors over other types of stakeholders or society as a whole Villiers and Sharma (2017). Deegan (2013) analyses the call for an overhaul of financial accounting, broadening and opening the profession up to non-financial aspects of corporate performance. He concludes that ultimately, accountants will have to be the driver of this change. However, this proves difficult. From the example of using debits and credits as an ancient invented work-around for the absence of negative numbers to the amount of times changes in accounting standards were abandoned or delayed because of their effect on profit, Deegan (2013) concludes that accountants as a profession are not a group that embraces change. A change of great magnitude, to report extensively on non-financial matters and to recognize externalities would be impossible. Most of the selected scholars and all interviewees agree that sustainability reporting developments seem to break the existing reporting paradigm (Atkins, Atkins, Thomson, & Maroun 2015). The new value creating business paradigm is at odds with traditional accounting's narrow perspective. Accountants are perhaps obstructing long term value creation, maintaining a powerful presence in companies, boards and internal audit teams. Long term value creations require a need for greater skills in non-financial accounting and non-financial auditing, Adams (2017) acknowledges that further research is needed on practical implementation of education and the function of accountants in an age of multiple value creation.

In order to anticipate for regulations on non-financial reporting, it seems apparent that the accounting profession's traditional role will expand. Deegan (2014) claims the existing accounting profession and financial reporting standards are incompatible with the holistic perspective that IR requires and is pessimistic about the accounting profession's ability to adopt changes. According to Adams (2017), the emerging business paradigm seems to be incompatible with the traditionally narrow perspective that accountants have. This is problematic because accountants have an affluent presence and influence within many organizations, enabling the profession group to hinder long term value creation (Adams, 2017). The tendency to focus too much on financial results and information is large problem in accounting and subsequently in accounting education.

#### 13.6.2.4 Financial-Operational

IR is crucial for assessing long term viability of business models and strategies. This claim was argued by experts in interviews held by Humphrey, O'Dwyer and Unerman (2016). Hereby integrated thinking and transparency were the most important components of IR. Integrated thinking can lead to an integrated strategy which, when reported about, both internally and externally, becomes integrated reporting. This is facilitated by an (integrated) planning and control cycle, accompanied by future proof thinking related key performance indicators.

The link between transparency and IR is a key component to long-term success. A case study from Mio, Marco and Pauluzzo (2016) seems to confirm the importance of this link in practice. "Integrated reporting is not only about external reporting, but it is rather about how company's complexity can be managed more generally." (p. 1) They noticed this in a case study of a relatively large Italian insurance organization, using a management control system that was based on integrated reporting, that it readily increased (1) employee engagement, causing a positive effect for the entire organization (2) practical implementation of values (3) improved dialogue with stakeholders and (4) potentially allow for easier external reporting. Besides the internal benefits, their case study organization also used internal IR as an information tool, allowing clarification of internal and external business relations in the value chain.

In our search for literature, we found only one paper in healthcare. The case study of Cavicchi, Oppi, and Vagnoni (2019) aims at investigating mechanisms that affect the possible development of integrated reporting practices in the healthcare sector. Through a case study in a university hospital, they discuss the process of production, construction, and consumption of a management commentary, which is a report combining financial and non-financial information about organizational performance. A management commentary can be considered the natural setting to develop IR. In the case study of Cavicchi, Oppi, and Vagnoni (2019) the prepares of the report were involved in the production process of the report, but not involved a priori in the strategic process of management commentary definition, and a lack of integrated thinking in the organization emerged. Indeed, the difference organizational

units responsible for the reporting practices did not interact to identify the drivers of multiple value creation to be part in the document. So, although the implementation of an IR framework is recommended in the literature, even in the context of the public sector (Adams, 2015), it emerges that the features of an organization can challenge its applicability (Cavicchi, Oppi, and Vagnoni 2019).

Application of IR affects both the internal organizational working and appears to also have a significant positive effect on the capital market. Zhou et al. (2017) found that higher level alignment with the IR framework leads to fewer forecasting error, suggesting IR provides useful information to the capital market over current reporting methods. Their econometric analysis of South African integrated reports showed that analyst forecast errors decrease as companies are more aligned companies with the IR framework. Barth et al. (2017) found that higher quality integrated report correlates with positive economic consequences. Their econometric analysis of South African integrated reports shows a positive relation between IR quality and firm value (disaggregated into liquidity, cost of capital and expected future cash flows).

### 13.7 Conclusion Integrated Reporting and Healthy Healthcare

The implementation of an IR framework is recommended in the literature, also in the context of public sector organizations like healthcare organizations (Adams, 2015). A good example of a practical implementation is the Integrated report of KPJ Healthcare (2018, p. 14). The results of this chapter revealed that the capital “Human capital” is important for the Healthy Healthcare pillar *worker wellbeing* and “Intellectual capital” is important for the Healthy Healthcare pillar *quality of care*. On an organizational level, all the six capitals of IR and the trade-offs between them are important to steer the Healthy Healthcare services holistically as a value ecosystem aimed at sustainable long-term value creation for all stakeholders. However, as Adams (2015) suggests in her “call to action”, IR has a long way to go before it becomes the reporting norm, and to also include more capital values that reflect worker well-being or occupational health measures. It appears its supporters admit as much, the support required to achieve the objective of being the primary report has not yet been reached. Different stakeholder groups, like employers, environmentalists’ academics, policymakers have agreed on that it’s a good idea to advance Environmental, Social and Governance reporting, the issue is that they differ in opinion on its purpose and operationalization (Brown & Dillard, 2014).

Furthermore, there seems to be an important obstacle in the ‘misfit’ with the management control processes in organizations. Following Trébucq and Magnaghi (2017), I argue that one cannot expect an improvement in corporate reporting without improving strategy execution, managerial thinking and decision making supported by a useful Management Control System (MCS). I propose to fill in MCS by the Levers of Control (LOC) framework of Simons because this framework is, according to the

literature, best suited for dynamic environments where innovation and multi-capital strategies aimed at different stakeholders become crucial factors for organizations, like Healthy Healthcare organizations, to survive.

Lastly, whether for or against IR, it appears in the early research done on the results of internal application of IR principles that the positive internal effects of adopting internal IR are numerous and undeniable. It is remarkable that we found very few case studies in the healthcare sector, so a lot of work is still to be done. The IIRC's approach to IR is to start with integrated thinking. It can be wholeheartedly recommended to Healthy Healthcare organizations to start to consider the environment they interact with in their daily activities, the flow of information and performance across multiple levels of the six capitals.

## References

- Adams, C. A. (2015). The international integrated reporting council: a call to action. *Critical Perspectives on Accounting*, 27, 23–28.
- Adams, C. A. (2017). Conceptualizing the contemporary corporate value creation process. *Accounting, Auditing & Accountability Journal*, 30(4), 906–931.
- Arjaliès, D.-L., & Ponssard, J.-P. (2010). A managerial perspective on the Porter hypothesis: the case of CO<sub>2</sub> emissions. In P. Z. Crifo, & J.-P. Ponssard, (Eds.), *Corporate social responsibility: from compliance to opportunity*, Les Editors de l'Ecole Polytechnique.
- Atkins, J., Atkins, B. C., Thomson, I., & Maroun, W. (2015). "Good" news from nowhere: Imagining utopian sustainable accounting. *Accounting, Auditing & Accountability Journal*, 28(5), 651–670.
- Barth, M. E., Cahan, S. F., Chen, L., & Venter, E. R. (2017). The economic consequences associated with integrated report quality: Early evidence from a mandatory setting. *Accounting, Organizations and Society*, 62, 43–64.
- Bhimani, A., & Langfield-Smith, K. (2017). Structure, formality and the importance of financial and non-financial information in strategy development and implementation. *Management Accounting Research*, 18(1), 3–31.
- van Bommel, K. (2014). Towards a legitimate compromise? An exploration of integrated reporting in the Netherlands. *Accounting, Auditing & Accountability Journal*, 27(7), 1157–1189.
- Brown, J., & Dillard, J. (2014). Integrated reporting: On the need for broadening out and opening up. *Accounting, Auditing & Accountability Journal*, 27(7), 1120–1156.
- Cavicchi, C., Oppi, C., & Vagnoni, E. (2019). On the feasibility of integrated reporting in healthcare: A context analysis starting from a management commentary. *Journal of Management and Governance*, 23, 345–371.
- Cheng, M., Green, W., Conradie, P., Konishi, N., & Romi, A. (2014). The international integrated reporting framework: Key issues and future research opportunities. *Journal of International Financial Management & Accounting*, 25(1), 90–119.
- Cho, C. H., Laine, M., Roberts, R. W., & Rodrigue, M. (2015). Organized hypocrisy, organizational façades, and sustainability reporting. *Accounting, Organizations and Society*, 40, 78–94.
- CIMA, Chartered Institute of Management Accountants. (2016). *Integrated reporting in the public sector*. United Kingdom: CIMA.
- Deegan, C. (2013). The accountant will have a central role in saving the planet... really? A reflection on 'green accounting and green eyeshades twenty years later.' *Critical Perspectives on Accounting*, 24(6), 448–458.
- Demartini, C., & Trucco, S. (2017). *Integrated reporting and audit quality*. Cham, Switzerland: Springer International Publishing AG.

- Dey, C., & Burns, J. (2010). Integrated reporting at Novo Nordisk. In A. Hopwood, J. Unerman, & J. Fries (Eds.), *Accounting for sustainability: Practical insights* (pp. 215–232). London: Earthscan.
- Dumay, J., Bernardi, C., Guthrie, J., & Demartini, P. (2016). Integrated reporting: A structured literature review. *Accounting Forum*, 40(3), 166–185.
- Durlauf, S. N., & Blume, L. (Eds.). (2008). *The new Palgrave dictionary of economics* (Vol. 6 (pp. 631–634). Basingstoke: Palgrave Macmillan.
- Eccles, R. G., & Krzus, M. P. (2010). *One report: Integrated reporting for a sustainable strategy*. Hoboken: Wiley.
- Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California Management Review*, 36, 90–100.
- European Commission. (2014.). *Non-financial reporting*. Retrieved March 8, 2019, from [https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/non-financial-reporting\\_en](https://ec.europa.eu/info/business-economy-euro/company-reporting-and-auditing/company-reporting/non-financial-reporting_en).
- EY. (2014). *Integrated reporting elevating value*.
- Flower, J. (2015). The international integrated reporting council: A story of failure. *Critical Perspectives on Accounting*, 27, 1–17.
- Gatti, M., Chiucchi, M. S., & Montemari, M. (2018). Management control systems and integrated reporting: Which relationships? The case of the Azienda Ospedaliero Universitaria Ospedali Riuniti Ancona. *International Journal of Business and Management*, 13(9), 169–181.
- Gond, J.-P., Grubnic, S., Herzig, C., & Moon, J. (2012). Configuring management control systems: Theorizing the integration of strategy and sustainability. *Management Accounting Research*, 23, 205–223.
- Henri, J.-F., & Journeault, M. (2010). Eco-control: The influence of management control systems on environmental and economic performance. *Accounting, Organizations and Society*, 35, 63–80.
- Humphrey, C., O'Dwyer, B., & Unerman, J. (2017). Re-theorizing the configuration of organizational fields: The IIRC and the pursuit of 'Enlightened' corporate reporting. *Accounting and Business Research*, 47(1), 30–63.
- IFAC. (2015). *Creating value with integrated thinking*. New York: International Federation of Accountants.
- IIRC. (2013). *The international <IR> framework*. Retrieved from <https://integratedreporting.org/wp-content/uploads/2013/12/13-12-08-THE-INTERNATIONAL-IR-FRAMEWORK-2-1.pdf>.
- Ittner, C. D., & Larcker, D. F. (2003). Coming up short on nonfinancial performance measurement. *Harvard Business Review*.
- Jesson, J., Matheson, L., & Lacey, F. M. (2011). *Doing your literature review: Traditional and systematic techniques*. Sage.
- Kober, R., Ng, J., & Paul, B. J. (2007). The interrelationship between management control mechanisms and strategy. *Management Accounting Research*, 18, 425–452.
- KPJ Healthcare Berhard. (2018). *The future of healthcare*. Integrated report 2018. KPJ Healthcare Berhard, Johor, Malaysia.
- Levy, Y., & Ellis, T. J. (2006). A systems approach to conduct an effective literature review in support of information systems research. *Informing Science Journal*, 9, 19–212.
- Milne, M. J., & Gray, R. (2013). W(h)ither ecology? The triple bottom line, the global reporting initiative, and corporate sustainability reporting. *Journal of Business Ethics*, 118(1), 13–29.
- Mio, C., Marco, F., & Pauluzzo, R. (2016). Internal application of IR principles: Generali's Internal Integrated Reporting. *Journal of Cleaner Production*, 139, 204–218.
- Morsing, M., & Oswald, D. (2009). Sustainable leadership: Management control systems and organizational culture in Novo Nordisk A/S. *Corporate Governance*, 9(1), 83–99.
- NBA. (2013). *Integrated reporting: het rapportagemodel van de toekomst*. Retrieved from [https://www.nba.nl/globalassets/themas/thema-externe-verslaggeving/integrated-reporting/nba-visiedocument\\_integrated\\_reporting\\_mei\\_2013.pdf](https://www.nba.nl/globalassets/themas/thema-externe-verslaggeving/integrated-reporting/nba-visiedocument_integrated_reporting_mei_2013.pdf).
- PWC. (2015). *Implementing integrated reporting*. PricewaterhouseCoopers LLP: PWC's practical guide for a new business language.

- Reinecke, J. (2010). Beyond a subjective theory of value and towards a 'fair price': An organizational perspective on Fairtrade minimum price setting. *Organization*, 17(5), 563–581.
- Reuter, M., & Messner, M. (2015). Lobbying on the integrated reporting framework: An analysis of comment letters to the 2011 discussion paper of the IIRC. *Accounting, Auditing & Accountability Journal*, 28(3), 365–402.
- Rowbottom, N., & Locke, J. (2016). The emergence of <IR>. *Accounting and Business Research*, 46(1), 83–115.
- Schaltegger, S., & Burritt R. (2010). Sustainability accounting for companies: Catchphrase or decision support for business leaders? *Journal of World Business*, 45, 375–384.
- Simons, R. (1995). *Levers of control: How managers use innovative control systems to drive strategic renewal*. Boston, MA: Harvard Business School Press.
- Stacchezzini, R., Melloni, G., & Lai, A. (2016). Sustainability management and reporting: The role of integrated reporting for communicating corporate sustainability management. *Journal of Cleaner Production*, 136, 102–110.
- Tessier, S., & Otley, D. (2012). A conceptual development of Simons' levers of control framework. *Management Accounting Research*, 23(3), 171–185.
- Tillema, K. (2013). *Van cijfers naar waarden*. Alphen aan de Rijn: Kluwer.
- Thomson, I. (2015). But does sustainability need capitalism or an integrated report a commentary on. In J. Flower (Ed.), *The International Integrated Reporting Council: A story of failure*. J. Critical Perspectives on Accounting, 27, 18–22.
- Trébucq, S., & Magnaghi, E. (2017). Using the EFQM excellence model for integrated reporting: A qualitative exploration and evaluation. *Research in International Business and Finance*, 42, 522–531.
- Tweedie, D. (2018). After Habermas: Applying Axel Honneth's critical theory in accounting research. *Critical Perspectives on Accounting*, 57, 39–53.
- Villiers, C. D., Rinaldi, L., & Unerman, J. (2014). Integrated reporting: Insights, gaps and an agenda for future research. *Accounting, Auditing & Accountability Journal*, 27(7), 1042–1067.
- Villiers, C. D., Venter, E. R., & Kelly Hsiao, P.-C. (2017). Integrated reporting: Background, measurement issues, approaches and an agenda for future research. *Accounting & Finance*, 57, 937–959.
- Villiers, C. D., & Sharma, U. (2019). A critical reflection on the future of financial, intellectual capital, sustainability and integrated reporting. *Critical Perspectives on Accounting*. <https://doi.org/10.1016/j.cpa.2017.05.003>
- Widener, S. K. (2007). An empirical analysis of the levers of control framework. *Accounting, Organizations and Society*, 32(7), 757–788.
- Zhou, S., Simnett, R., & Green, W. (2017). Does integrating reporting matter to the capital market? *Abacus*, 53(1), 94–132.

# Chapter 14

## Healthy Workplaces: Designing and Implementing Health-Promoting Organizational Interventions in Healthcare



Marit Christensen, Siw Tone Innstrand, and Per Øystein Saksvik

**Abstract** The chapter provides an integrative perspective on implementing interventions within healthcare institutions and an overview of the important factors and stakeholders involved in the design of successful interventions in healthcare. Healthy Healthcare is an ambiguous and complex goal comprising many different aspects. Successful interventions should include a systematic and processual approach on how to design, develop and implement interventions by using a health-promoting bottom-up strategy. There is no such thing as one size fits all when it comes to interventions for organizational development and improvement of the working environment. The emphasis of aligning the intervention to fit the local context is critically important and should therefore be developed in a participative bottom-up approach. As there is no easy or clear-cut procedure for how to approach interventions, the need for a systematic framework to conduct organizational change is imperative.

**Keywords** Healthy workplaces · Organizational interventions · Employee participation · Intervention fit · Implementation · Process evaluation

### 14.1 Healthy Workplaces

The World Health Organization (WHO) defines a healthy workplace as “one in which workers and managers collaborate to use a continual improvement process to protect and to promote the health, safety and wellbeing of workers and the sustainability of the workplace” (Burton, 2010, p. 23). In this definition, WHO aligns with the mission of health promotion by enhancing a participatory approach. Moreover,

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the definition underlines a twofold need for both healthy employees and a sustainable organization (Christensen, 2017). There is comprehensive knowledge on how demands and resources affect health, wellbeing and motivation among employees, as presented in Chaps. 3 and 10. However, knowledge about what works for whom under which circumstances and why regarding interventions for improving the psychosocial working environment are scarce. The current chapter provide an integrative perspective on implementing interventions within healthcare institutions and an overview of the important factors and stakeholders involved in the design of successful interventions in healthcare. A key challenge is how apply theories and empirical research to practical use when working on implementing interventions to improve the work environment and create Healthy Healthcare organizations (Cox, Taris & Nielsen, 2010; Nielsen & Miraglia, 2017).

The current chapter draws on existing literature and uses the results from a holistic intervention programme, called ARK (A Norwegian acronym for work environment and climate study), to suggest success factors for the implementation process in healthcare organizations. ARK is a comprehensive participatory plan and tool for the systematic mapping of the psychosocial work environment and the development and implementation of bottom- up interventions for improving wellbeing, health and performance in the higher education sector in Norway (Innstrand et al., 2015).

## 14.2 Healthcare as a Healthy Setting

Characteristics of the context are important to consider in any attempt to achieve a healthy workplace, and for it to be successful, an intervention needs to be aligned to the context. In order to manage that, a thorough understanding of the context regarding challenges and strengths needs to be in place. One strategy is to look at the healthy setting approach. The healthy settings movement, which was laid out in the Ottawa Charter for Health Promotion (1986), underlined the value of settings for implementing strategies and an infrastructure for health promotion. Examples of settings include schools, universities, hospitals, and cities. The promotion of health through these settings can take many forms.

Actions often involve organisational development related to changes in the physical environment or to the organizational structure, administration and management. The WHO suggests that characteristics of the context of specific settings, like the healthcare sector, are a critical point. Organizational context is defined as “situational opportunities and constraints that affect the occurrence and meaning of organizational behaviours well as functional relationships between variables (Johns, 2006, p. 386). The context in each organization is important because it can activate the mechanism of organizational information and explain why an intervention was effective or not. Nielsen and Miraglia (2017) suggested a more in- depth understanding of the content and process mechanisms of interventions that could help improve employees' wellbeing and health, and the context would determine whether or not these mechanisms are triggered. The aim in this chapter is to use experiences from the ARK programme

to understand more of the contextual mechanisms that could also be applied to the work of creating healthy workplaces in a healthcare setting. We also emphasize that no one size fits all, and, thus, any intervention must be aligned with the actual context.

In Chapter 10, the importance of medical personnel's working conditions for improving the quality of patient care is demonstrated (see Teoh, Hassard, & Cox, 2019). These results emphasize the need for developing healthy workplaces in order to promote employees' wellbeing, health and performance and, subsequently, a sustainable healthcare organization.

## **14.3 Implementing Organizational Interventions in Healthcare**

Healthcare organizations, in general, and hospitals, in particular, are characterized by constant change and restructuring that involve and affect their employees. Such transitions are necessary in order to meet changing societal demands for resource-efficient, high-quality healthcare services. Organizational interventions are often recommended and used to improve the psychosocial work environment in organizations and, thereby, employee wellbeing and health (Nielsen & Abildgaard, 2013; Nielsen et al., 2010). These organizational interventions can be defined as planned, behavioural, theory-based actions that aim to change how work is organized, designed and managed with the goal of improving the health and wellbeing of participants (Nielsen, 2013; Richardson & Rothstein, 2008).

In their review, Nielsen and Noblet (2018) presented three key principles identified throughout the intervention process, namely participation, management support and intervention fit. Each is described in detail below.

### ***14.3.1 Employee Participation***

A guiding principle and one of the most critical success factors throughout a health-promoting intervention process is the participation of employees. According to Nielsen et al. (2010), there are three reasons for this. First, employee participation can help optimize the fit with the local organizational context; secondly, it can be considered an intervention in its own right; and thirdly, it can facilitate the intervention process. Research has suggested that establishing a workgroup consisting of a safety representative, union representative, and more informal key personnel responsible for the process, together with the line manager, is of critical importance for sustaining the momentum and positive long-term effects of an intervention (Saksvik, Fossum, Christensen, Lysklett, & Karanika-Murray, 2020).

### ***14.3.2 Management Support***

Both line managers and senior management are crucial to anchor the intervention for it to succeed (Framke & Sørensen, 2015; Mellor et al., 2013). One reason is that senior management staff are positive role models for the organization; another might be the credibility such support gives the line manager for working with organizational development. Management support also demands allowing the time and resources required to work continuously with the psychosocial work environment. Line managers play an important role because they need to prioritize regarding the work with the intervention, along with other priorities regarding economy, strategies and various other daily tasks (Helland, Christensen, Innstrand, & Nielsen, 2020; Helland, Christensen, Innstrand, Iversen, & Nielsen 2020; Ipsen et al., 2015). Nielsen (2017) emphasized that line managers could make or break an intervention, but she also discussed whether they could potentially derail the progress of an intervention, leading the discussion back to the context and how it influences the intervention and whether a leader will succeed in the implementation process or not.

### ***14.3.3 The Fit of the Intervention***

This refers to the fact that there is no one size fits all solution when it comes to organizational interventions, and that the intervention must be fitted to the local context (Nielsen & Randall, 2015). Participatory organizational interventions are shaped by employees themselves and, thereby, can be very different when it comes to their implementation. Integrating the work with organizational intervention into already-existing strategy and action plans helps to place the psychosocial working conditions on the agenda and align with the wholeness of the organization (Framke & Sørensen, 2015; Mellor et al., 2013). This underlines the importance of understanding how the context of an organization affects the mechanisms within an organizational intervention (Abildgaard et al., 2019). Next, we present results from the ARK programme in order to identify several experienced success factors for implementing organizational interventions to improve the psychosocial work environment.

## **14.4 The ARK Intervention Programme**

To create Healthy Healthcare organizations, it is essential to have a holistic, health-promoting approach with a comprehensive, research-based plan and tool for (1) the systematic mapping of the psychosocial work environment and (2) the development and implementation of interventions for improving wellbeing, health and performance (Innstrand et al., 2015). The European union has a frame directive stating that organizations have a legal requirement to ensure health and safety in

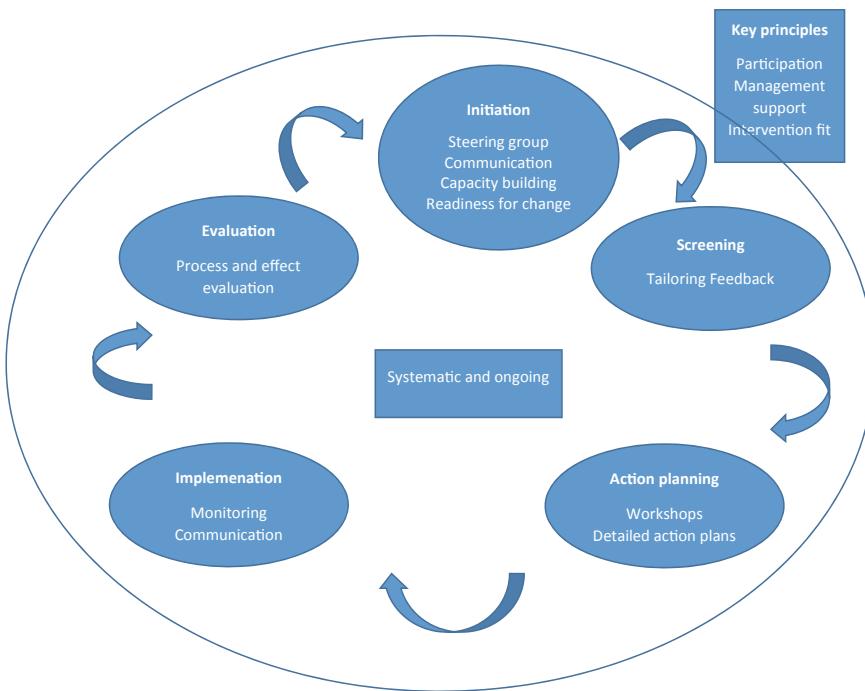
all aspects of their work, including the psychosocial work environment. In response to the directive, several countries have developed guidelines for how organizations should approach actions for wellbeing and health within the workplace (Nielsen & Noblet, 2018). A similarity between these policies and guidelines is that they are not very concrete in their guidance about how to create a healthy workplace (Nielsen & Noblet, 2018). Therefore, it is of great importance to introduce experiences with mechanisms and models that have been proven to work to implement interventions for a better psychosocial work environment (Christensen et al., 2019). The current chapter build on experiences and results from the ARK programme to offer several recommendations and suggestions for best practices.

An intervention should be built on the three key principles for successful implementation by ensuring employee participation in the development of actions, developing management support through the involvement of leaders in all phases of the intervention process, and securing an intervention fit by adapting the survey and interventions to the context. Further, the bottom-up development of actions, where line managers, together with employees, are responsible for progress and implementation in their own departments, is necessary to align the intervention with the context.

Leaders of healthcare organizations need tools in order to contribute to understanding and developing the work environment with a twofold focus on demands and resources. This further ensures that the demands of the working environment act on systematic Health, Safety and Environment-work (HSE-work) with psychosocial factors and generates a basis for interventions in the work environment. In addition, it should create an arena for participation and influence. It would be beneficial to use a bottom-up process where employees themselves suggest what actions to take to improve their psychosocial work environment. Any recommendation for a successful intervention in healthcare should be based on the five phases identified by Nielsen et al. (2010) as a framework for the processual work of organizational development, including (1) initiation, (2) screening, (3) the development of interventions, (4) the implementation of interventions and (5) an evaluation of interventions (see Fig. 14.1). Within the different phases, specific topics found to be especially important are highlighted based on the revised model by Nielsen and Noblet (2018). The figure also includes the key principles of participation, management support and intervention fit that have been elucidated above.

Qualitative interviews with the management and safety representatives participating in the ARK programme have suggested several different challenges and possibilities related to all these phases.

The experiences related to the ARK programme are that an annual “exchange of experience” conference is one of the success factors. These are held to update those who work with ARK (HR, line managers, health and safety representatives, among others) on current research and to exchange knowledge and experiences with others using the programme. The ARK programme also gives us a unique opportunity to study qualitative processes together with large quantitative datasets that provide information about the context mechanisms and parallel effect measures of the interventions. Ways of thinking and learning about the organization should be transferred



**Fig. 14.1** The five phases of an organizational intervention process (Nielsen et al., 2010; Nielsen & Noblet, 2018)

to healthcare organizations, as well as creating an arena for learning and exchanging knowledge regarding interventions for the psychosocial work environment. Further, following the research allows the provision of feedback to the sector about what works and what factors result in success. The idea behind the ARK programme being research-based was that the research conducted on both the data collected and the processes around the interventions should serve as feedback to the sector for further development of the programme and to influence potential policy implications. An example of how relevant, research-based knowledge has been useful for practitioners and policy makers comes from a paper that identified positive associations between resources, work engagement and productivity in the academic sector (Christensen, Dyrstad, & Innstrand, 2018). Knowing that creating engagement at work can increase productivity may also increase all stakeholders' motivation for developing a good psychosocial work environment for employees and leaders alike.

## 14.5 Experiences with the Implementation of an Organizational Intervention

Here, in regard to the five phases model (Fig. 14.1), the experiences with the ARK programme regarding the implementation of an organizational intervention is valuable to identify which central mechanisms healthcare organizations should ensure in their future work with interventions in order to promote the psychosocial work environment.

### 14.5.1 *Initiation Phase*

The work with the preparation in the initiation phase is highly significant and crucial for determining how well the process that follows turns out. In one study based on results from the ARK programme, we followed a unit over a longer time to investigate which factors were successful for improving the working environment and whether the effects were sustainable over a longer period (Saksvik et al., 2020). In this study, a working group or steering committee was established in a longitudinal follow-up in one department within the ARK project, and the results showed that the workgroup is one of the success factors for monitoring and communicating the results and ensuring systematic and ongoing work with the psychosocial working environment (Saksvik et al., 2020). A steering group in the initial phase is essential to anchor the project, plan and maintain momentum throughout an intervention process (Nielsen & Noblet, 2018; Jenny et al., 2014).

Readiness for change is central in order to initiate an intervention and change process. (Weiner, Amick, & Lee, 2008) and is thought to be the cognitive driver for the actor's motivation for or, in contrast, resistance to change. When readiness for change is high, we are more open to initiating change; we increase the efforts to implement change; we have more endurance for managing and coping with change; and we cooperate more effectively and serve as ambassadors for the change work, and thus, resistance towards change decreases (Rafferty & Simons, 2006; Herscovitch & Meyer, 2002). The employees need to be ready for change and to participate actively in the intervention. They must also recognize that it is not just about what the organization and management can do for them, but also about what the employees need to contribute; in short, creating a positive working environment is a mutual responsibility. Co-workership (Schrøder, Christensen, Innstrand, & Fjeld, 2017) is a key concept here, where the employees should be encouraged to ask themselves what they can do for their colleagues, leaders, and organization to improve the environment and create growth in the organization.

In a study of the line manager's role in the ARK process, Christensen et al. (2019) showed that, based on experiences and results from the ARK project, leaders exert significant influence in regard to readiness for change. First, a leader needs to create a common language and a clear vision for the psychosocial work environment for

employees to understand what it is about, why all stakeholders need to work on the change, what effects it will have, and how it will be accomplished. The leader needs to promote a bottom-up process in which the employees are included and listened to and comprise an important part of developing and implementing change together with the leader. Both how the process will be conducted and its content must be clearly communicated (Christensen et al., 2019). Moreover, if the line manager can document efforts, evaluations and results from earlier actions, the motivation and readiness for change might increase because the employees will be able to see the benefit of the intervention. This is also a central issue related to change among leaders and includes the importance of continuous learning in the organization and the need to retain the knowledge and transfer it within the organization.

In the ARK programme, the safety representative has played a central role, with the line manager, in developing the process and ensuring the involvement of the employee perspective. The evaluation of the process, for example, needs to be signed and agreed upon by both the line manager and the safety representative (Helland, Christensen, Innstrand & Nilsen 2020; Helland, Christensen, Innstrand, Iversen & Nielsen, 2020). The results of the mentioned study showed that the safety representative struggled to make sense of the role of a safety representative during the ARK process. The conclusion was, therefore, to recommend a joint training program in the preparation phase, together with the line managers, to ensure a common understanding of the meaning of the programme so that they could further communicate and cooperate on the intervention together. Part of the conclusion was also that the safety representative should be part of all five phases of the process to ensure that a representative for the employees was present when decisions were made and to promote the legitimacy of the programme to the employees.

There is also a need for capacity building and management support. When senior management demonstrated support, it was easier to work on readiness for change not only for the line managers themselves but also to motivate their employees. The anchoring at the senior management level also made capacity building easier regarding time and resources for the line managers (Christensen et al., 2019). In some cases, in the ARK programme, line managers and deans recorded brief, entertaining videos designed to explain what ARK was and why they considered it important, with the aim of encouraging responses to the surveys in order.

### **14.5.2 Screening Phase**

The screening phase in the ARK programme takes a health-promoting approach and is based on mapping both the demands and resources in the work environment; it measures both individual work environment and climate factors (Innstrand et al., 2015). The questionnaire is built on the job demands-resources model (JD-R) as a theoretical approach. A theoretical approach may be useful because it can facilitate the understanding and analytical process of moving from trying to make sense of abstract psychological concepts and developing them as concrete actions to target

the desired outcome variables. For knowledge-intensive workers, it is also an important point to legitimize the background for the instrument being used to assess the psychosocial work environment; a solid, research-based background provides legitimacy. The questions being asked need to be tailored to the local context of the organization. In the ARK programme, the validated survey measures were selected from the Nordic context and from a context for knowledge-intensive workers. Communication from the management and safety representative remains important in this phase to maintain motivation for participation. In addition, the response rate is critical for gathering information about the perception of the work environment for the whole sample of employees.

### ***14.5.3 Action Development Phase***

For the action development phase, the ARK programme has developed a template for the presentation of the results and group tasks to ensure participation and a bottom-up approach. A video was also made of the JD-R model for academia as a tool for leaders to explain the theoretical background and to pave the way to a common understanding of the theoretical background and further process. The results from the survey are presented to the employees through spider diagrams and tables including means and standard deviations of the different concepts of the psychosocial work environment. Based on these results, the employees are divided into groups and asked to come up with three aspects of the current work environment they want to preserve and three aspects they want to improve.

### ***14.5.4 The Implementation Phase***

In the implementation phase, it is the line manager's responsibility to prioritize and implement these suggestions as action plans. There are several critical issues related to this phase (Christensen et al., 2019). The first is leader support in case the results are difficult for the leader to handle. Risk assessment, leader support and a plan for managing the implementation are important aspects to address, especially for the line manager.

One issue we discovered that is demanding for organizations in this phase is going from abstract psychosocial aspects of the workplace being measured by work environment and climate surveys to the development of actual concrete actions. In order to manage this, appropriate tools are needed (see e.g. Nielsen & Noblet, 2018). Care must be taken to address the level of change intended (Nielsen & Miraglia, 2017). Many studies have focused on the individual as the target of change and have shown that individual-level interventions alone may not enhance health if the organization does not change as well (Heaney, 2003). Using the Individual, Group, Leadership, Organization model (IGLO), we can gain a deeper understanding of the context and

the level of change (Day & Nielsen, 2017; Nielsen & Miraglia, 2017). Contextual resources at different levels within the working environment seem to be important for the line manager to improve the employees' wellbeing and the organization's performance (Christensen et al., 2019). One example is the importance of qualities at the leadership level. In a study of line managers in academia, showed that such resources at different levels of the work environment were needed for the line manager to improve employee wellbeing and organizational performance (Christensen et al., 2019). The actions developed should be integrated into the organization's already-existing action plans to ensure that they are locally anchored and part of the context of the local unit, as also argued by Nielsen and Noblet (2018).

We would argue that implementation begins with the work in the initiation phase and continues throughout the entire process. Management is often the driver of the implementation of the actions being developed in the action-planning phase (Christensen et al., 2019) and a critical factor for whether the targeted actions are actually implemented and followed in a systematic and ongoing way. However, a working group comprising representatives of the employees, the leader and other key personnel who should be involved may be a resourceful driver of the process, maintaining momentum and ensuring that all parties are responsible for its progress (Saksvik et al., 2020). In light of the action science approach, a workgroup might serve as a key factor in implementing occupational health interventions, especially when the goal is sustained positive effects (Lien & Saksvik, 2016).

One explanation for this is that it can be an arena for discussing, planning, and preparing the intervention. The line manager can use the opportunity to signal that the intervention is important, necessary and worth spending resources on while giving employees responsibility and opportunities for greater participation in the process. The workgroup members can play an important role in the communication of the results to their unit and for cooperation between management and employees. An essential part of this cooperation is the feedback loop, which can provide important information and communication about how the intervention is progressing (Saksvik et al., 2020).

#### **14.5.5 *The Evaluation Phase***

In the evaluation phase, an effect evaluation alone does not give us enough information about what works for whom under which circumstances and why (Nielsen & Noblet, 2018). To fully understand the effect of an intervention, it is important to see it in light of a process evaluation perspective (Saksvik et al., 2015). Therefore, in attempting to understand the impact of an ARK intervention programme, the approach is to investigate what happens during all the different phases of the intervention.

We have also investigated the effect of an intervention in the long term, and the results showed that two process factors, namely communication and leadership, were significantly associated with the level of employee satisfaction with the intervention

(Saksvik et al., 2015). Leader engagement was important in the form of a deeply rooted engagement in the process, and employee trust in the management was developed over time when the results of the intervention results were making a constructive difference in the working environment. The evaluations of the ARK programme suggest that an engaged line manager, by building empowerment and trust, establishing a workgroup and the supportive use of external consultants, is essential for promoting employee motivation and involvement. One of the key factors in leading organizational health interventions is the managerial ability to signal the importance of employee effort and involvement for an intervention's success over time (Saksvik et al., 2015).

## 14.6 Success Factors for Best Practices

One of the expressed positive experiences related to the ARK programme was that it placed the working environment on the agenda by establishing a communication channel for the work environment. This was, to some extent, due also to positive experiences with the process being bottom-up and focusing on participation and involvement of the employees.

The programme's intention was not that one size should fit all when it comes to the actions being taken, but more that they were developed by the employees locally at each department. The health-promoting aspect were also underlined as important. Employees appreciated not being considered as an element that needed to be fixed but rather as a resource that could be further developed and motivated.

Other critical success factors were also discovered throughout the programme. The anchoring in the initiation phase seemed to be crucial for further development and implementation. This affected the leaders and the employees "readiness for change". Due to a heavy workload and other risk factors for the leader, leader support was emphasized as important throughout the whole process for him/her to be able to maintain a continuous focus and to work systematically with the work environment. The results from the long-term study showed the importance of establishing a workgroup to work on communication, maintain momentum and ensure successful implementation. The annual conference was also a source of success because it allowed an exchange of experiences and discussions about new approaches and ideas for overcoming challenges throughout the process (Innstrand & Christensen, 2018; Christensen et al., 2019).

## 14.7 Implementing a Health-Promoting Initiative in the Healthcare Setting

As with all health-promoting initiatives, the key principles of participation, management support, and intervention fit are important for creating a Healthy Healthcare organization. This implies that one has to have a process approach to the intervention where anchoring in the management creates credibility, ensures a screening that is context-specific in order to understand the mechanism behind the process that is not one size fits all, and where participation is ensured by bottom-up processes. The process perspective (the five phases) is documented as important for understanding the mechanism that influences the complex world of interventions (Nielsen & Noblet, 2018). Research, specifically from the healthcare sector, has emphasized many of the same factors discussed above. In the book ‘Health Systems Improvement Across the Globe: Success Stories from 60 Countries’ (Braithwaite et al., 2017), the authors describe how successful health reforms have been achieved around the world.

Although it was challenging to identify common denominators across many different cases and countries regarding complex reforms, several critical factors appeared repeatedly as contributing to success across the reforms, underscoring what has been presented thus far in the chapter. The first factor was that significant people believed in and catalysed the change, building momentum over time and throughout a longer process. Further, success was related to the inclusion of relevant stakeholders, effective communication and appropriate leadership and governance. The involvement of patients and their needs was also regarded as an important factor. It was concluded that joint success factors are often interlinked, and therefore, it is important to talk about a culture that is engaging and receptive and, therefore, willing to drive an intervention for change. Braithwaite et al., (2017) also refers to meta-lessons learned from the project, and the authors describe how even small-scale interventions with local initiatives can lead to system-wide improvements. Communication is emphasized as highly significant in relation to how information is communicated and analysed throughout the change process. The final meta-lesson mentioned is the importance and value of placing patients’ experiences and wellbeing at the centre of attention as an anchor point for change and reform (Braithwaite et al., 2017).

## 14.8 Conclusion

Healthy Healthcare is an ambiguous and complex goal comprising many different aspects. Successful interventions should include a systematic and processual approach on how to design, develop and implement interventions by using a health-promoting bottom-up strategy (Innstrand & Christensen, 2018). There is no such thing as one size fits all when it comes to interventions for organizational development and improvement of the working environment. The emphasis of aligning the intervention to fit the local context is critically important and should therefore

be developed in a participative bottom-up approach. All health promotion needs to happen in the employees' own setting, whether it is large hospitals or other types of healthcare organizations. In hospitals, several special characteristics, such as shift-work and emotional demands, must be taken into consideration when screening and implementing actions. As there is no easy or clear-cut procedure for how to approach interventions, the need for a systematic framework to conduct organizational change is imperative. Sometimes, changes and actions are seen as highly beneficial for employees, yet implementations fail and expected results do not appear. In these cases, it is the very implementation of the intervention that fails. The establishment of a continuous feedback loop between different agents is a key factor for avoiding derailments as the intervention process progresses. For an intervention to succeed, both time and resources must be invested as well as a process-oriented approach where effort is invested in all five phases of the intervention.

## References

- Abildgaard, J., Nielsen, K., Wählén Jacobsen, C. D., Maltesen, T., Christensen, K. B., & Holterman, A. (2019). "Same, but different": A mixed-methods realist evaluation of a cluster-randomized controlled participatory organizational intervention. *Human Relations*, 1–27. doi.org/10.1177/0018726719866896.
- Braithwaite, J., Herkes, J., Ludlow, K., et al. (2017). Association between organisational and workplace cultures, and patient outcomes: systematic review. *BMJ Open* 7(e017708.), 1–11. https://doi.org/10.1136/bmjopen-2017-017708.
- Burton, J. (2010). *WHO Healthy workplace framework and model: Background and supporting literature and practices*. Geneva: WHO.
- Christensen, M., Innstrand, S. T., Saksvik, P. Ø, & Nielsen, K. (2019). The line manager's role in implementing successful organizational interventions. *Spanish Journal of Psychology*, 22, e5. https://doi.org/10.1017/SJP.2019.4
- Christensen, M. (2017). Healthy individuals in healthy organizations: The happy productive worker hypothesis. In M. Christensen & P. Ø Saksvik (Eds.), *The positive side of occupational health psychology* (pp. 155–169). The Netherlands: Springer.
- Christensen, M., Dyrstad, J. M., & Innstrand, S. T. (2018). Academic work engagement, resources and productivity: Implications for intervention policies. *Studies in Higher Education*, 45(1), 86–89. doi.org/10.1080/03075079.2018.1517304
- Cox, T., Taris, T. W., & Nielsen, K. (2010). Organizational interventions: Issues and challenges. *Work & Stress*, 24(3), 217–218. https://doi.org/10.1080/02678373.2010.519496
- Day, A., & Nielsen, K. (2017). What does our organization do to help our wellbeing? Creating healthy workplaces and workers. In N. Chmiel, F. Fraccoli, & M. Sverke (Eds.), *An introduction to work and organizational psychology: An international perspective* (p. 295). Sussex: Wiley Blackwell.
- Framke, E., & Sørensen, O. H. (2015). Implementation of a participatory organizational-level occupational health intervention—Focusing on the primary task. *International Journal of Human Factors and Ergonomics*, 3(3–4), 254–270. https://doi.org/10.1504/IJHFE.2015.072998
- Heaney, C. A. (2003). Worksite health interventions: Targets for change and strategies for attaining them. In J. C. Quick & L. E. Tetrick (Eds.), *Handbook of occupational health psychology*, (p. 305–323). American Psychological Association. https://doi.org/10.1037/10474-015.

- Helland, E., Christensen, M., Innstrand, S. T., & Nielsen, K. (2020). *Manuscript submitted for publication. The sandwiched middle manager in organizational interventions: Driver or protector.* NTNU.
- Helland, E., Christensen, M., Innstrand, S. T., Iversen, A., & Nielsen, K. (2020). *Manuscript submitted for publication. Watchdog, counsellor and driver: Safety representatives' sensemaking in organizational interventions.* NTNU.
- Herscovitch, L., & Meyer, J. P. (2002). Commitment to organizational change: Extension of a three-component model. *Journal of Applied Psychology*, 87(3), 474–487. <https://doi.org/10.1037/0021-9010.87.3.474>
- Innstrand, S., & Christensen, M. (2018). Healthy universities. The development and implementation of a holistic health promotion intervention program especially adapted for staff working in the higher educational sector: The ARK study. *Global Health Promotion*. <https://doi.org/10.1177/1757975918786877>.
- Innstrand, S. T., Christensen, M., Undebakke, K., & Svarva, K. (2015). The presentation and preliminary validation of KIWEST using a large sample of Norwegian university staff. *Scandinavian Journal of Public Health*, 43(8). <https://doi.org/10.1177/1403494815600562>.
- Ipsen, C., Gish, L., & Poulsen, S. (2015). Organizational-level interventions in small and medium-sized enterprises: Enabling and inhibiting factors in the PoWRS program. *Safety Science*, 71(Part C), 264–274. <https://doi.org/10.1016/j.ssci.2014.07.017>.
- Jenny, G. J., Brauchli, R., Inauen, A., Füllmann, D., Fridrich, A., & Bauer, G. F. (2014). Process and outcome evaluation of an organizational-level stress management intervention in Switzerland. *Health Promotion International*, 30(3), 573–585. <https://doi.org/10.1093/heapro/dat091>
- Johns, G. (2006). The essential impact of context on organizational behavior. *Academy of Management Review*, 31(2), 386–408. <https://doi.org/10.5465/amr.2006.20208687>
- Lien, M., & Saksvik, P. Ø. (2016). Healthy change processes—A diary study of five organizational units. Establishing a healthy change feedback loop. *Stress and Health*, 32(4), 258–269. <https://doi.org/10.1002/smj.2698>.
- Mellor, N., Smith, P., MacKay, C., & Palferman, D. (2013). The “Management Standards” for stress in large organizations. *International Journal of Workplace Health Management*, 6(1), 4–17. <https://doi.org/10.1108/1753835131132295>
- Nielsen, K., Randall, R., Holten, A. L., & González, E. R. (2010). Conducting organizational-level occupational health interventions: What works? *Work & Stress*, 24(3), 234–259. <https://doi.org/10.1080/02678373.2010.515393>
- Nielsen, K., & Noblet, A. (2018). Introduction: Organizational interventions: Where we are, where we go from here? In K. Nielsen & A. Noblet. *Organizational interventions for health and wellbeing*. UK: Routledge.
- Nielsen, K. (2017). Leaders can make or break an intervention—But are they villains of the piece? In E. K. Kelloway, K. Nielsen & J.K Dimoff. (Eds.), *Leading to occupational health and safety: How leadership behaviours impact organizational safety and wellbeing*. (pp. 197–210). Singapore: Wiley.
- Nielsen, K., & Miraglia, M. (2017). Critical essay: What works for whom in which circumstances? On the need to move beyond the “what works?” Question organizational intervention research. *Human Relations*, 70(1), 23. <https://doi.org/10.1177/0018726716670226>
- Nielsen K., & Randall, R. (2015). Assessing and addressing the fit of planned interventions to the organizational context. In: M. Karanika-Murray & C. Biron (Eds.), *Derailed organizational interventions for stress and wellbeing*. Dordrecht: Springer.
- Nielsen, K. (2013). Review article: How can we make organizational interventions work? Employees and line managers as actively crafting interventions. *Human Relations*, 66(8), 1029–1050. <https://doi.org/10.1177/0018726713477164>
- Nielsen, K., & Abildgaard, J. S. (2013). Organizational interventions: A research-based framework for the evaluation of both process and effects. *Work & Stress*, 27(3), 278–297. <https://doi.org/10.1080/02678373.2013.812358>

- Rafferty, A. E., & Simons, R. H. (2006). An examination of the antecedents of readiness for fine-tuning and corporate transformation changes. *Journal of Business and Psychology*, 20, 325–350. <https://doi.org/10.1007/s10869-005-9013-2>
- Richardson, K. M., & Rothstein, H. R. (2008). Effects of occupational stress management intervention programs: A meta-analysis. *Journal of Occupational Health Psychology*, 13(1), 69–93. <https://doi.org/10.1037/1076-8998.13.1.69>
- Saksvik, P.Ø., Fossum, S., Christensen, M., Lysklett, K., & Karanika-Murray (2020). *In press*. Investigating intervention management to support a sustainable intervention in the long term. *Nordic Journal of Working Life Studies*.
- Saksvik, P. Ø., Olanyian, S. O., Lysklett, K., Lien, M., & Bjerke L. (2015). A process evaluation of a salutogenic intervention. *Scandinavian Psychologist*, 2, e8. <https://doi.org/10.15714/scandpsychol.2.e8>
- Schrøder, M., Christensen, M., Innstrand, S. T., & Fjeld, A. (2017). Co-workers ship and prolific behaviours in modern work life. In M. Christensen & P. Ø Saksvik (Eds.), *The positive side of occupational health psychology* (pp. 99–114). The Netherlands: Springer.
- Teoh, T., Hassard, J., & Cox, T. (2019). Doctors' perceived working conditions and the quality of patient care: A systematic review. *Work & Stress*, 33(4), 385–413. <https://doi.org/10.1080/02678373.2019.1598514>
- Weiner, B. J., Amick, H., & Lee, D. (2008). Conceptualization and measurement of organizational readiness for change: A review of the literature in health services research and other fields. *Medical Care Research and Review*, 65(4), 379–436. <https://doi.org/10.1177/1077558708317802>
- World Health Organisation. (1986). Ottawa charter for health promotion. In *First International Conference on Health Promotion* Ottawa, November 21, 1986. Retrieved from [https://www.healthpromotion.org.au/images/ottawa\\_charter\\_hp.pdf](https://www.healthpromotion.org.au/images/ottawa_charter_hp.pdf).

**Part III**

**Country Examples of Healthy Healthcare**

# Chapter 15

## Reviving the Concept of Healthy Healthcare in Hungary to Improve Hospital Care



Szilvia Adam and Viktor Dombradi

**Abstract** The beginning of Healthy Healthcare within the Hungarian hospital care began in 2008 with the passing of the Act on Labour Safety. In the following two years the Hungarian Health Insurance Supervisory Authority conducted national hospital surveys that not only asked questions regarding quality management and patient safety, but also human resource management. However, no similar initiatives were conducted by policy makers since then. Furthermore, in the past two decades Hungarian researchers have investigated the relationship between hospital working conditions, health status of the healthcare workers and patient related outcomes, however, none of the studies considered all three aspects Healthy Healthcare at once. To revive and promote this concept within the Hungarian healthcare system, we recommend utilizing standardized measurements both at an institutional and national level, which include questions that are necessary to measure, improve and research Healthy Healthcare.

**Keywords** Healthy healthcare · Workforce · Measurement · Research · Hospital · Hungary

### 15.1 Introduction

As in other European countries, the healthcare system in Hungary aims at delivering high quality of care for all its citizens, however the gap between the technologically available and the economically sustainable delivery of care ever increases. In the meantime, the rapidly ageing and insufficient number of healthcare workers puts further strain on the healthcare system (Balogh et al., 2019). If no long-term solutions

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are presented in the near future, the delivery of adequate healthcare for all the citizens will no longer be attainable in Hungary.

Healthy Healthcare focuses on the links among the health and wellbeing of healthcare workers, the quality of healthcare and healthcare services. The Hungarian healthcare system is undergoing significant transformation to address the changing needs of the society in a resource constraint environment in the most efficient and effective way. As demands on healthcare workers and the services are rising and resources are limited, the concept of Healthy Healthcare, its correlates and outcomes are of interest not only to policy makers but also to other decision makers and the society at large. In this context we introduce in this subchapter the history of Healthy Healthcare within the Hungarian hospital setting, present the research studies conducted in this field, and explore how this concept can be implemented into these medical institutions within the existing structures.

## 15.2 Healthy Healthcare from the Perspective of Hungarian Policy Makers

The history of Healthy Healthcare in Hungary started in 2008 when – in accordance with international regulations – a law was passed which prescribed and obliged employers to assess, prevent and reduce psychosocial risk at the workplace (see Fig. 15.1). This law is still in effect and helps protect the health of employees and ensures higher safety measures at work (Act on Labour Safety, 54. §). According to this law, psychosocial risks include the effects on the employee at work, such as conflicts, work organization, work schedule, uncertainty of employment relationship, etc. In this context, stress, work injury and psychosomatic disease can occur (Communication on workplace stress. Act on Labour Safety, 1993).

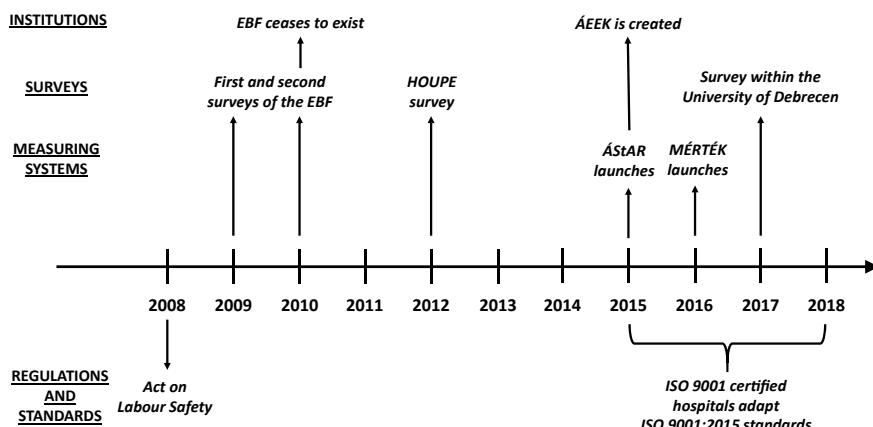


Fig. 15.1 History of Healthy Healthcare in the Hungarian hospital setting between 2008 and 2018

Further milestones were achieved in 2009 and 2010, when the Hungarian Health Insurance Supervisory Authority (EBF) conducted a national survey in outpatient and inpatient medical institutions to assess the quality of care. EBF was established in 2006 to supervise the quality of care provided by Hungarian medical institutions and to investigate patient complaints. In this context, the questionnaires used in both surveys aimed at exploring various topics such as quality management, patient safety, patient rights, and disease-specific topics such as cardiology, oncology, emergency care and maternity care (Dombrádi et al., 2017). The surveys included human resource management such as the organization of in-service training, employee satisfaction, and specific activities the medical institutions undertook for assessing and improving the health status of their workers. Examples of the latter included whether workers who were experiencing significant stress could consult professionals, the frequency of assessing burnout among healthcare workers, or whether the institution had a health promotion plan. This survey demonstrated that although it was not the responsibility of the EBF, as the decision-making authority, to deal with the health of the workers, they recognized that a healthy worker was an indispensable requirement for providing high quality of care.

In 2010, EBF ceased to exist without a legal successor and the data from the survey were not analysed or published until several years later when Dombrádi et al. (2017) analysed the data. However, because of the design of the research, of the 109 inpatient medical institutions only general hospitals were included in the analysis. According to the results, of the 54 general hospitals in Hungary 61.1% provided stress relief programmes for their workers, 44.4% provided a specialist for those workers who work under stress, only 16.7% and 38.9% conducted burnout surveys among physicians and healthcare professionals in the last year, respectively, 92.6% of general hospitals offered part-time work for returning mothers with small children, 35.8% provided smoking-cessation programmes for their workers, 17.3% offered a health promotion plan, and 17.3% financially supported sport related activities for their workers. After the dissolution of EBF, further national surveys in hospitals were conducted in 2014 and 2017, but they did not include any questions about human resource management (Dombrádi et al., 2015).

In 2015, the National Healthcare Services Center (ÁEEK) launched the Sectoral Statistical Data Collection System (ÁStAR, see Fig. 15.1) for hospitals in the Central Hungarian Region. The main objective of this newly created system was to provide decision makers with data to continuously monitor and evaluate the indicators required for providing high quality hospital care. The system includes many areas for data collection, such as quality improvement and human resource management. In this case, human resource management does not include the measurement of health status of hospital workers. Furthermore, since the launch of the system in 2015, there has been no information on how well it has supported decision-makers, or if there were plans to expand the system at a national level. However, if the expansion were to take place and accompanied by the collection of health-related data, decision-makers would gain access to up-to-date information that would enable them to adopt the Healthy Healthcare approach within the Hungarian healthcare system.

### 15.3 Healthy Healthcare from the Perspective of Hungarian Researchers

Hungarian researchers conducted numerous studies on the quality of care and human resources in the hospital setting but the two topics are still investigated separately (see Table 15.1). This can be explained by the fact that it is difficult to obtain reliable data that can properly reflect the quality of care. For example, despite the fact that around 80% of hospitals have ISO 9001 certification (Dombrádi et al., 2015), which is required to carry out a patient satisfaction survey at regular intervals, each institution creates its own questionnaire. In the absence of standardization, comparisons between different institutions are not feasible. Also, in 2016, the National Healthcare Services Center (ÁEEK) within the framework of the Hungarian Health System Performance Assessment (MÉRTÉK, see Fig. 15.1) collected a set of outcome related indicators that are available from various national databases. However, the list of these indicators is limited, and, in some cases, additional data need to be collected in order to draw appropriate conclusion.

These examples suggest that since the cessation of the EBF, the system based understanding of Healthy Healthcare that links organisational structure, staff health and quality care does not exist in Hungary. This should be urgently changed since the well-being of physicians—and other health care workers is critical in maintaining an effective healthcare system as they are in the front line to guard and promote wellness, advocate and administer preventive care, diagnose new illnesses, and manage chronic ones. Research on the mental health of physicians in other countries has revealed high prevalence of distress, burnout, suicidal ideation, and depression (Shanafelt et al., 2012; Firth-Cozens, 1997; Schernhammer & Colditz, 2004), which has been associated with functional impairment, and subsequently, with reduced quality of patient care (Shanafelt et al., 2002).

Although the studies conducted in Hungary did not include all three aspects of Healthy Healthcare, i.e. healthcare services, health and wellbeing of the medical staff, and quality of care, they still provide useful insights on the matter. For example, a Hungarian study conducted among healthcare professionals in 2016 looked at the relationship between work-related conflicts and burnout. In this study the majority of respondents (95.4%) had reported some form of work-related conflict (Irinyi

**Table 15.1** Research studies conducted in Hungary related to Healthy Healthcare

Research	Hospital characteristics or working conditions	Health status of the staff	Patient related outcomes
Dombrádi et al. 2019	—	X	X
Irinyi et al. 2017	X	X	—
Nistor et al. 2016	X	X	—
Dombrádi et al. 2016	X	—	X
Boncz et al. 2007	X	—	X

et al., 2017). Other studies have identified risk factors of work conflict, such as high workload, lack of superior recognition (Bishop, 2004), unclear tasks, lack of competence, changing expectations, rivalry (Berenyi & Juhasz, 2012), differences in personality or values, poor communication, irrelevant expectations, unfulfilled and unrealistic goals such as salary, promotion, workload, overly complex organizational structure, and suppressed prior conflicts (Kreitner & Kinicki, 2010). High work stress (Almost et al., 2010; Wright, 2011), lack of communication or poor quality of communication (Wilmot & Hocker, 2007) also increase the chance of workplace conflicts (Irinyi et al., 2017).

Data in the Health and Organisation among University hospital Physicians in Europe (HOUPE) study, in which Hungary also participated, showed a relationship between organizational factors and burnout among young university hospital physicians (Nistor et al., 2016). The organizational factors included human resource primacy, empowering leadership, innovative climate, role conflict, and control of work pacing as well as harassment at work. It was found that role conflict was a significant predictor of one of the of burnout dimensions, namely exhaustion. Furthermore, human resource primacy, empowering leadership and control of work pace also significantly predicted exhaustion among physicians. In addition, role conflict, human resource primacy, and age were identified as significant predictors of disengagement, another burnout dimension.

In a survey conducted among the staff at the University of Debrecen Clinical Centre in 2017 (Dombrádi et al., 2019), associations among patient safety, employee satisfaction and burnout were investigated. The authors explored the impact of burnout (exhaustion and disengagement) on the relationships among socio-demographic factors, patient safety and employee satisfaction among nurses and physicians. The results showed that burnout had a strong moderating effect on the relationship among socio-demographic variables and various aspects of perceived patient safety as well as employee satisfaction. This suggest that in order to improve both patient safety and employee satisfaction in the hospital setting, actions should be taken to tackle the level of burnout among workers.

Two studies conducted in Hungary (Boncz et al., 2007; Dombrádi et al., 2016) provided further information about the correlates of patient outcomes. These studies showed that the type of hospital was significantly associated with the 30-day mortality rates after acute myocardial infarction (AMI). The higher academic grade the hospital had, such as university hospitals, the better the chances of patient survival was. This could probably be attributed to more experienced staff, more resources and better infrastructure in such institutions. Thus, future studies investigating the impact of Healthy Healthcare on mortality rates should also include the type of hospital as a potential correlate.

The studies presented above demonstrate that the concept of a Healthy Healthcare has been ignored in Hungary since 2010. However, recent events could help revive this concept. Serious shortages in and, in some cases, the lack of workforce put ever-increasing strains on the Hungarian healthcare system (Balogh et al., 2019), and thus raise the question of how to increase the quality of care for the citizens with the limited resources available. Promoting the concept of Healthy Healthcare could

help in this regard. Also, it is worth mentioning that one of the subchapters of the ISO 9001:2015 Quality Management Systems addresses the issue of health among workers and emphasizes the importance of preventing burnout and discrimination. Because the majority of hospitals possess this certification (Dombrádi et al., 2015), there is a strong rationale for hospital management to act upon the concept of Healthy Healthcare. Another tool that can also help ensure the legal framework of Healthy Healthcare is the enforcement of the previously mentioned 2008 law on workplace safety.

## 15.4 Recommendations for Reviving Healthy Healthcare in Hungary

For the Healthy Healthcare concept to spread in Hungary, we recommend the following steps at the health policy, institutional, and research levels. Similarly, to the work of the late EBF, it would be beneficial to conduct annual surveys to assess both the quality of care and human resource management in hospitals. Besides helping decision-makers to understand the current situation, it would also provide data for participating institutions about the importance of the topic and potential areas for improvement. Also, to reduce the fluctuation within the workforce and to conform with the ISO 9001:2015 requirements the management of the hospitals should incorporate questions into their worker satisfaction surveys regarding the issues of burnout, discrimination and general health status. Thus, the management would have the necessary information about the areas requiring intervention and conducting longitudinal research could help assess the success of these interventions. To obtain reliable information that guides the management of the institutions, researchers and policy makers should adopt and/or develop standardized questionnaires. Freely available, reliable, internationally recognized and relatively short questionnaires should be validated on Hungarian samples.

In conclusion, the concept of Healthy Healthcare in the Hungarian healthcare system is currently absent. However, the environment is conducive to changing this situation. If appropriate steps are made, the health status of healthcare workers can be improved, which may enhance the quality of patient care.

## Glossary

**General hospital:** In Hungary, an inpatient medical institution is considered a general hospital, which provides inpatient services for adults and children, surgery, and obstetrics.

**Human resource primacy:** Making employees and the work environment a priority to ensure workplace wellbeing, such as rewards and recognition, competency

development, support staff to tackle workplace stress etc. Making employees and the work environment a priority to ensure workplace wellbeing, such as rewards and recognition, competency development, support staff to tackle workplace stress etc.

**Indicator:** A form of measurement to objectively assess the delivery and outcome of healthcare.

**ISO 9001 certification:** A formal recognition that an institution operates a quality management system in accordance with the requirements established by the International Organization for Standardization.

**Academic grade of a hospital:** A hierarchy in delivering healthcare. Medical institutions delivering more complex care are placed higher in this hierarchy. A hierarchy in delivering healthcare. Medical institutions delivering more complex care are placed higher in this hierarchy.

## References

- Act on Labour Safety 54. § (1) [Munkavédelmi törvény 54. § (1) pont]. [https://net.jogtar.hu/jr/gen/hjegy\\_doc.cgi?docid=99300093.TV](https://net.jogtar.hu/jr/gen/hjegy_doc.cgi?docid=99300093.TV) (Hungarian).
- Act on Labour Safety (1993). Communication on workplace stress. Act XCIII, 87. § 1/H, of the year 1993. [Kommunikáció a munkahelyi stresszel kapcsolatban, Munkavédelemről szóló törvény: 1993. évi XCIII. Törvény 87. § 1/H] [https://ommf.gov.hu/index.php?akt\\_menu=172&hir\\_reszle\\_t=163](https://ommf.gov.hu/index.php?akt_menu=172&hir_reszle_t=163) (Hungarian).
- Almost, J., Doran, D. M., McGillis Hall, L., & Laschinger, H. K. S. (2010). Antecedents and consequences of intra-group conflict among nurses. *Journal of Nursing Management*, 18(8), 981–992. <https://doi.org/10.1111/j.1365-2834.2010.01154.x>
- Balogh, Z., Babonits, T., Üveges, P., Szabó, B. Z. (2019) A humánerőforrás-helyzet – nővér outsourcing, *IME – Interdisziplináris Magyar Egészségügy*, 18(3):21–25.
- Berenyi, A., Juhasz, B. Sz. (2012) Stressz, konfliktus, munkahely, megküzdés. Debreceni Egyetem Mentálhigiénés és Esélyegyenlőségi Központ, Debrecen. Available at: [http://www.ommf.gov.hu/letoltes.php?d\\_id=5573](http://www.ommf.gov.hu/letoltes.php?d_id=5573). Last accessed June 25, 2019.
- Bishop, S. R. (2004). Nurses and conflict: Workplace experiences. Master of nursing dissertation, University of Victoria (Canada), Victoria, BC. Available: [https://dspace.library.uvic.ca:8080/bitstream/handle/1828/669/bishop\\_2004.pdf?sequence=1](https://dspace.library.uvic.ca:8080/bitstream/handle/1828/669/bishop_2004.pdf?sequence=1). Last accessed June 25, 2019.
- Boncz, I., Takács, E., Belicza, É., Sebestyén, A., Kriszbacher, I., Oláh, A., & Bódis, J. (2007). Survival analysis of patients with acute myocardial infarction according to hospital type. *Value in Health*, 10(3), A40. [https://doi.org/10.1016/S1098-3015\(10\)68658-5](https://doi.org/10.1016/S1098-3015(10)68658-5)
- Dombrádi, V., Gődény, S., Margitai, B., Gáll, T. (2015). Külső értékelő rendszerek használata a magyar kórházi ellátásban – egy országos felmérés eredményei. *IME – Interdisziplináris Magyar Egészségügy*, 14(5):11–15.
- Dombrádi, V., Gődény, S., Dózsa, C. (2016). Tanúsítások, klaszterek és heveny szívinfarktust követő 30 napon belüli halálozások aránya a magyar kórházi ellátásban – egy előzetes vizsgálat eredményei. *IME – Interdisziplináris Magyar Egészségügy*, 15(7):45–49.
- Dombrádi, V., Csenteri, O. K., Sándor, J., & Gődény, S. (2017). Association between the application of ISO 9001:2008 alone or in combination with health-specific standards and quality-related activities in Hungarian hospitals. *International Journal for Quality in Health Care*, 29(2), 283–289. <https://doi.org/10.1093/intqhc/mzx016>

- Dombrádi, V., Mészáros, V., Ádám, Sz., Bányai, G., Boruzs, K., & Bíró, K. (2019). *Investigating the moderating role of burnout between age and working characteristics with patient safety and employee satisfaction among nurses and physicians*. Glasgow, United Kingdom: International Forum on Quality and Safety in Healthcare.
- Firth-Cozens, J. (1997). Depression in doctors. In M. M. Robertson & C. L. E. Katona (Eds.), *Depression and physical illness* (pp. 95–111). New York: Wiley.
- Iriinyi, T., Lampek, K., & Németh, A. (2017). Munkahelyi konfliktus és kiégés kapcsolata egészségügyi szakdolgozók körében. *Nővér*, 30(3), 22–28.
- Kreitner, R., Kinicki, A. (2010). Organizational behavior (9th ed.). New York, NY: McGraw- Hill.  
In: Patton, C. M. (2014). Conflict in health care: A literature review. *The Internet Journal of Healthcare Administration*, 9(1):1–11.
- National Healthcare Services Center (ÁEEK), *Sectoral Statistical Data Collection System* (ÁStAR). Available at: <https://www.aeek.hu/agazati-statisztikai-adatgyujto-rendszer-astar>. Last accessed June 27, 2019.
- National Healthcare Services Center (ÁEEK), *Hungarian Health System Performance Assessment (MÉRTÉK)*. Available at: <https://mertek.aeek.hu/>. Last accessed June 27.06.2019.
- Nistor, A., Nistor, K., Tevik, Løvseth L., Fridner, A., Adam, S. (2016) Organizational factors as predictors of burnout among young university hospital physicians in Hungary and Sweden, the HOUPE study. PhD Conference, Budapest, Hungary.
- Schermhammer, E. S., & Colditz, G. A. (2004). Suicide rates among physicians: A quantitative and gender assessment (meta-analysis). *American Journal of Psychiatry*, 161(12), 2295–2302. <https://doi.org/10.1176/appi.ajp.161.12.2295>
- Shanafelt, T. D., Boone, S., Tan, L., Dyrbye, L. N., Sotile, W., Satele, D., et al. (2012). Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Archives of Internal Medicine*, 172(18), 1377–1385. <https://doi.org/10.1001/archinternmed.2012.3199>
- Shanafelt, T. D., Bradley, K. A., Wipf, J. E., & Back, A. L. (2002). Burnout and self-reported patient care in an internal medicine residency program. *Annals of Internal Medicine*, 136(5), 358–367. <https://doi.org/10.7326/0003-4819-136-5-200203050-00008>
- Wilmot, W. W., & Hocker, J. L. (2007). *Interpersonal conflict* (7th ed., p. 364). Boston, Mass, London: McGraw-Hill.
- Wright, K. B. (2011). A communication competence approach to healthcare worker conflict, job stress, job burnout, and job satisfaction. *Journal for Healthcare Quality*, 33(2), 7–14. <https://doi.org/10.1111/j.1945-1474.2010.00094.x>

# Chapter 16

## Healthy Healthcare Systems in India: A Prognosis



Rashmi Rai, Shruti Tripathi, and Annet H. de Lange

**Abstract** India has been an emerging economy which has retained its second position in the global healthcare market that has been tackling its economic gaps, shifting demographics, thereby, facing a wide gap between the demand and supply of healthcare products and services due to technology and increasing cost. Affordable treatment facilities for the economically low strata is still a dream. The government scheme of “Swachh Bharat Abhiyan” and “Ayushman Bharat Yojna” are the steps to uplift the backward community and make all the facilities available to them at the lowest possible cost directly and indirectly. Hence, the objective of this research was to unfold the three pillars of Healthy Healthcare which revolves around healthcare systems in India, Healthcare Employees’ wellbeing and resultant patient outcomes. This research also tried studying various interventions that can be taken to improve the present scenario of affordable and quality service to the needy people.

**Keywords** Indian healthcare · Ayushman bharat yojna · Swachh bharat abhiyan · Employee wellbeing · Rural india

### 16.1 Introduction

The healthcare sector all over the world is regenerating itself faster than ever, working integrated delivery models and innovation with an element of optimized care that will shape the future of healthcare sector. India being one of the emerging economies,

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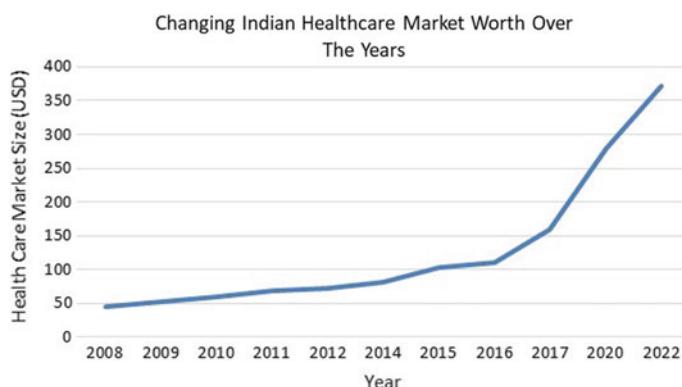
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needs to tackle the challenges of differences in quality, wide gaps between the birth and death rates, inaccessibility to timely care, rising costs in the changing dynamics of globalization. However, the healthcare industry in India is at the point of a transformation which will be characterized by unparalleled opportunities for growth in more affordable quality of healthcare service offerings.

Shifting demographics, middle class income and upsurge in the lifestyle of people in the country have contributed to good economic prospective for the healthcare market. The healthcare of India encompasses hospital sectors, medical & surgical equipment industry, clinical experiments, outsourcing, telemedicine, health tourism and health insurance sector etc. Healthcare industry which started blooming through the specialty hospitals and clinics succeeded through the ‘Bouquet Hospitals’, medical tourism and gaining popularity through ‘Budget Hospitals’ as the majority of India is comprised of middle and low economic strata. The healthcare market in India which stood at \$160 billion in 2016 is projected to reach \$372 billion by 2022 as per the statistics of ASSOCHAM India.

Moreover, based on the records of World Bank (2015), the whole expenditure on healthcare as a percentage of GDP of India in 2015 was around 3.89%. Out of this 3.89%, the governmental health expenditure as a percentage of GDP is simply 1% which is comparatively very less keeping this in mind that India is ranked number two among largest populated countries in the world. As per the report of IBEF (2020). The overall Indian healthcare market is worth around USD 160 billion and is predicted to reach USD 372 billion by 2022, with a Compound Annual Growth Rate (CAGR) of 16.28 per cent which is depicted in Fig. 16.1.

Though the needs of the healthcare facilities are increasing, the healthcare infrastructure of India still is not able to cope with the pace of healthcare demand. It has created a remarkable gap in the demand and supply in this industry for quality services and growing capital demand due to the surge in operational costs and technology acquisitions.



**Fig. 16.1** Changing Indian healthcare market worth over the years

The fast-growing private specialty hospitals in urban areas have been displaying international norms and the best of the facilities. They are generating incomes from medical tourism whereas the major part of the population is still whirling under bad physical infrastructure facilities and a shortage of qualified doctors and nursing staff even though the government has regulated the primary health centres.

For example, a substantial mass of population from rural India, still must travel close to 80 km to access basic healthcare. According to an article by Rukmani Shrinivasan in Times of India) a huge majority, approximately 86% of all medical tours are made by rural Indians. A high percentage (70–80%) of health-care expenditure in India is perceived as burning the pocket of nationals and hence a major part of this is often spent on outpatient treatment or just on medicines. Unaffordable treatment facilities for the economically low strata holds back the progress of the society and nation which leads to poverty. According to recent estimations, India will need 2.07 million of more doctors by 2030 so as to attain a ratio of one doctor per 1000 people as per the as per the India Brand Equity Foundation (IBEF) 2018. The structure of Indian healthcare is multifaced, in this chapter we will we will describe relevant barriers in the Indian healthcare system to create a healthy balance between patient flow, available healthcare staff and more economic system-based measures. Finally, to sum we will end with relevant results of various researches conducted amongst healthcare workers suggesting relevant avenues for intervention to create more healthy workplaces in India.

## 16.2 Rural India and Government Initiative

Earlier reports (“World Health Statistics 2019: Monitoring health for the SDGs”, 2020) indicate that of India’s population approximately 65% lives in rural areas. Despite the economic growth, Indian rural regions have lacked basic and proper healthcare infrastructure. (“Economic Survey 2018-2019: Healthcare still inaccessible in rural India”, 2020) mentions in their article that poor sanitation and malnutrition have been a major cause of illness and in addition to this poverty also deprives a large part of the rural population to health facilities. But (Barik & Thorat, 2015) in their study mentiones that the healthcare scenario is changing very fast from 2014 onwards because of the paradigm shift in orientation towards the healthcare i.e. the government has started focusing on preventive measures instead of curative measures only. According to (Key Indicators of Social Consumption in India Health, 2020) survey though the overall phase of healthcare sector in India is experiencing a hike, preferably the presence of public healthcare facility in the country should oversee both the potential to pay and potential to get good quality of healthcare. Though a lot of efforts and attention is to improvise the accessibility of quality tertiary healthcare system, it has a different facet to it as for those inhabiting in the smaller and far away villages, a lot of the public services are out of reach geographically and often such consumers are left with lack of treatment. The understaffed facilities with lack of proper physical infrastructure contribute to this problem.

Indian Government healthcare structure system consists of a three-tier structure that comprises of primary, secondary, and tertiary facilities. The rural areas are provided healthcare service through network of subcentre, primary health centre and community health centres. This is the first tier called as Primary healthcare care service. According to (Directorate General of Health Services Ministry of Health & Family Welfare Government of India, 2012). The primary point of contact between the primary healthcare system and the community is the subcentre, the major responsibility of that subcentre is to handle disease control, and health counselling, maternal and child health for a population of 3,000 to 5,000. Every six subcentres would have one male and one female heath visitor to supervise the daily cases.

The first point of contact between a village community is the primary health centre that is located at different geographical locations which has a medical officer and provides curative and preventive services to approximately 20,000 to 30,000 people. (Functioning of Community Health Centres (CHCs), 1999) another form of rural healthcare is community health centre that are managed and maintained by state governments to cover around 80,000 to 120,000 people. Government took a holistic view about rural health like preventive measures to check the reoccurrence of diseases, creating an affordable healthcare infrastructure and making healthcare facilities accessible to rural poor. ("Swachh Bharat Mission - Gramin, Ministry of Drinking Water and Sanitation", 2020) says that as part of preventive measure "Swachh Bharat Abhiyan" (Mission Clean India) for cleanliness, sanitation and clean drinking water has been started extensively aiming to bring change even through social behaviour modifications. For making health-care reachable to poor class as quoted in ("Ayushman Bharat: An ambitious set of reforms that should benefit millions of India's poor and vulnerable", 2020) the government has started "Ayushman Bharat Yojna" (National Health Protection Scheme). It's the world's largest health insurance programme, covering public and private hospitals, taking care of secondary and tertiary healthcare, being paid by the government and covering around 10 crore families which is approximately 50 crore poor people of India. It gives Rs 5 lakh medical expenses cover to each beneficiary family. The "Swachh Bharat Abhiyan" (mission Clean India) which also includes open defecation free mission has given outstanding results. Patwa & Pandit, (2018) According to government data 93% villages have become open defecation free by 2 October 2019 to achieve this task around 9.2 crore toilets were constructed till February 2019. The cleanliness mission has become mass social campaign also which makes cleanliness as culture which can be brought through behavioural change.

### **16.3 Overview of Employee's Wellbeing in the Indian Healthcare Industry by Indian Researchers**

Lots of researchers have emphasized possible positive effects of HR practices in creating more healthy workplaces, and the system associated with the performance

of the Healthcare industry and its outcome (Hyde et al., 2005; Pak et al., 2019). Rai, De Lange, Pijnappels, & Osagie, (2020) in their research conducted in one of the leading hospitals in Bangalore India used a scale on Work ability, employability, use of HR instruments, work experience and physical health and concluded that for Healthy Healthcare, development of HR practices can have a positive influence on work outcomes such as job security, vigour and dedication at work, Maintenance and developmental HR practices may help reduce fatigue and emotional exhaustion In spite of these findings of earlier research, the services provided by the healthcare professionals in this industry has proven to be more challenging given the aforementioned challenges and complexity of the healthcare service processes in India (Berg and Toussaint, 2003). It has become difficult for the healthcare service providing institutions to provide high quality service and care due to the rise in the demand of healthcare services and lack of healthcare professionals (Murale, Singh & Preetha, 2015) in his findings mentioned a positive correlation that can be observed between the employee commitment (Independent variable in the study) and patient satisfaction (dependent variable in the study), thereby emphasizing the significance of employee commitment, specifically in the healthcare sector which is a people-centric industry. A study based on Kolkata city claimed hospitals in Kolkata to be the best hospital chain and healthcare service provider in East India. The model shown in the study is based on the observational findings showing interrelationships between employee job engagement and the other factors like relationship with the supervisor, participation of the employees etc. (see also De Lange, Kooij, & van der Heijden, 2015). The study also showed that the participation of the employees had the most impact on respondent perception related to employee retention and engagement, which was followed by fair compensation and relations with the supervisor. A ‘strong correlation was observed between perception on job engagement along with job attractiveness and employee participation. Another correlation observed was between fair compensation and relations with the supervisor (Mutsuddi, 2016; Priyanka, & Upadhyay, 2016) in their findings mentioned the job benefits proved to be less satisfying for the medical staff than the paramedical staff in a hospital setting and the private sector posed less fascinating to its workers than the government setups. Another observation which can prove to be important for both government and private hospital administrations is that it finds a way to improve the employee job satisfaction levels, using perceived organisational support and wellbeing because these two variables majorly account to make changes in employee job satisfaction.

The Indian Hospital administration research is at its preliminary stages. One of the studies carried in this respect was by Rao et al. (2006). In his study he concluded that infrastructural facilities, medicine availability on time, interpersonal skills; waiting time; are one of the major components to improve patient satisfaction in Indian healthcare Industry.

Chaskar (1997) in his study conducted a survey to identify the complaints regarding patient satisfaction and how does these complaints effect the image of the hospital, (Bhargava et al., 2012) in their research examined the role of patient satisfaction survey as an important tool for hospital administrators to measure service

quality and further in their research explained the role of hospitals as social institutions and therefore it is the responsibility of the hospital administrators to ensure their patients and their attendants are satisfied with the quality services.

#### **16.4 Interventions to Enhance the Concept of Healthy Healthcare in India**

In addition, the present study might have significant implications for Indian healthcare setups. The policy changes and inflow of cash into the industry is the beginning of changes for betterment in the industry. The private hospitals generally offer multiple specialty and the government hospitals can afford better medical technology. Thus, indicating that job satisfaction, perceived organizational support, and wellbeing should be considered more sincerely in health sector and foresee a better future for the sector.

Organizations should adopt employee-friendly management policies and practices that could facilitate the formation of network-building social capital which can serve as an asset to organizations and creates competitiveness among healthcare stakeholders.

#### **16.5 Conclusion**

India has gained independence 70 years ago still health in India remains an extravagance expense and only the upper strata of the society can afford it. The 75% of the quality healthcare system of India has been limited to the urban area where just 27% of the entire population lives. Hence quality healthcare is still a mirage for the rest of rural Indians. People ignoring the available public health units, had to visit equally poor private practitioners, and pay beyond their capacity draining them down emotionally, physically and monetarily. The present scenario can improve and provide quality health services, either public or private, with some government regulation and initiations. The rural Indians face more challenges than others and are still away from the health equity. Allocation of required funds, proficient medical consultants and proper medical awareness with a well-equipped health facility within the reach of a common man can improve the access of public health services. The important points that can be drawn from this work is that more importance needs to be given to the development of the model, based on commitment based employment in an healthcare institution, as the success of such institution is heavily dependent on its workforce, who are responsible for many processes beginning with checking-in, treatment preparations and procedure for the medication.

## Glossary

**ASSOCHAM:** The Associated Chambers of Commerce of India.

**Primary healthcare:** are state-owned rural healthcare facilities in India.

**Secondary Healthcare:** District hospitals and Community Health Centre at block level.

**Tertiary Healthcare:** Tertiary Healthcare refers to a third level of health system, in which specialized consultative care is provided usually on referral from primary and secondary medical care.

**“Make in India” program:** Make in India initiative ‘s primary goal is of encouraging multinational and domestic companies to manufacture their products in India.

**“Ayushman Bharat” scheme:** Ayushman Bharat Yojana, also known as the Pradhan Mantri Jan Arogya Yojana (PMJAY), is a scheme that aims to help economically vulnerable Indians who need healthcare facilities.

**Swachh Bharat Abhiyan or Clean India Mission::** It was a nation-wide campaign in India for the period 2014 to 2019 that aimed to clean up the street, roads and infrastructure of cities towns, urban and rural cities and area in India.

## References

- Barik, D., & Thorat, A. (2015). Issues of unequal access to public health in India. *Frontiers of Public Health*, 3, 245. <https://doi.org/10.3389/fpubh.2015.00245>
- Bhargava, A., Thakur, A., Mishra, B., Taneja, J., Dogra, V., & Loomba, P. (2012). Patient satisfaction survey of microbiological tests done in G.B. Pant Hospital. *International Journal of Healthcare Quality Assurance*, 25(7), 555–564. <https://doi.org/10.1108/09526861211261163>
- Chaskar, R. P. (1997). A study of satisfaction levels of patients visiting Charak Hospital Indore. *Hospital Administration*, 34(3/4), 198–205.
- De Lange, A. H., Kooij, D., van der Heijden, B. I. J. M. (2015). Human Resource Management and Sustainability at Work Across the Lifespan: An Integrative Perspective. In: L. M. Finkelstein, D. Truxillo, F. Fraccaroli, R. Kanfer (Eds.), *Facing the Challenges of a Multi-Age Workforce: A Use-Inspired Approach*, p. 50–79. Routledge: London.
- Directorate General of Health Services Ministry of Health & Family Welfare Government of India. (2012). Indian Public Health Standards (IPHS) Guidelines for Sub-Centres Revised 2012.
- IBEF. (2019). “Healthcare Industry in India”, Indian Brand Equity Foundation. Available at <https://www.ibef.org/download/Healthcare-March-2020.pdf>
- Kaur, B. (4 July, 2019). Down to Earth. Economic Survey 2018–19: Healthcare still inaccessible in rural India retrieved from <https://www.downtoearth.org.in/news/health/economic-survey-2018-19-healthcare-still-inaccessible-in-rural-india-65443>
- Key Indicators of Social Consumption in India Health [https://mospi.nic.in/sites/default/files/publication\\_reports/nss\\_71st\\_ki\\_health\\_30june15.pdf](https://mospi.nic.in/sites/default/files/publication_reports/nss_71st_ki_health_30june15.pdf)
- Murale, V., Singh, J., & Preetha, R. (2015). Employee commitment and patient satisfaction: An initial reflection from Indian healthcare sector. *International Journal on Customer Relations*, 3(1), 22–30.
- Mutsuddi, I. (2016). Employee Retention and Engagement Practices In The Healthcare Sector: A Study On Medica Super-Specialty Hospital. *Kolkata. Delhi Business Review*, 17(1), 65–78.

- niti.gov.in, Functioning of Community Health Centres (CHCs) [Ebook] (1999). Retrieved from [https://niti.gov.in/planningcommission.gov.in/docs/reports/peoreport/peo/peo\\_chc.pdf](https://niti.gov.in/planningcommission.gov.in/docs/reports/peoreport/peo/peo_chc.pdf).
- Pak, K., Kooij, D., De Lange, A., & Van Veldhoven, M. (2019). Human Resource Management and the ability, motivation and opportunity to continue working: A review of quantitative studies. *Human Resource Management Review*, 29(3), 336–352. <https://doi.org/10.1016/j.hrmr.2018.07.002>
- Patwa, J., & Pandit, N. (2018). Open defecation-free India by 2019: How villages are progressing? *Indian Journal of Community Medicine Official Publication of Indian Association of Preventive & Social Medicine*, 43(3), 246–247. [https://doi.org/10.4103/ijcm.IJCM\\_83\\_18](https://doi.org/10.4103/ijcm.IJCM_83_18)
- Priyanka, S. J., & Upadhyay, B. K. (2016). Job satisfaction perceived organisational support and subjective wellbeing of medical and paramedical staffs of hospitals in public and private sector. *Journal of Organisation and Human Behaviour*, 5(4), 30–46.
- Rai, R., De Lange, A., Pijnappels, M., & Osagie, E. (December, 2019). Sustaining Workers in Healthcare: The Importance of Workability in an Indian Context. In International Conference on “New Work Order-Hopes and Challenges. Bangalore.
- Rao, K. D., Peters, D. H., & Bandeen-Roche, K. (2006). Towards patient-centred health services in India—a scale to measure patient perceptions of quality. *International Journal of Quality in Healthcare*, 18(6), 414–421.
- Shrinivasan, R. (2010). ‘86% of all medical trips are made by rural Indians. *The Times of India* Nov 11. Retrieved: [https://www.articles.timesofindia.indiatimes.com/2010-11-11/india/28253232\\_1\\_trips-medical-tourism-rural-areas](https://www.articles.timesofindia.indiatimes.com/2010-11-11/india/28253232_1_trips-medical-tourism-rural-areas).
- Singh, P. K. (2018). Ayushman Bharat: An ambitious set of reforms that should benefit millions of India's poor and vulnerable, World Health Organization. Retrieved from- <https://www.who.int/southeastasia/news/opinion-editorials/detail/ayushman-bharat-an-ambitious-set-of-reforms-that-should-benefit-millions-of-india-s-poor-and-vulnerable>.
- Swachh Bharat Mission. Retrieved: <https://swachhbharatmission.gov.in/sbmcms/index.htm>
- The World Bank. Domestic general government health expenditure (% of GDP)". Retrieved: <https://data.worldbank.org/indicator/SH.XPD.GHED.GD.ZS>:
- The World Bank. (2015). Health Expenditure, Total (% of GDP). The World Bank. Retrieved from: <https://data.worldbank.org/indicator/SH.XPD.TOTL.ZS>
- World Health Organization. (2019). World Health Statistics 2019. Retrieved: [https://www.who.int/gho/publications/world\\_health\\_statistics/2019/en/](https://www.who.int/gho/publications/world_health_statistics/2019/en/)

## Chapter 17

# Healthy Healthcare in Portugal: Empirical Studies of Relational Job Characteristics and Wellbeing Among Hospital Nurses



Filipa Castanheira, Maria José Chambel, Alda Santos,  
and Filipa Rocha Rodrigues

**Abstract** This chapter builds on several studies about the relational job design (organizational practice) and nurses' wellbeing from different healthcare organizations in Portugal. Altogether, studies demonstrate that the psychological effects of relational job characteristics (RJCs), namely affective commitment to patients, perceived social impact and social worth explain additional variance of nurses' work engagement and burnout, even controlling for the effects of other well-studied job characteristics. Furthermore, these effects spillover to the life and the organizational domains. Indeed, we found that the psychological effects of RJCs affect nurses' life satisfaction and perceived health, and nurses' affective commitment to the organization through work engagement and burnout. With this set of studies, we explore the potential role of interactions with patients to improve nurses' wellbeing, which is a less explored avenue when considering patients' role in the Healthy Healthcare systems.

**Keywords** Nurses · Engagement · Perceived social impact · Perceived social worth · Wellbeing · Affective organizational commitment · Burnout

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## 17.1 Relational Job Design in Healthy Healthcare: The Case of Nurses

Considering the three pillars of Healthy Healthcare (i.e., quality of patient care, healthcare workers' wellbeing and organisational practise), the current chapter presents knowledge generated from Portuguese research projects on the relationships between relational job design (organizational practice) and nurse wellbeing (workers wellbeing), which earlier studies have shown to be related to quality of patient care (e.g., Griffiths et al., 2018).

Nurses are the largest healthcare occupational group (OECD, 2017), and as such, the nature and quality of services provided to individuals within healthcare organizations may be largely dependent on the performance of nurses (Needleman & Hassmiller, 2009). Nursing care relates to the appropriate execution of assessments and interventions to optimize patient outcomes and prevent adverse events, including attention to safety issues, and entails consistent monitoring tailored to patients' conditions and family needs/resources. More recently, the initiatives taken by Hospitals for curtailing costs or increasing productivity have transformed nursing labor. Nowadays nurses strive to deliver the best care because during healthcare transformation nursing care has suffered strong work intensification, related to a drop-in nurse staffing levels and less time to provide quality care (Millisen, Abraham, Siebens, & Dierckx de Casterlé, 2006).

Regrettably, there is now accumulated evidence that this high-demanding work context has a negative impact on nurses (Carod-Artal & Vazquez-Cabrera, 2013). Surveys of hospital nurses from 12 European countries and the United States showed that these countries face challenges related to patient care quality and safety, and that the nursing profession suffers from negative work-related risks such as high professional burnout syndrome (Aiken et al., 2012). Nursing staff levels have also shown to be related to quality of care, and patient safety as well as nurse wellbeing (Aiken et al., 2017; Griffiths et al., 2018).

In our studies with Portuguese nurses in different specialities/disciplines and healthcare organizations, we've been investigating the linkage between the relational aspects of nursing work and staff wellbeing. Namely, the potential role of interactions with patients to improve nurses' wellbeing, trying to shed a positive light in the study of the relational aspects of the work of nurses. In line with the research developed by Grant and colleagues (Grant, 2007), we explored how the social dimensions of nurses' work can act as sources of meaning and value, which is considered critical to enhance motivation, wellbeing, and performance (Hackman & Oldham, 1976; Morgeson & Humphrey, 2006).

According to the Relational Job Design Framework (Grant, 2007), opportunities for impact on others and contact with beneficiaries are discrete relational job characteristics (RJCs; Grant, 2007) that trigger distinct psychological effects in employees: perceived social impact, perceived social worth, and affective commitment to beneficiaries. The way interpersonal contacts are shaped through job design (opportunity for impact and frequency of interactions with patients) will facilitate the occurrence of

socially valuing interactions that foster nurses' experience of affective commitment to patients, perceived social impact, and perceived social worth, i.e. psychological effects of RJC<sub>s</sub>. Research has shown these effects to represent empirically distinct constructs (Grant, 2008), also in the validation study of the Portuguese version of the psychological effects of the relational job characteristics scale among hospital nurses in Portugal and Brazil (Santos, Castanheira, Chambel, Amarante & Costa, 2017a). In this study a sample of 335 Portuguese hospital nurses reported a high perception of positive social impact on patients, high commitment to patients, and a moderate sense of social worth (respectively 5.95, 5.60 and 5.31 on a 7-point scale).

## **17.2 The Psychological Effects of Relational Job Design in Nurses' Wellbeing and Affective Commitment to the Organization**

We propose that the psychological effects triggered by the RJC<sub>s</sub> (affective commitment to patients, perceived impact, and perceive social worth) provide valuable indicators of the perceived quality of the relationship with the patient, which is an important resource in nursing and healthcare, and thus, should be related with nurses' work engagement. Research on the Job Demands-Resources model (JD-R; Schaufeli & Bakker, 2004) has demonstrated that engagement depends on the resource's individuals obtain in the work context (Hakanen & Roodt, 2010); which impact intrinsic motivation and wellbeing at work. Furthermore, patient-interactions in which a nurse perceives his/her actions as having a positive impact on patients, and also that the positive impact is valued and appreciated by the patient may be perceived as valuable resources that fulfil nurses' need for esteem and approval (Hakanen & Roodt, 2010).

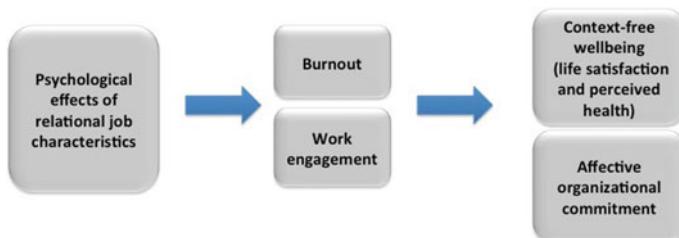
Recently, we found support for the assumption that the relationship with patients can be understood in a more positive way: nurses that reported higher perceptions of positive impact on the lives of patients, felt more socially valued by, and more committed to patients, resulting on higher levels of work engagement at work (Santos, Chambel, & Castanheira, 2016). Furthermore, we found a significant negative relationship between nurses' burnout and the extent to which they feel they are valued for their work (Santos et al., 2017a). This result is consistent with previous research that showed burnout to be inversely related to the feelings of reciprocity in contacts with the recipients of one's work (Schaufeli, 2006).

On a positive perspective, these studies, presented in 1, suggest that nurse- patient interactions can be associated with job significance (perceived social impact and social worth) and commitment to patients, so that the feedback received from the patient can provide a sense of worth and value that will motivate nurses in an enduring way (i.e., work engagement). This is particularly encouraging for nursing because, as stated by Schaufeli and Bakker (2004), work engagement is not a momentary and specific state, but rather, it is "a more persistent and pervasive affective-cognitive state" (p.295). Further, it aligns with the Job Characteristics Model (JCM; Hackman

& Oldham, 1976) by highlighting the role of others (i.e. patients) in determining the experience of meaningfulness at work. The importance of these psychological effects of RJC to explain nurses' well-being was also confirmed in Alda, Chambel & Castanheira (2020), where authors demonstrated the unique contribution of psychological effects of relational job characteristics to nurses' work engagement and burnout, beyond the effects of other job characteristics (Fig. 17.1).

Enduring positive effects also last longer than work and may show a spillover effect to nurses' lives. In a sample of 335 Hospital nurses in Portugal, we found support for a spillover effect of the above-discussed psychological mechanisms on nurses' life satisfaction and perceived health through work engagement and burnout (Santos, Castanheira, Chambel, Amarante, & Costa, 2017b). This indicates that the awareness of having an impact on, feeling committed to, and being valued by patients is associated with the work-related wellbeing of nurses. Moreover, it suggests that the enthusiasm and energy in their work represent a motivational process and may attenuate the strain inherent to nursing work, ultimately influencing the non-work wellbeing of nurses (Pierce, Gardner, & Crowley, 2015). Altogether, these are encouraging results for highlighting the potential motivator role of interactions with patients. Indeed, nurses' focus on their work (and the relationships within it) may prevent them from concentrating on negative events, creating a state of positive affect (being engaged), which can improve the quality of life outside the work domain.

In addition, we also found evidence suggesting that the positive effects of work engagement may go beyond the work setting and beyond the employee. Indeed, when nurses perceive Hospitals as an effective contributor to their wellbeing (through their work and how it is designed), nurses interpret this as a strong sign that the organization values and supports them, reciprocating with affective organizational commitment (Santos et al., 2016). Therefore, the idea is that nurses develop a social exchange relationship with the Hospital (Blau, 1964), and orient their attitudes toward the organization based on a general norm of reciprocity (Gouldner, 1960). This is in line with the JD-R model that proposes a mechanism via the motivational process, in which job resources foster work engagement and affective commitment (Hakanen & Roodt, 2010). Indeed, the psychological effects of RJC can be an indicator of how meaningful and significant the job is, which is likely to foster work motivation. This, in turn, will make it more likely for nurses to nurture an affective attachment



**Fig. 17.1** Model of studies

to the organization that created the conditions for these relationships with patients to occur.

Grant (2007) also mentioned the potential “dark-side” of the motivational power of RJC<sub>s</sub>, referring to situations when employees in adverse circumstances justify their work (and the efforts they put on doing it) through the welfare of the recipients of their work. Therefore, it is important that future research should focus on the threshold above which the purpose and meaning become damaging, leading to over-engagement and a threat to nurses’ wellbeing.

### 17.3 Implications for Healthy Healthcare

The results demonstrate that the psychological effects of relational characteristics of work (perceived social impact, perceived social worth, and affective commitment to patients) are important sources of meaning and have the ability to trigger motivational processes that relate to nurses’ wellbeing at work, outside work and the affective commitment to the hospital. Our studies highlight the role of patients in shaping a good and meaningful experience of work, which has been traditionally neglected in service literature. This applies to work and non-work domains of nurses and unveils the importance of recognizing and fostering the social dimension of nursing work in order to create healthier workplaces in Hospitals. Therefore, health organizations may contribute with their practises to the wellbeing and motivation of their nursing workforce by keeping these workers close to the people under their care (e.g., not burdening them with bureaucratic procedures) and allowing them time to establish meaningful contacts with these patients, thus contributing to the three pillars of Healthy Healthcare.

## Glossary

**Affective organizational commitment:** emotional attachment to the organization, which is at the core of the worker’s desire to maintain organizational membership (Meyer & Allen, 1991).

**Perceived social impact:** degree to which employees believe their actions have a positive impact on others (Grant, 2007).

**Perceived social worth:** perception that one’s actions are valued by others (Grant, 2007).

**Work engagement:** motivational, positive, fulfilling work-related state of mind that is characterized by vigour, dedication, and absorption (Schaufeli & Bakker, 2004).

**Affective commitment to clients:** sense of emotional concern and dedication to the people impacted by one’s work (Grant, 2007)sense of emotional concern and dedication to the people impacted by one’s work (Grant, 2007).

**Burnout** syndrome characterized by exhaustion (feeling depleted by work) and cynicism (distancing from others at work) as its core dimensions (Schaufeli & Bakker, 2004).

## References

- Aiken, L. H., Sloane, D., Griffiths, P., Rafferty, A. M., Bruyneel, L., McHugh, M., & Sermeus, W. (2017). Nursing skill mix in European hospitals: Cross-sectional study of the association with mortality, patient ratings, and quality of care. *British Medical Journal Quality & Safety*, 26, 559–568.
- Aiken, L. H., Sermeus, W., Van den Heede, K., Sloane, D. M., Busse, R., McKee, M., & Kutney-Lee, A. (2012). Patient safety, satisfaction and quality of hospital care: Cross sectional surveys of nurses and patients in 12 countries in Europe and in the United States. *British Medical Journal*, 344, e1717. <https://doi.org/10.1136/bmj.e1717>
- Blau, P. M. (1964). *Exchange and power in social life*. New York: John Wiley.
- Carod-Artal, F. J., & Vázquez-Cabrera, C. (2013). Burnout syndrome in an international setting. In S. Bährer-Kohler (Ed.), *Burnout for experts: Prevention in the context of living and working* (pp. 15–35). New York: Springer. [https://doi.org/10.1007/978-1-4614-4391-9\\_2](https://doi.org/10.1007/978-1-4614-4391-9_2)
- Castanheira, F. (2016). Perceived social impact, social worth, and job performance: Mediation by motivation. *Journal of Organizational Behavior*, 37(6), 789–803. <https://doi.org/10.1002/job.2056>
- Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, 25, 161–178.
- Grant, A. M. (2007). Relational job design and the motivation to make a prosocial difference. *Academy of Management Review*, 32, 393–417. <https://doi.org/10.5465/AMR.2007.24351328>
- Grant, A. M. (2008). Designing jobs to do good: Dimensions and psychological consequences of prosocial job characteristics. *The Journal of Positive Psychology*, 3(1), 19–39. <https://doi.org/10.1080/17439760701751012>
- Griffiths, P., Ball, J., Bloor, K., Böhning, D., Briggs, J., Dall’Ora, C., Smith, G. (2018). Nurse staffing levels missed vital signs and mortality in hospitals: retrospective longitudinal observational study. *Health Services and Delivery Research*, 6(38). <https://doi.org/10.3310/hsdr06380>
- Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. *Organizational Behavior and Human Performance*, 16, 250–279. [https://doi.org/10.1016/0030-5073\(76\)90016-7](https://doi.org/10.1016/0030-5073(76)90016-7)
- Hakanen, J. J., & Roodt, G. (2010). Using the job demands-resources model to predict engagement: Analysing a conceptual model. In A. B. Bakker (Ed.) & M. P. Leiter, *Work engagement: A handbook of essential theory and research* (pp. 85–101). New York, NY, US: Psychology Press.
- Meyer, J. P., & Allen, N. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1, 61–89. [https://doi.org/10.1016/1053-4822\(91\)90011-Z](https://doi.org/10.1016/1053-4822(91)90011-Z)
- Millisen, K., Abraham, I., Siebens, K., & Dierckx de Casterlé, B. (2006). Work environment and workforce problems: A cross-sectional questionnaire survey of hospital nurses in Belgium. *International Journal of Nursing Studies*, 43(6), 745–754. <https://doi.org/10.1016/j.ijnurstu.2005.10.008>
- Morgeson, F. P., & Humphrey, S. E. (2006). The work design questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology*, 91, 1321–1339. <https://doi.org/10.1037/0021-9010.91.6.1321>

- Needleman, J., & Hassmiller, S. (2009). The role of nurses in improving hospital quality and efficiency: Real-world results. *Health Affairs*, 28(4), 625–633. <https://doi.org/10.1377/hlthaff.28.4.w625>
- Pierce, J. L., Gardner, D. G., & Crowley, C. (2015). Organization-based self-esteem and well-being: Empirical examination of a spill over effect. *European Journal of Work and Organizational Psychology*, 25(2), 1–19. <https://doi.org/10.1080/1359432X.2015.1028377>
- Santos, A., Castanheira, F., Chambel, M. J., Amarante, M. V., & Costa, C. (2017a). Psychological effects of relational job characteristics: Validation of the scale for hospital nurses. *Journal of Nursing Management*, 25(5), 329–338. <https://doi.org/10.1111/jonm.12468>
- Santos, A., Castanheira, F., Chambel, M. J., Amarante, M. V., & Costa, C. (2017b). Relational job characteristics and well-being: A study among Portuguese and Brazilian hospital nurses. *Stress & Health*, 33(4), 415–425. <https://doi.org/10.1002/smj.2729>
- Schaufeli, W. B. (2006). The balance of give and take: Toward a social exchange model of burnout. *International Review of Social Psychology*, 19(1), 87–131
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25, 293–315. <https://doi.org/10.1002/job.248>

# Chapter 18

## The PROGERPSI Programme: A New Comprehensive Approach for Healthcare Institutions in Portugal



Pedro Moura, Rui Ruivo, and Ana Matos Pires

**Abstract** The current chapter presents a programme developed by healthcare workers for healthcare workers to manage psychosocial risk in the workplace – PROGERPSI at a healthcare institution in south Portugal (Unidade Local de Saúde do Baixo Alentejo). PROGERPSI relies on internal resources and the human capital already available in the institution and covers a wide range of evidence-based interventions, including primary, secondary and tertiary prevention. Research is ongoing to study the impact of the primary interventions, and the effect of the complete programme on absenteeism, productivity and the quality of life of workers, as well as the programme's cost in general for the healthcare organization.

**Keywords** Psychosocial risks · Healthcare workers · Internal resources · Evidence-based interventions · Improving quality of life

### 18.1 Introduction

PROGERPSI (Programa de gestão integrada de riscos psicosociais nos profissionais – Programme of integrated management of professional psychosocial risks) is a programme developed by healthcare workers for healthcare workers to manage psychosocial risk in the workplace. It relies on internal resources and the human capital already available in the institution and covers a wide range of evidence-based interventions, including primary, secondary and tertiary prevention (European Commission, 2016). The programme focuses on the workers' well-being and their working conditions, and how this can improve the quality of patient care. It emphasizes the system-based understanding of Healthy Healthcare that links staff health and quality of care. The programme has been successful in terms of providing comprehensive help to workers and is starting to demonstrate its economic value. It is also in the process of enlarging its scope to encompass other healthcare institutions.

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The current chapter provides a description of the programme's context, content and how it relates to each of the pillars of Healthy Healthcare, ending with some concluding remarks.

## 18.2 Context

PROGERPSI includes workers at a healthcare institution in south Portugal called Unidade Local de Saúde do Baixo Alentejo (ULSBA), which comprises a public hospital and 14 primary care centres, employing around 1700 people. It is in a rural and agricultural area in the Baixo Alentejo region, with a widely dispersed population (accounting for 1.1% of the Portuguese population in 9.3% of the national territory, with a deficient motorway and public transportation network, and with very sparse private healthcare sector penetration). This makes it difficult for the resident population to access specialized mental healthcare outside of ULSBA.

PROGERPSI is managed and operated by workers with relevant experience in the Department of Psychiatry, ULSBA, on a part-time basis (average 2 h/week/team member). The team includes a psychiatrist (who coordinates the programme), psychologists, nurses (specializing in mental, occupational and community health), a social worker, an occupational engineer and a secretary. To guarantee privacy for all workers that receive help from PROGERPSI, entry activities are executed in collaboration with the Occupational Health department as a yearly evaluation by this department is mandatory in Portuguese Law. This approach allows issues of stigmatization of mental illnesses in the workplace to be avoided.

## 18.3 Worker's Health and Wellbeing Pillar

### 18.3.1 Primary Prevention

Mental health promotion group:

This group is open to all workers at the institution, with the purpose of raising awareness about the importance of mental health in the workplace and improving individual resilience in the general working population. With a periodicity of 2 weeks and covering several prevention topics, it is held in the facilities of the in-house professional training department. Each topic is allocated a session lasting 1.5 hours.

On-job training:

The subject of “Psychosocial hazards” was introduced in the in-house professional training courses available for workers. Through the introduction of specific modules on already existing courses, awareness of the importance of good mental health

in the workplace is improved, as well as coping strategies relating to stress and mental illness. This strategy also enables the divulgence of other initiatives already in place to help workers to seek help early. So far, 4% of the working population has participated in these modules.

### ***18.3.2 Secondary Prevention***

The programme aims to improve access to specialized care by implementing a fast track to care for workers at ULSBA (1–2 weeks for those in the PROGERPSI programme compared with 8 weeks for the public in the Psychiatry department). Outpatient treatment is provided in the Occupational Health department (where all workers must go to do their routine evaluations), where the workers need only ask for help. They are evaluated using a semi-structured interview given by an occupational health nurse, including a general psychiatric symptom rating scale. Based on that clinical assessment and the score of the instrument the worker is directed to either i) a brief psychotherapeutic support consultation with a mental health nurse (maximum of 4 sessions of cognitive behavioural therapy inspiration in a 4-week period), or ii) an occupational psychiatric consultation, when moderate to severe symptoms are present. The occupational psychiatrist can also refer the patient to a psychotherapeutic treatment consultation, which also occurs in the Occupational Health department. The occupational psychiatrist also liaises with the Occupational Health department, specifically regarding the adaptation of work schedules.

(shifts, number of working hours) and workloads for workers suffering or recovering from mental illnesses.

The most prevalent pathologies encountered were recurrent major depressive disorder, acute stress reactions and personality disorders, while operational assistants, technical assistants and nurses made up the bulk of workers seeking help in our programme.

## **18.4 Organizational Practice Pillar**

### ***18.4.1 Primary Prevention***

Tailor-made interventions:

After solicitation by a department, the PROGERPSI team conduct an anonymous structured questionnaire about psychosocial hazards and quality of life, as well as general sociodemographic questions. The purpose is to get a “picture” of the department in terms of which psychosocial risks are present (interpersonal relations, work-home conciliation, work load, etc.) and the level of risk (and risk stratification),

as well as a measure of outcome against which the PROGERPSI interventions can be assessed (quality of life). These interventions are then tailored to the specific problems encountered, generally through (i) relaxation and stress management techniques, interpersonal relations workshop or other connected areas and (ii) brainstorming on the working conditions and how to improve the workflow (including senior management). Three months after the end of these interventions (which last between 2–8 h for every group of 8–12 workers) all participants are invited to fill out the same questionnaires previously administered to look for an improvement in their resilience.

In 2017 a survey was conducted in ULSBA, using a validated questionnaire for psychosocial hazards (Moura et al., 2020, in press), and found a health risk for medical workers in the dimension “job insecurity”, which reflects fear of losing their job; an intermediate risk was also found for nurses, technical assistants and other workers with higher qualifications. Operational assistants and management workers were the professional categories for which the health risk was considered favourable.

## 18.5 Quality of Patient Care

### 18.5.1 Tertiary Prevention

In 2018, a group intervention with a focus on improving quality of life through building resilience for workers already suffering from psychological/psychiatric symptoms, was started. It is known that workers with mental disorders have much higher rates of Absenteeism (International Labour Organization, 2016) and workers recovering from physical illnesses often have clinical or sub-clinical psychiatric symptoms, with anxious and depressive symptoms being the most prevalent (Harvey et.al, 2014). Workers were selected based on a high absenteeism rate in the previous year and were provided with a 3-month, 2 h per week programme of group dynamics workshops with clinical psychologists, on several rehabilitation topics, which we named the VITA-Q (Quality of Life) programme. These topics ranged from healthy lifestyle and sports, motivation, managing time and emotions, relaxation, decision-making, conflict management, assertiveness and communication, teamwork, alcohol and drug problems. These workers were evaluated using structured questionnaires at the start and end of the programme and at a 6-month follow-up. Preliminary data suggests improvement in all domains of Quality of Life (not limited to the psychological domain), improvement in the work commitment of workers and an average reduction in absenteeism of 0.73 days/person/month. By using net values considering average days of absenteeism before and after the programme and average hourly wages by professional category, this change could be quantified as an “economic gain” of 31.14 EUR/person/month. In comparison, using the average hourly wages of the PROGERPSI team the “cost” of this sub-programme was

23.54 EUR/person/month. In 2019, another VITA-Q sub-programme was run for workers with a diagnosis of recurrent major depressive disorder.

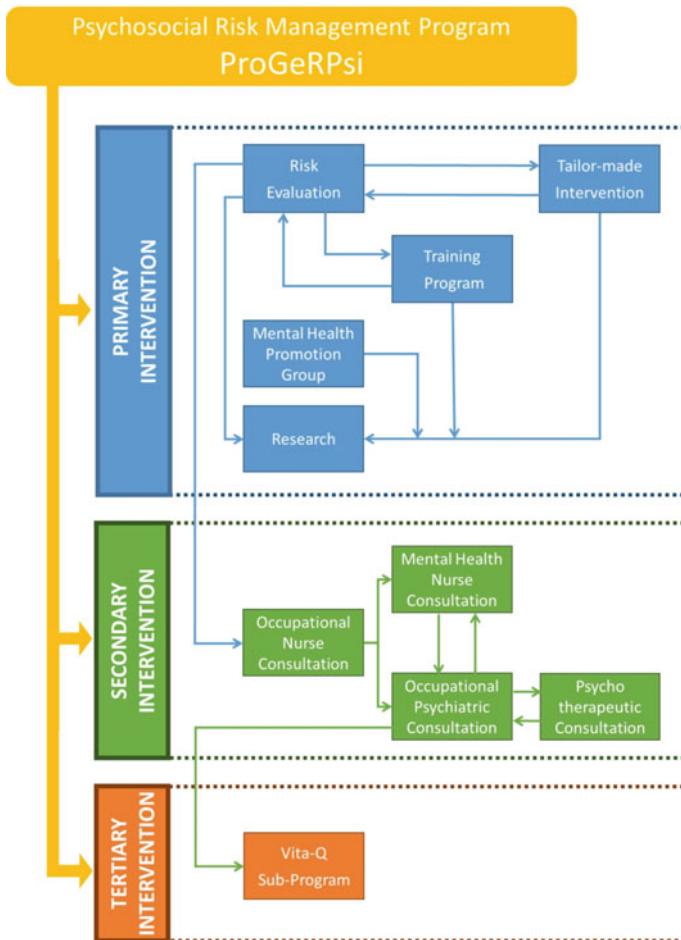
## 18.6 Learned Lessons and Future Directions

One key aspect is involving senior management and demonstrating its support of the different initiatives, especially as middle management tends to resist having workers participate in the programme sessions during their working hours. In addition, the PROGERPSI team is now moving away from “broad” audience prevention initiatives and is focusing on tailor-made interventions and specific needs. As the programme continues to develop, it must include evaluation of the impact on the workers’ productivity and the quality of patient care by the workers who have participated in the programme. Evaluation of the programme to date shows that using internal resources (facilities and human resources) already available in the healthcare organization keeps operating costs very affordable, providing a replicable and scalable solution to address workers’ psychosocial risk. The programme is also moving towards integrating existing quality care metrics for each participating department on the outcome evaluation of: PROGERPSI tailor-made actions, the secondary prevention consultations and the Vita-Q sub- programme. PROGERPSI aims to implement individual risk assessment metrics by developing an e-platform that workers can voluntarily use and then receive feedback (with useful tips about their condition or how to find professional help and where to find it).

PROGERPSI has received funding from the Portuguese Surgeon General’s Office to facilitate the implementation of this programme in two other major public hospitals in south Portugal. This will facilitate a “pooling” of human resources and network functioning. If successful, the PROGERPSI model will serve as the basis for a comprehensive psychosocial risk management network in healthcare organizations across the entire country.

## 18.7 Conclusion

The current chapter provides a broad description of the programme, its interventions and future directions. Research is ongoing on the impact of the primary interventions, and the effect of the complete programme on absenteeism, productivity and the quality of life of workers, in relation to the programme’s cost in general in healthcare organizations. Figure 18.1 gives an overview of the programme.



**Fig. 18.1** Overview of the program

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## References

European Commission. (2017). EU Compass for Action on Mental Health and Well-Being, Prevention of Depression and Promotion of Resilience. Retrieved from: <https://www.mentalhealthandwellbeing.eu/depression-suicide-and-e-health/>.

- Harvey, S., Joyce, S., et al. (2014). *Developing a mentally healthy workplace: a review of the literature*, National Mental Health Commission, Sydney, viewed 09 Jun 2020. [https://www.headsup.org.au/docs/default-source/resources/developing-a-mentally-healthy-workplace\\_final-november-2014.pdf?sfvrsn=8](https://www.headsup.org.au/docs/default-source/resources/developing-a-mentally-healthy-workplace_final-november-2014.pdf?sfvrsn=8).
- International Labour Organization. (2016). Workplace stress: A collective challenge. Retrieved from: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_protect/---protrav/---safework/documents/publication/wcms\\_466547.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_466547.pdf).
- Moura, P., Moura, T., & Ruivo, R. (2020). Psychosocial Risks in Workers of a Healthcare Unit in the Alentejo region of Portugal, Psilogos (paper submitted for publication).

# Chapter 19

## Promoting Lean Management and Healthy Healthcare Workers in Nursing Departments in Switzerland



Rebecca Brauchli, Anja I. Lehmann, and Georg F. Bauer

**Abstract** More and more hospitals are introducing Lean approaches to counteract economic pressure and to increase their efficiency. Previous research shows that introducing Lean brings certain economic benefits for hospitals. However, studies also indicate a negative impact on employee well-being. In the project described in this chapter, we followed an innovative approach to implement Lean and simultaneously maintain employee well-being by offering specific workshops to address working conditions and employee health. The results of our evaluation showed partial success. In general, compared to the control group, the situation in the intervention group remained stable, whereas the control group, without workshops, experienced a deterioration of working conditions and health in the same period.

**Keywords** Psychosocial health · Job demands · Job resources · Employee well-being · Lean healthcare · Outcome evaluation

### 19.1 Lean Approaches to Healthcare

Healthcare organizations are under strong economic pressure, exacerbated by an aging population with increasing healthcare demands and by the use of expensive technologies (Radnor, Holweg, & Waring, 2012). To improve effectiveness and save costs, healthcare organizations are progressively adopting Lean (Stenfors-Hayes, Hasson, Augustsson, Hvitfeldt Forsberg, & von Thiele Schwarz, 2014; von Thiele Schwarz, Nielsen, Stenfors-Hayes, & Hasson, 2017). Lean is a management or production process that comes from the Japanese manufacturing industry and has spread worldwide (Womack & Jones, 1997). Lean is multifaceted, focusing on

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reducing waste and creating added value for the customer (Womack, Jones, & Roos, 1990).

While the impact of Lean on the efficiency and productivity of an organization through the improvement of work processes is rarely disputed, its effects on the quality of care and employee well-being remain controversial (Hasle, Bojesen, Jensen, & Bramming, 2012). Most studies suggest that Lean has a negative impact by reducing job autonomy and, at the same time, increasing job demands, such as workload or work intensity. Few studies mention positive effects, namely a wider range of employee roles, the use of skills, and the variety of social relationships (Hasle, et al., 2012). Some studies have shown that Lean does not interfere with the well-being of employees when combined with elements that focus on well-being in the workplace (Stenfors-Hayes et al., 2014).

## **19.2 Lean and Employee Well-Being in the Healthcare Setting Previous and Current Research**

It is common knowledge that participatory intervention approaches embedded in existing organizational structures may improve the efficiency and effectiveness of organizational interventions (see Chap. 14 on interventions in this book): “From an early stage it was suggested that Lean would benefit employees due to its promotion of a higher degree of participation and the possibility to eliminate strained working conditions” (Hasle, et al., 2012, p. 830). To summarize the current state of evidence, three degrees of integration of Lean, of the quality of care, and of employee well-being can be distinguished: (1) studying side effects of traditional Lean on employee outcomes; (2) fully merging Lean with employee health interventions; and (3) considering employees’ working conditions and health through an enhanced Lean approach.

### ***19.2.1 Studying Side Effects of Traditional Lean on Employee Outcomes***

Empirical evidence for side effects is scarce and contradictory (Ulhassan, Westerlund, Thor, Sandahl, & Schwarz, 2014). As mentioned, in most cases, Lean has been associated with negative effects on employees’ working conditions and well-being due to increased pace and reduced job variation (Bränmark & Håkansson, 2012; Hasle, et al., 2012), while participatory approaches seem more promising with regard to employee well-being outcomes (Hasle, et al., 2012). Stenfors-Hayes and her colleagues (Stenfors-Hayes et al., 2014) found that traditional Lean measures focusing on improving relationships at work tend to affect employees’ well-being positively, whereas focusing on improving job tasks tend to have negative effects.

### ***19.2.2 Fully Merging Lean-Occupational Health Interventions***

A group of Swedish researchers investigated an approach that integrates occupational health and safety, health promotion, and Lean within Kaizen workshops (von Thiele Schwarz et al., 2017). The term Kaizen is Japanese, meaning “improvement.” It indicates a process of continuous improvement of the standard way of working (Chen, Dugger, & Hammer, 2001). Kaizen is a tool for participatory, continuous improvement used in Lean management. It can be used to improve employee well-being (von Thiele Schwarz et al., 2017). Each action plan in the Swedish study to improve work processes was additionally analyzed for its possible effects on employees’ working conditions and well-being. This approach sensitizes employees and managers for these interrelationships and trains them to consider a health perspective in future improvement processes. The approach was implemented in a Swedish country district hospital with 500 employees in 12 units using a quasi-experimental study design. In each unit, some employees served as representatives, but all employees were involved in identifying problems, participated in meetings, and developed solutions. The actual design of the integrated Lean-health project was adapted to the needs of each ward, leading to a non-standardized implementation across wards. However, such a complete integration of different topics throughout the Lean implementation can be challenging and sometimes perceived as artificial by those involved (Stenfors-Hayes et al., 2014).

### ***19.2.3 Considering Employees’ Working Conditions and Health through an Enhanced Lean Approach***

The third approach considers the employee well-being perspective in a focused way during traditional Lean workshops. To our best knowledge, there exists no evidence on the implementation and effectiveness of such an enhanced Lean approach considering employees’ working conditions and well-being. As it was expected to be both highly feasible and effective, it was implemented in the context of the project presented in this chapter. The Lean workshops were supplemented by one special session explicitly devoted to participatory analysis and improvement of employees’ psychosocial working conditions and employee well-being based on a survey-feedback method. The inclusion of these topics followed the recommendations of previous research to avoid possible negative effects that may be accompanied with classical Lean interventions (Hasle, et al., 2012).

Compared to the fully merged approach, this enhanced approach presumably had the following advantages: (1) The Lean workshops where action plans were developed included only a limited number of employee representatives, making it feasible in hospitals with 24-h shifts. (2) The additional perspective on employees’ psychosocial working conditions and well-being was addressed during only one workshop

session, making it manageable in complex healthcare settings. (3) Devoting a full session explicitly to improve employees' working conditions and well-being could increase the status and visibility of this complementary outcome. In the following section, we present the impact of this enhanced Lean approach in nursing wards at a large university hospital in Switzerland. We expected that the introduction of enhanced Lean would not have a negative impact on the well-being and quality of care of the involved wards.

### 19.3 Intervention and Evaluation

The overall concept of the intervention (labeled as "Lean Hospital") described in this chapter aimed at improving performance measured by productivity and quality from a patient's view through continuous optimization of work processes and the prevention of waste. An essential intervention element of the Lean implementation was a four-day workshop held in every nursing ward in a standardized way. The workshop was a Lean healthcare intervention (Dahlgaard, Pettersen, & Dahlgaard-Park, 2011) with an additional focus on the improvement of psychosocial working conditions and employee well-being. Thus, besides classical Lean content aimed at the improvement of work processes and efficiency, the workshops explicitly included content on psychosocial work conditions and well-being. The workshops followed the principle of empowering employees for participatory problem solving.

The main goal of these Lean workshops was to identify the best mix of skills and grades per nursing ward by applying the Lean principles of identifying value, mapping the value stream, creating flow, establishing pull within and between nursing wards, and seeking perfection (Womack & Jones, 1997). The project also focused on improving interprofessional collaboration between nursing and medical staff through Lean principles. The hospital's internal project managers implemented the four workshop days within a period of four to six weeks in a standardized way in each nursing ward. The workshops took place at the internal training centre of the hospital, but site visits were also implemented to observe walking routes, waste, and disorder. During the workshop sessions, participants discussed current and future targeted value-added processes and interprofessional collaboration within the team. Next, participants created several action plans to optimize the value-added processes and the interprofessional collaboration. To simultaneously improve the working conditions (job demands and job resources) as well as employee well-being (team climate, stress, motivation, and satisfaction at work), workshop participants developed additional action plans concerning these topics during a specially devoted workshop session. They built on the teams' baseline results of the employee surveys conducted immediately before the workshop. This survey feedback method based on representative survey data allowed workshop participants, as representatives of the entire team, to prioritize key working conditions to be improved (e.g., job control, workload, or supervisor behaviour). The following gives a summary of the contents of the four workshop days.

Day 1 (Laying the foundations: Analysis of current value stream): Analysis of process steps and covered distance. Identification of general waste. Analysis of interactions between employees, definition of fields of action, and formulation of concrete action plans to be implemented.

Day 2 (Concretion of target process): Presentation and discussion of employee survey results on job demands and resources, team climate, and stress, motivation and satisfaction at work. Definition of fields of action and formulation of concrete action plans to be implemented.

Day 3 (Implementation): Introduction and planning test run. Introduction to the hospital's overall Lean strategy. Lean game. Planning of upcoming implementation of action plans.

Day 4 (Implementation and evaluation): Developing target skill-grade profiles specific to each ward. Developing or validating checklists. Evaluating first implementations of action plans. Adapting action plans. Developing detailed target value stream based on developed skill-grades profiles. Auditing the quality of project and action plans. Visiting the sites of the implemented action plans.

## 19.4 Results

In our project, we expected that the psychosocial working conditions and employee well-being would not deteriorate in the intervention group compared to the control group (without intervention). The results of our evaluation showed that we were at least partly successful. In general, compared to the control group, the situation in the intervention group remained stable, whereas the control group experienced a deterioration in the same period.

Specifically, we found a stable situation in the intervention group and deterioration in the control group for the experienced support from supervisors, team climate, and job satisfaction, with statistically significant results. We found only trends in the expected direction for job demands, the reported autonomy at work, peer support, role clarity, stress, and motivation. Whereas the situation remained stable in the intervention group, we found a decrease in the control group.

Overall, a clear picture emerges when looking at the results. As expected, and shown in previous studies, it seems that the implementation of Lean at the organizational level, which impacted the control group in our study as well, has a rather unfavourable effect on psychosocial working conditions and employee well-being. However, if the organizational Lean implementation is accompanied by team-level workshops in which occupational health issues are addressed and measures are developed, and thereafter implemented, the negative effect of Lean seems to be mitigated, at least to some extent.

## 19.5 Conclusion

There is no doubt that Lean is a controversial approach with ongoing debate about possible benefits and detriments of Lean for employee health (Hasle, et al., 2012). As introduced above, studies show that Lean can bring a certain economic benefit and, therefore, is legitimate in times of economic pressure, especially in healthcare organizations (Womack & Jones, 1997). In view of the promising results in terms of productivity, it is expected that more hospitals will implement Lean (Poksinska, 2010). However, there are studies that suggest Lean has a detrimental effect on psychosocial working conditions and employee well-being (Hasle, et al., 2012). If Lean was fully merged with occupational health management implementation (von Thiele Schwarz et al., 2017), researchers found positive effects. This approach is promising, but its integration into a hospital setting may not always be feasible. Therefore, we aimed to study the impact of an enhanced Lean approach in nursing wards at a large university hospital that addressed both better patient and employee outcomes. In contrast to studies that considered only side effects of Lean, leading to mixed results (Stenfors-Hayes et al., 2014; Ulhassan et al., 2014), our study yielded results that showed a clear pattern, although only some results were significant. Still, we think the enhanced Lean approach we have followed in this study represents a good trade-off, as it is both highly feasible and indicates positive effects on employee well-being that should be confirmed in future studies.

Based on these findings, we recommend that hospitals should not follow a classical Lean approach exclusively aimed at improving work processes and efficiency but should enhance this approach by explicitly implementing measures to improve psychosocial working conditions and well-being. When connecting staff outcomes, patient outcomes, and organizational intervention approaches such as Lean, it is crucial to have a sophisticated overarching project management team with excellent communication skills.

## References

- Brännmark, M., & Håkansson, M. (2012). Lean production and work-related musculoskeletal disorders: Overviews of international and Swedish studies. *Work: A Journal of Prevention. Assessment and Rehabilitation*, 41, 2321–2328. <https://doi.org/10.3233/WOR-2012-0459-2321>
- Chen, J. C., Dugger, J., & Hammer, B. (2001). A Kaizen based approach for cellular manufacturing system design: A case study. *the Journal of Technology Studies*, 27(1/2), 84–92.
- Dahlgaard, J. J., Pettersen, J., & Dahlgaard-Park, S. M. (2011). Quality and lean healthcare: A system for assessing and improving the health of healthcare organisations. *Total Quality Management & Business Excellence*, 22(6), 673–689. <https://doi.org/10.1080/14783363.2011.580651>
- Hasle, P., Bojesen, A., Langaa Jensen, P., & Bramming, P. (2012). Lean and the working environment: A review of the literature. *International Journal of Operations & Production Management*, 32(7), 829–849. <https://doi.org/10.1108/01443571211250103>
- Poksinska, B. (2010). The current state of Lean implementation in healthcare: Literature review. *Quality Management in Healthcare*, 19(4), 319–329.

- Radnor, Z. J., Holweg, M., & Waring, J. (2012). Lean in healthcare: The unfilled promise? *Social Science & Medicine*, 74(3), 364–371.
- Stenfors-Hayes, T., Hasson, H., Augustsson, H., Hvitfeldt Forsberg, H., & von Thiele Schwarz, U. (2014). Merging occupational health, safety and health promotion with lean: An integrated systems approach (the LeanHealth Project). In C. Biron, R. J. Burke, & C. L. Cooper (Eds.), *Creating Healthy Workplaces: Stress Reduction, Improved Well-being, and Organizational Effectiveness* (pp. 281–298). Gower.
- Ulhassan, W., Westerlund, H., Thor, J., Sandahl, C., & von Thiele Schwarz, U. (2014). Does Lean implementation interact with group functioning? *Journal of Health Organization and Management*, 28(2), 196–213. <https://doi.org/10.1108/JHOM-03-2013-0065>
- von Thiele Schwarz, U., Nielsen, K. M., Stenfors-Hayes, T., & Hasson, H. (2017). Using kaizen to improve employee well-being: Results from two organizational intervention studies. *Human Relations*, 70(8), 966–993. <https://doi.org/10.1177/0018726716677071>
- Womack, J. P., & Jones, D. T. (1997). Lean thinking—Banish waste and create wealth in your corporation. *Journal of the Operational Research Society*, 48(11), 1148.
- Womack, J. P., Jones, D. T., & Roos, D. (1990). *The machine that changed the world* (p. 323). New York: Rawson Associates.

## Chapter 20

# The Dutch Healthy Healthcare Project: Antecedents and Interventions to Facilitate Sustainable Work Ability Among Healthcare Workers



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Eghe R. Osagie, Tjerry Verhoeven, Mirthe Pijnappels,  
and Samuel van Neure

**Abstract** In this chapter we present results of a study conducted in the Netherlands among 25 healthcare institutions and two employer associations to examine the effects of two different interventions to facilitate sustainable work ability of healthcare workers. In the project, positive effects were found of implementing a self-leadership intervention among healthcare workers and of creating a community of practice among Human Resource professionals to share best practices across healthcare institutions. No significant effects were found for the implementation of a leadership intervention. We describe the relevant results and lessons learned of this project in relation to Healthy Healthcare.

**Keywords** Sustainable work ability · Self-leadership · Leadership community of practice · Healthcare workers · Employer associations

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## 20.1 Introduction

The Dutch healthcare is facing many challenges in creating a Healthy Healthcare, such as great shortages of and an increasing turnover rate of healthcare staff, and at the same time a growing number of patients (Statline, 2019; see also Chap. 7 of this book). As a result, organizing a good balance between staff, patients and system requirements becomes more and more difficult. Fortunately, employer associations are collaborating intensively to share and learn from best practices or to develop joint initiatives to organize a healthier dynamic between patients, healthcare staff and systems (see also Chaps. 1, 8 and 14 in this book). In other words, to exchange knowledge on how to create a Healthy Healthcare. In this chapter we will discuss the results of one of these initiatives, labelled as the Dutch Healthy Healthcare project implemented in 25 different healthcare institutions (including N = 6866 employees) in the eastern and southern part of the Netherlands in the period between 2017 and 2018 (De Lange et al., 2020).

## 20.2 Background

In 2017 two Dutch employer associations decided to collaborate and start new intervention projects to sustain healthcare workers in their work. The focus of this project was to learn from each other on Human-Resource level that create a community of practice and to examine work-related antecedents of sustainable work ability such as work ability, internal and external employability and vitality of healthcare workers. External employability is the perceived opportunity one must keep one's job or find a new job within the organization when needed versus employment in another organization. Vitality is the energy level experienced in work (Box 20.1). The main aim was to positively affect the work ability of healthcare workers by implementing two different interventions:

1. An intervention directed at improving employees' self-leadership, with the aim to develop the competences for self-influencing own willingness and ability to work. Self-leadership refers to the degree of which people self-influence their motivation, cognitions and actual behaviour.
2. An intervention program with the aim to develop an human resource (HR) strategy for facilitating sustainable work ability as well as to develop leaders in their knowledge and skills related to sustainable work ability.

The first intervention was a bottom-up approach initiated by employees for improving sustainable work ability and the second a top-down approach initiated by the employer.

We will start with providing more information about creating a community of practice, theory of sustainable work ability (Box 22.1) and the research model behind this study (Fig. 22.1).

## 20.3 Community of Practice

Communities of practice can arise spontaneously but can also be organized for a specific purpose (Pattinson et al., 2016). For example, in the current Healthy Healthcare project a conscious decision was made to create a community of practice among Human Resource professionals. For a community of practice to emerge and flourish, there are necessary conditions at multiple levels to consider. More specifically, conditions on the individual-, organizational and community of practice or interorganizational team level.

On an individual level, participants in a community of practice must have good communication skills and a similar work ethic (Seibert, 2015). They must be willing to share knowledge and experiences and to trust other members of the community (Nicolini, Scarbrough & Gracheva, 2015). Finally, voluntary participation is essential to achieve learning (Seibert, 2015). Within the current project, HR professionals could voluntarily participate in the community and trust was created by talking openly about it.

When the community of practice is established, it is important to align as much as possible with existing habits and relationships (Nicolini et al., 2015). Participation of recognized experts or scientists also increases the chance of success of the community of practice. In the current project, scientists were therefore invited to share their expertise about the topic of sustainable work ability and healthy work design in the community of practice.

Furthermore, to create confidence among the members of the community and to share experiences and to facilitate learning, we deemed it important that the HR professionals were involved in the decision-making of the topics to be discussed during the meetings. Trust also developed better when the HR professionals participated more frequently in the different meetings across the year (Nicolini et al., 2015). The employer associations therefore payed a lot of attention to the content of the meetings, and actively invited the HR professionals to give feedback about their experiences in the implementation of and reported effects of the interventions during the project (see also paragraph 22.7 process evaluation).

### Box 20.1 Sustainable Work Ability

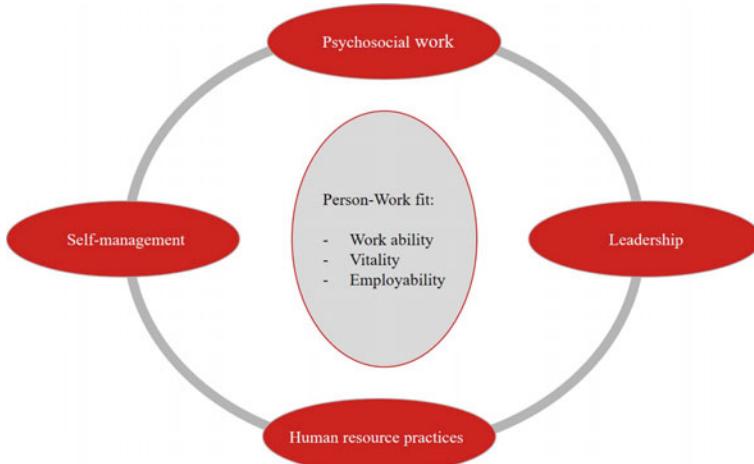
*Work ability* expresses the extent to which a worker is capable to work in the present and in the near future, taking one's own physical and mental resources as well as the requested level of work demands into account (Ilmarinen, 2006). The concept of work ability is based on the theory of Ilmarinen (also labelled as the house of work ability theory; Ilmarinen, 2006; Ilmarinen, Tuomi, & Seitsamo, 2005) in which the work ability of workers is assumed to be influenced by factors on micro-, meso- and macro-level: such as societal influences, influence of work and organisational factors as well as personal factors. In this study we have included the work-ability index (Ilmarinen, 2006; Tuomi et al., 1995), but

also included items that measure the vitality (Schaufeli & Bakker, 2004) and employability (Akkermans et al., 2012) of healthcare workers (Fig. 20.1).

## 20.4 An Integrative Perspective on Healthy Healthcare: Focusing on System and Staff-Based Measures

Based on earlier work examining antecedents of sustainable work ability (de Lange, 2019; De Lange, Kooij, & Van der Heijden, 2015; Box 22.1), we used an integrative perspective measuring the concepts of Fig. 22.1 and examined the influence of the following antecedents in relation to work ability, vitality and employability of healthcare staff members across time:

- 1 Self-management: measured by a selection of the revised self-leadership questionnaire (self- observation, goal-setting, evaluation thoughts/assumptions, natural rewards strategies, Houghton & Neck, 2002), Independent action scale (Yun, Cox, & Sims, 2006) and the Job crafting scale (crafting structural job resources, Tims, Bakker, & Derkx, 2012),
- 2 Psychosocial work characteristics: measuring emotional and mental job demands versus job resources autonomy and social support (Schmitz, Jungen, & Bokhorst, 2012);
- 3 Leadership: measured as coaching leadership (De Hoogh, Den Hartog, & Koopman, 2004);



**Fig. 20.1** Fit-model: an integrative perspective on sustainable work ability (De Lange, Kooij, & Van der Heijden, 2015)

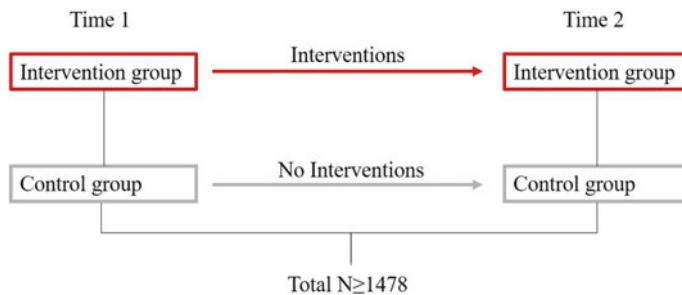
4 Human Resource Management practices (Kooij, Jansen, Dikkers, & De Lange, 2014; Ybema, Van Vuuren & Van Dam, 2020).

Our analyses revealed that across-time changes in sustainable work ability of health care staff could be explained by the influence of psychosocial work characteristics highlighted in Chaps. 3 and 10 of this book.

We found the following significant effects:

1. Work pressure: a high work pressure was negatively related to across-time changes in work ability, vitality and internal and external employability of healthcare workers. These results indicate that healthcare workers who report higher work pressure will very likely report lower work ability, as well as lower employability scores across time.
2. Self-management: Job crafting behaviour of healthcare staff to create more structural resources at work is important as this self-management skill was positively related to higher work ability, vitality and internal and external employability of healthcare workers. This self-management skill specifically refers to taking initiative for developing professional knowledge and skills.
3. Emotional workload: a high emotional workload for example emotional demands of patients was significantly related to a lower work ability, vitality and internal employability of healthcare workers across time. In other words, learning to cope with emotional demands and emotions at work is important to prevent low work outcomes and possible risk of dropouts of healthcare staff.
4. Coaching leadership was a positive predictor of vitality and external and internal employability of respondents. Leaders need to be aware of their important role in creating a healthy team of healthcare workers and in sustaining workers at work.
5. HR development practices were the only significant HR practice that was significantly and positively related to work ability, vitality and internal and external employability of healthcareworkers.
6. Person-work (PW) fit had a small positive effect in explaining positive changes in work ability, vitality and internal and external employability of healthcare workers across time.

The results demonstrate the importance of examining an integrative perspective (Fig. 22.1) at work, paying attention to work-related factors, leadership processes, self-management as well as human resource practices or interventions in context (Fig. 22.1). As all factors played a role in creating more healthy workplaces and explaining sustainable work functioning of healthcare workers concordant with Chap. 10.



**Fig. 20.2** Design of 2-wave complete panel study including intervention and control group

## 20.5 Evaluation of a Bottom-Up Versus Top-Down Intervention Program

To learn as much as possible about the effects of the self-leadership by bottom-up interventions versus the leadership top-down intervention, the project developed a quasi-experimental complete panel-design. Comparing the results of an intervention versus control group, and a process evaluation (Nielsen & Randall, 2013) among Human Resource Managers working in these 25 healthcare institutions Fig. 20.2 and Table 20.1.

## 20.6 Self-Leadership Training Intervention

The primary goal of the self-leadership intervention was to improve sustainable work ability of the participants (Van Dorssen-Boog, De Jong, Veld, & Van Vuuren, 2020). The aim was to develop self-leadership competences to proactively influence and improve their level of experienced vitality or energy at work. During a blended learning training program, participants were encouraged to reflect on their own vitality as well as on their own opportunities to self-influence their vitality. At the end of the first workshop participants set their personal goals for development, such as improving the work-life balance, making the job more enjoyable, or more general, learn to mainly focus on things that they themselves could influence.

Subsequently, participants were trained to use self-leadership strategies such as goal setting, increasing natural rewards, self-evaluation of thoughts and assumptions, positive thinking, using reminders and self-rewards as means to achieve these goals, and actually improve one's experienced vitality at work (Van Dorssen-Boog, Van Vuuren, De Jong, & Veld (in press).

The content of the training was based on exercises for improving self-leadership (Neck & Manz, 2011), proactive problem solving (Covey, 1989), positive thinking (Seligman, 2012) and strength-based development (Linley & Harrington, 2006). The training program included three group workshops and eight weekly e-learning

**Table 20.1** Results of the control group versus the intervention group from the self-leadership-intervention (bottom-up)

		Measurement 1	Measurement 2	Effect
Work ability	Total group	40.9	41.0	The work ability of the intervention group has increased significantly across time
	Intervention group	40.1	40.5	
	Control group	41.5	41.3	
Vitality	Total group	4.5	4.5	The vitality of the intervention group has increased significantly across time
	Intervention group	4.4	4.5	
	Control group	4.5	4.5	
Internal employability	Total group	3.2	3.3	The internal employability of the intervention group has increased significantly across time
	Intervention group	3.3	3.4	
	Control group	3.2	3.2	
External employability	Total group	3.1	3.4	The external employability of the intervention group has increased significantly across time
	Intervention group	3.1	3.4	
	Control group	3.2	3.3	

*Note:* In total 6866 employees were approached. Of these respondents, 39.3% (2967) filled in the questionnaire at the first measurement. At the second measurement 71.9% (2132) employees filled in the questionnaire (follow- up response rate). In this study we only included the employees that filled in both the first and the second questionnaire. A total of 1478 employees met this criterion. The average age of the employees was 46.79 ( $SD = 11.06$ ) and ranged from 18 to 85 ( $M = 46.79$ ,  $SD = 11.06$ ). Most of the respondents was female 84% ( $N = 1242$ ) and had a fixed contract (89.6%,  $N = 1325$ )

modules over a time-period of eight weeks. Six expert trainers with a background within the work and organization psychology and work and health psychology were responsible for training the groups. Participation was only on voluntary basis.

## 20.7 Leadership Program for Development of Sustainable Work Ability

The leadership program was aimed at: (a) supporting leaders and HR professionals in the development of a general vision and HR strategy on sustainable work ability for their organization, and (b) to train leaders in how to develop and have a clear dialogue with employees around the theme of sustainable workability. On the basis

of the assumption that organisations will differ in their phase of development and their needs for improving sustainable work ability, organisations were allowed to adjust the development program to their own specific needs for improvement or development that resulted in different intervention programs and planning across the health care institutions.

## 20.8 Results Discussed with Community of Practice

### 20.8.1 Quantitative Analyses

Our study revealed significant across-time effects of the self-leadership training intervention or bottom-up approach in improving the sustainable work ability in terms of work ability, internal employability and vitality of healthcare workers participating in the intervention. Though no effects were found for the control group (Fig. 22.3–22.6 and Table 22.1) across time, further analyses revealed that this change was mainly due by the effect that the training had in improving the self-observation of the participants across time. Unfortunately, the top-down leadership intervention did not result in significant across-time differences in the intervention versus control group.

### 20.8.2 Process Evaluation

For the process evaluation 25 HR managers representing the healthcare institutions in the community of practice filled in a survey and attended a focus group. The results of this survey and focus group revealed that all participating HR managers and/or project managers were positive about the participation in the project and saw more or less significant progress within their organization concerning the development of sustainable work ability among healthcare workers. Nonetheless, the HR professionals as well as the intervention partners formulated different recommendations for increasing the impact of both the self-leadership versus the leadership intervention. More specifically, they suggested that by providing:

1. a clear communication strategy including personal communication to not only inform people, but also encourage employees and leaders to participate in interventions, more motivation can be created for the interventions among healthcare professionals. This is especially important for interventions which are based on free choice participation, such as the self-leadership training;
2. management support, HR professionals can better translate the interventions like the self-leadership training into existing HR policies and practices;
3. sufficient finances and personnel for project management can improve the implementation process of interventions, and finally;

4. tailor-made interventions allow to better adjust the intervention to the different needs and preferences of a heterogenous group of healthcare workers.

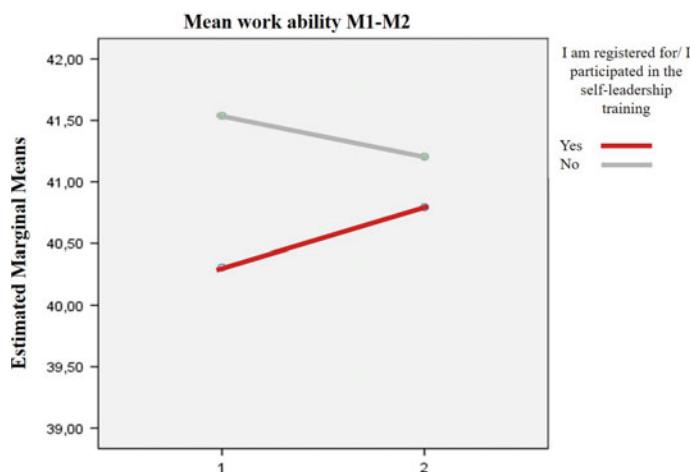
## 20.9 Conclusions

We discussed the implications of the project “Healthy Healthcare” in the Netherlands in improving the knowledge on occupational health and sustainable work ability among healthcare institutions.

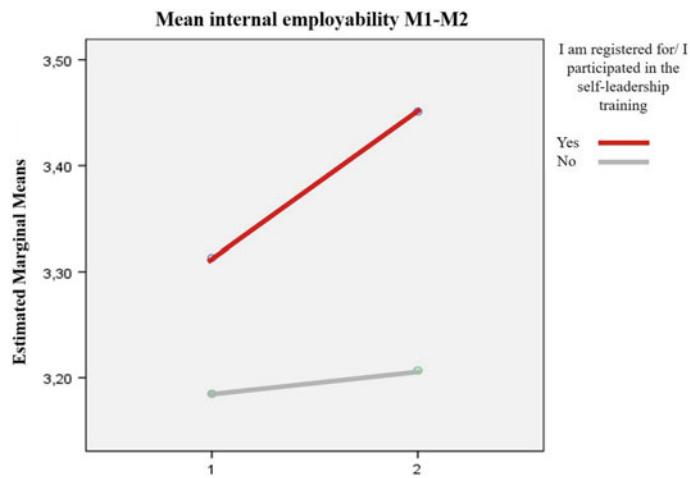
We realized that it is important to pay attention to different levels including individual, team and administration of the organisational system in healthcare, which resulted in an important HR community of practice to share knowledge and integrate the knowledge in existing HR policies.

Important implications for future studies in healthcare settings and practical implementation are: (i) that a healthy work design is an important predictor of sustainable work ability of healthcare workers by preventing too high level of job demands, and making sure that there are enough job resources and social support of leaders at work, (ii) workers need to be trained in their self-leadership skills at work to make them more sustainable at work, (iii) the visibility and use of human resource practices for prevention at work is important in relation to creating Healthy Healthcare.

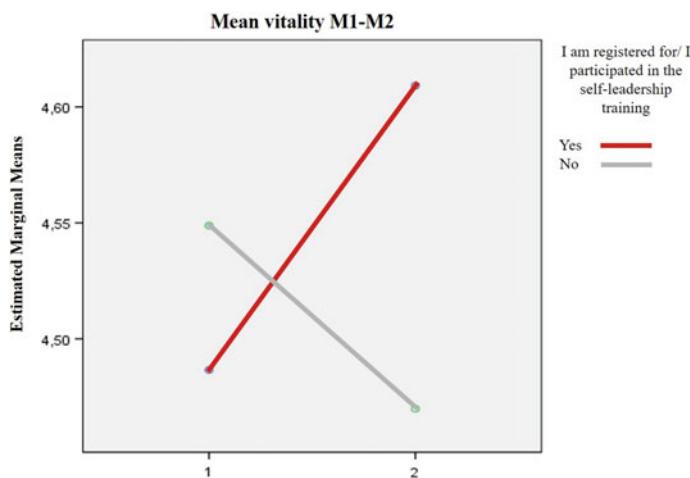
An important outcome of this project was that by sharing results across healthcare institutions a community of practice can be created including HR professionals of different healthcare institutions (see Nicolini, Scarbrough, & Gracheva, 2015), resulting in a higher level of reflective practice and learning outcomes about prevention and sustainable work ability in healthcare (Figs. 20.3, 20.4, 20.5 and 20.6).



**Fig. 20.3** Results of work ability in the experimental versus control group for the self-leadership training



**Fig. 20.4** Results of internal employability in the experimental versus control group for the self-leadership training



**Fig. 20.5** Results of vitality in the experimental versus control group for the self-leadership training



**Fig. 20.6** Process evaluation topics *Note:* This project was made possible by: WGV zorg en welzijn ([www.wgvzorgenwelzijn.nl](http://www.wgvzorgenwelzijn.nl)), transvorm ([www.transvorm.org](http://www.transvorm.org)), cnv ([www.cnv.nl](http://www.cnv.nl)) and financed by a grant provided by the European Social Fund: <https://ec.europa.eu/esf/home.jsp>

## References

- Akkermans, J., Brenninkmeijer, V., Huibers, M., & Blonk, R. W. (2012). Competencies for the contemporary career: Development and preliminary validation of the Career Competencies questionnaire. *Journal of Career Development*, 40, 245–267. <https://doi.org/10.1177/0894845312467501>
- Covey, (1989). *The seven habits of highly effective people*. New York: Simon & Schuster.
- De Lange, A. H., Kooij, D. T. A. M., & Van der Heijden, B. I. J. M. (2015). Human resource management and sustainability at work across the lifespan: An integrative perspective. In L. Finkelstein, D. Truxillo, F. Fraccaroli, & R. Kanfer (Eds.), *Facing the challenges of a multi-age workforce: A use-inspired approach* (pp. 50–79). New York: Routledge.
- De Lange, A. H., Pak, K., van Dam, K., Christensen, M., Løvseth, L. T., Osagie, E. R., et al. (2020). An Open Time Perspective and Social Support to Sustain in Healthcare Work: Results of a two-wave Complete Panel Study. *Frontiers of Psychology*. <https://doi.org/10.3389/fpsyg.2020.01308>
- De Lange, A. H. (2019). *Succesvol ouder worden op het werk. Psychologische perspectieven op zelfmanagement en duurzame inzetbaarheid van werkenden tijdens de levensloop*. Oratie Open Universiteit. Bureau Ketel: Heerlen. ISBN/EAN: 978-94-92739-53-7
- De Hoogh, A. H., den Hartog, D. N., & Koopman, P. L. (2004). De ontwikkeling van de CLIO: Een vragenlijst voor charismatisch leiderschap in organisaties. *Gedrag en Organisatie*.
- Houghton, J. D., & Neck, C. P. (2002). The revised self-leadership questionnaire: Testing a hierarchical factor structure for self-leadership. *Journal of Managerial Psychology*, 17(8), 672–691.
- Ilmarinen, J. (2006). Towards a longer and better working life: A challenge of work force ageing. *La Medicina Del Lavoro*, 97, 143–147.
- Ilmarinen, J., Tuomi K., & Seitsamo J. (2005). New dimension of work ability. In G. Costa, W. J. A. Goedhard, & J. Ilmarinen (Eds.). *Assessment and Promotion of Work Ability, Health and Well-Being of Ageing Workers* (pp. 3–7). International Congress Series. No. 1280. Amsterdam: Elsevier.
- Kooij, D. T., Jansen, P. G., Dikkers, J. S., Lange de, A. H. (2014). Managing aging workers: A mixed methods study on bundles of HR practices for aging workers. *The International Journal of Human Resource Management*, 25(15), 2192–2212
- Linley, P. A., & Harrington, S. (2006). *Playing to your strengths. The Psychologist*, 19 (2), 86–89.
- Neck & Manz (2011). *Mastering self-leadership: Empowering yourself for personal excellence* (6th edn.). New Jersey: Pearson.
- Nielsen, K., & Randall, R. (2013). Opening the black box: Presenting a model for evaluating organizational-level interventions. *European Journal of Work and Organizational Psychology*, 22(5), 601–617. <https://doi.org/10.1080/1359432x.2012.690556>

- Nicolini, D., Scarbrough, H., Gracheva, J. (2015). Communities of practice and situated learning in healthcare. In F. Ewan, M. Kathleen, & R. P. Anne, (Eds.) *Oxford Handbook of Health Care Management*. Oxford: OUP. ISBN 978019870510
- Pattinson, S., Preece, D., & Dawson, P. (2016). In search of innovative capabilities of communities of practice: A systematic review and typology for future research. *Management Learning*, 47(5), 506–524.
- StatLine. (2019). <https://azwstatline.cbs.nl/#/AZW/nl/dataset/24049NED/table?ts=1566384949127>. Accessed on 22-09-2019.
- Seibert, S. (2015). The meaning of a healthcare community of practice. *Nursing Forum*, 50, 69–74.
- Schmitz, R. M. J., Jungen, M. J. H., & Bokhorst, M. (2012). *Uitgebreide toelichting van het meetinstrument: VBBA*. Amsterdam: SKB Vragenlijst Service.
- Seligman, M. E. P. (2012). *Flourish: A visionary new understanding of happiness and well-being*. New York: Hodder & Stoughton.
- Schaufeli, W. B., & Bakker, A. B. (2004). Bevlogenheid: Een begrip gemeten. *Gedrag & Organisatie*, 17(2), 89–112.
- Tuomi, K., Ilmarinen, J., Jahkola, A., Katajärinne, L., & Tulkki, A. (1995). *Work Ability Index – Arbeitsbewältigungsindex*. Helsinki: Finnish Institute of Occupational Health.
- Tims, M., Bakker, A. B., & Derkx, D. (2012). Development and validation of the job crafting scale. *Journal of Vocational Behavior*, 80(1), 173–186.
- Van Dorssen-Boog, P., Van Vuuren, T., De Jong, J. & Veld, M. (in press). Facilitating self-determination: The impact of a self-leadership-intervention on intrinsic motivation, performance, and health.
- Van Dorssen-Boog, P., De Jong, J., Veld, M. & Van Vuuren, T., (2020). Self-leadership among healthcare workers: a mediator for the effects of job autonomy on work engagement and health. *Frontiers of Psychology*, 16 July. <https://doi.org/10.3389/fpsyg.2020.01420>
- Ybema, J. F., Van Vuuren, T., & Van Dam, K. (2020). Human Resource Practices for Enhancing Sustainable Employability: Implementation. *Use, and Outcomes, International Journal of Human Resource Management*, 31(7), 881–907. <https://doi.org/10.1080/09585192.2017.1387865>
- Yun, S., Cox, J., & Sims, H. P., Jr. (2006). The forgotten follower: A contingency model of leadership and follower self-leadership. *Journal of Managerial Psychology*, 21(4), 374–388. <https://doi.org/10.1108/02683940610663141>

# **Chapter 21**

## **Healthy Healthcare Starts with Energized and Vital Professionals: The Human Factor at Work. A Case Study at Radboud University Medical Center Nijmegen**



**Peter Loozen**

**Abstract** This essay exposes an indispensable element for explorers and travellers on the road towards Healthy Healthcare: the human factor at work. The text provides some theoretical backgrounds, but mainly gives a comprehensive description of how the Radboud university medical center in the Netherlands invested in creating maximum vitality in an environment where workers feel energized and motivated. The Dutch Radboud university medical center (11,000 workers) introduced an innovative, person-oriented approach that supports healthy choices by using four perspectives. These are the perspectives from the individual worker, the supervisor, the team and the whole organization. Thus, a rich coexistence of self-direction and supportive group- and organizational interference starts to boost customization, leading to new solutions on different levels. A must read for those who believe vitality and well-being in large organizations is a multidimensional concept rather than an individual responsibility.

**Keywords** Human factor at work · Vitality · Radboud university medical center · Personalized and innovative

### **Box 21.1**

“Working in healthcare means that you have to deliver peak performance every day. Our healthcare professionals, researchers, and lecturers are always willing to go above and beyond what is expected. However, this enthusiasm also has its limits. After all, our sector features a stressful workload and a growing number of vacancies. We are constantly faced with the necessary changes that come with innovation, digitization, and regulation. Furthermore, we work longer hours than most, often combined with informal care outside of the workplace. As a result, absenteeism in the healthcare is higher than in other sectors. These are the challenges we are currently facing. At Radboud university medical

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center in Nijmegen, over 11,000 people work in healthcare, education, and research. It is essential that we keep a close eye on our patients, but we also need to look out for each other as colleagues and staff. It is for this reason that we began asking ourselves the following questions several years ago: How do we retain the human factor at work? Are we still seeing the people behind the professionals?

*Our greatest asset is the people who provide the healthcare. Excellent healthcare requires healthy professionals. In other words: how can we ensure vitality within our organization and create an environment where people feel energized and motivated?"*

—P Loozen, Senior policy advisor HR

## 21.1 The Human Factor

A “one size fits all” approach or Human resource strategy does not fit our diverse group of healthcare staff. After all, each generation and staff member have different needs. An older employee with three years left until retirement is focused on working towards their pension at the right speed, while a young physician training in a specialization might still be learning how to balance their long workdays alongside a new family. A nurse who is also an informal caregiver faces challenges that are entirely different from those of a supervisor who juggles the schedules of 50 colleagues every week and must ensure that everyone is comfortable and vital in the workplace.

To ensure that employees thrive at work and enjoy it, all these levels or pillars need to be in harmony or balance (just like the Healthy healthcare concept suggests in Chap. 1 of this book). To ensure workers vitality some issues can be resolved individually, while others might require the involvement of a manager, a team that readily engages in discussion, the possibility for flexibility in scheduling work, and an organization that understands the importance of the human factor.

## 21.2 Listening

Focusing on workers vitality we initially started by listening instead of talking. The Executive Board took the initiative to speak with employees. What do you need as an individual? What about a team? This was where our search began. We approached the process from four perspectives:

- the individual,
- the supervisor,
- the team,

- and the organization.

The talks that were held during this phase revealed the places where we should start looking and these led us to ideas and solutions. Sometimes the HR department initiated them, but often, the answers came from the professionals themselves. One example of this involved our colleagues who work in the night shifts in the ICU. They wanted to improve their fitness during these night shifts and wanted to avoid physical problems, such as feeling bloated, diarrhoea, and headaches they even sometimes experienced. They came up with the idea of taking short, refreshing powernaps during the night.

As an organization, we supported this idea by setting up rooms with relaxation chairs and dimmed lighting. We also adjusted the food provided in order to prevent a glucose spike during the night. Finally, everyone was given orange-tinted glasses before they left to go home. These glasses prevent melatonin levels from declining because of the daylight. This allows the night-shift employees to fall asleep more quickly and deeply once they arrive home. Not only does it improve their vitality, but we are also convinced that it enables them to provide better healthcare. Less fatigue means a lower risk of error.

### 21.3 Fit Healthcare Professionals

Another example is the Healthy Professionals program, an initiative started by the head of the Surgery department. People work in small teams to increase their stamina. How do you handle your energy and recovery time? The secret lies in the combination of adequate exercise, healthy food, and personal/professional development. However, attention is also given to spirituality and the balance between the body and mind. This is not a one-time meeting full of well-intentioned recommendations. It is a six-month program that alternates between training days and individual coaching in order to enable participants to build the habits of a healthy lifestyle. The goal is to take action to achieve the things that you want. As a participant in the program, you will be given three invitations that you can share with your colleagues. This is not an imposed, mandatory program: the decision to participate is entirely up to the staff member. Intrinsic motivation is a compulsory for behavioural change.

Over 400 people have since taken part in the program. The goal is 3000. By doing this, we hope that people feel fitter, more energized and that absenteeism drops in a sector with a rate 5% higher than average. Not only does such a program have a positive impact on the participants, but it also benefits their partners and families, which is in keeping with our desire, as a university medical center, to have an impact on society. Not to mention that it also helps our patients. First and foremost, we anticipate that employees will be healthier and will, therefore, call in sick less frequently. We also believe that a nurse or physician who makes recommendations for a healthy lifestyle based in their own experiences and enthusiasm will be more

convincing. After all, healthcare is not only about curing illnesses: the goal is to prevent them.

## 21.4 A Broad Palette

The power behind working on vitality lies in the level of customization. Solutions must be integrated seamlessly based on the needs of an individual employee or team. The question is always the same:

“What do you need?” Over time, we have developed a broad palette of options that can be used to support people: from the “generational meetings” and self-scheduling options for staff members to a curriculum for physicians in residence (AIOS) on topics such as the doctors of the future, leadership, healthcare expenses, and balance. This curriculum was initiated by the AIOS themselves. An initiative like this is valuable and effective, because it was devised by the target group. Another example is the peer support that the medical specialists offer each other. A pulmonologist and neurologist took the initiative to set up discussions in order to assist other specialists in dealing with pressure, making choices, or rediscovering job satisfaction.

We also organize a week dedicated to vitality every year. Several workshops and lectures are provided during this week. Vitality week is also an excellent time to test our ideas: is a workshop meeting a specific demand? The workshop on menopausal symptoms drew so many attendees that we made it a permanent part of our program. Vitality is even evident in our buildings. We encourage people to take the stairs. At the top of the steps, you can see how many calories you burned by taking the stairs instead of the elevator. It is vitality with a playful spin.

One of the four vitality perspectives is that of the supervisor. They play a key role in our organization. Supervisors are responsible to continuously maintain a balance between healthcare consistency, education and research, team health, and operational management. As such, we have developed a module specifically for supervisors. How can you create win-win-win situations? These are solutions that are not only good for the employee and supervisor, but also for the whole team.

These types of ideas require the investment of time and money. At Radboud university medical center, we have therefore implemented several initiatives in place to improve the quality of healthcare, education, and research. For example, we have “Hotspots”, the vehicles for social innovation. The concept behind these hotspots is simple: the people on the work floor often know best when it comes to how patient care, education, and research can be improved. We do not bog down these ideas with lists of criteria that they have to meet, which means that they are given a fair chance. Our approval process is approachable and accessible. We feel that it is important for ideas to be applicable to other teams and departments, and we encourage working in a team. The team that submits the idea will receive financial or people-based support in developing it. In this way, Hotspots reflect how we operate at Radboud university medical center: we promote ownership by holding people accountable, while also providing assistance.

## 21.5 Personalized Healthcare

As Radboud university medical center, we have clear goals for the future. We aim to lead the pack in the development of sustainable, innovative, and affordable healthcare: “to have a significant impact on healthcare”. The pillars that support this strategy are founded in innovation, personalization and working together in our networks regardless of whether it involves healthcare, education, or research. In terms of healthcare, this means that the patient and their quality of life serve as the basis for all our decisions.

Our goal is to truly get to know the patient. What are their likes and dislikes? What are their unique circumstances? Simply put, we want to know the person, not only the patient. It is only logical that personalized healthcare would lay the groundwork for individualized attention for our 11,000 employees. Care is typically customized at a university medical center. Our employees deserve the same attention that we give to our patients.

Vitality can sometimes be a difficult topic. Healthcare costs are often heavily scrutinized. It is becoming increasingly difficult to keep healthcare affordable, which in turn makes it less accessible. For instance, what exactly does an investment into the power napping area in ICU or the Healthy Professionals program really yield in concrete terms? Our next step is to make this measurable, so that we are standing on solid ground when making these decisions. Nonetheless, our investment in vitality will never come into question. This is an ongoing project without a deadline. At Radboud university medical center, vitality is part of our Human Resource strategy.

We strive to provide exceptional healthcare to our patients, day in and day out. We want to improve diagnoses, treatment methods, and healthcare through our research and train a new generation of doctors and nurses through our education. That can only be accomplished with people who feel challenged and motivated, who love their work, and who strive to do their best each day. By seeing, listening to, and helping each other, we can create the space for the human factor in the workplace.

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# Chapter 22

## Outpatient Clinic Design in Israel: Comparative Evaluation by Digital Simulation



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Yehuda E. Kalay, and Jacob Yahav

**Abstract** The case study from Israel tested digital simulations as a communication tool between the stakeholders in co-design processes to visualise and evaluate the design outcomes to support hospital organisational practices, increases efficiency of operations, and improves the quality of care. The case study compared two designs of ophthalmology outpatient clinics in two different hospitals in Israel and found that the digital simulations enabled stakeholders to communicate practical knowledge and to discuss the trade-offs between the stakeholder's objectives. The process identified different conceptions of management, relationships between doctors and nurses, design team dynamics, and discrepancy between the architect and the client. The process contributed to the validation or reconsideration of the design team assumptions regarding the outcomes of the chosen model of care and supported the development of innovative solutions to obtain efficient organisational practices optimal for workers and quality of care.

**Keywords** Healthcare design · Co-design process · Digital simulation · Evaluation · Quality of care

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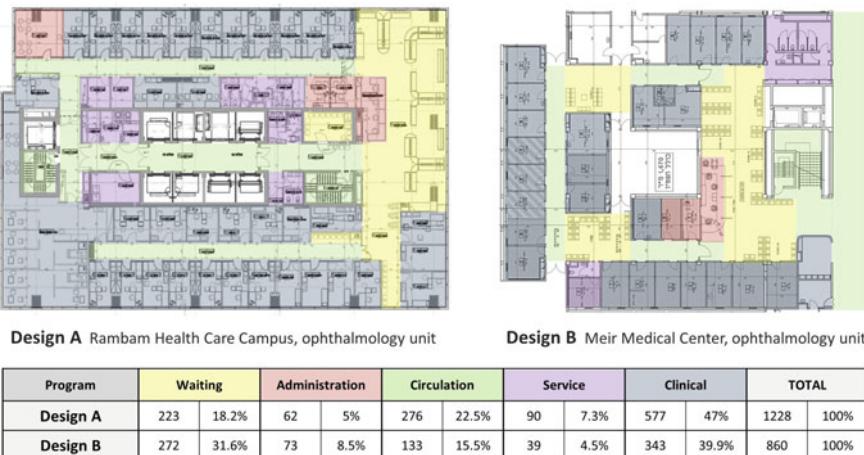
## 22.1 Introduction

Healthy Healthcare environments are designed to support hospital organisational practices, increase efficiency of operations, and improve the quality of care. This process is often subjected to limitations in communication as design team members have different disciplinary focus, skills and experiences (Pilosof, Schaumann, Sopher, Yahav, & Kalay, 2019). Co-design processes aim to enhance collaboration between architects, hospital stakeholders, the clinical team and end-users, to ensure continuous evaluation of a fit between the desired model of care and the architectural design (Cawood et al., 2016; Joseph, Bosch, Frederick, & Jackson, 2007).

The current case-study presents digital simulations as a communication tool between the stakeholders to integrate knowledge of different professional practices, and to continuously visualise and evaluate the design outcomes during the design process to obtain a hospital design that supports the organisation of healthcare services, their workforce health and wellbeing, and a high quality of care (Peavey, Zoss, & Watkins, 2012; Schaumann, Pilosof, Sopher, Yahav, & Kalay, 2019). We present ophthalmology outpatient clinics designed in two different hospitals in Israel during the years 2016–2019 as examples on how simulations can be applied in co-process healthcare design to represent differences in clinical work, organisational practice and perspectives on quality of care. The first project was designed as part of a new building in Rambam Health Care Campus in Haifa, and the second is an extension of the existing outpatient clinic in Meir Medical Center in Kfar Saba.

## 22.2 Different Perspectives on Quality of Care in Outpatient Clinics

In both cases the design teams aimed to increase the efficiency of the staff and the satisfaction of the patients, but their approach was significantly different due to different perspectives on quality of care. Although both projects have a similar architectural program (Fig. 22.1), the outpatient ophthalmology clinic at the Rambam Health Care Campus (Design A) was designed with a clinical perspective of a *process-centred* model of care, aiming to optimise the work processes of the healthcare workers. The outpatient ophthalmology clinic at the Meir Medical Center (Design B) was designed to advance a *patient-centred* model of care, aiming to optimise the patient experience. In Design A, the physicians head of clinic wanted to increase the productivity of the clinic by creating a quiet and stress-free environment for the doctors. Accordingly, the treatment area should be kept free of patients waiting in the corridors to avoid staff-visitor interactions and potential disruptions of clinical procedures. In Design B, the head nurse of the clinic, aimed to increase the productivity by locating waiting areas as close as possible to the treatment rooms to reduce the distance patients had to walk and to increase staff overview of the patients. The design



**Fig. 22.1** Architectural drawings of the two designs with comparative area calculations. *Source* Design A: Mochly-Eldar Architects, 2016; Design B: Faten Kattouf Architects, 2016

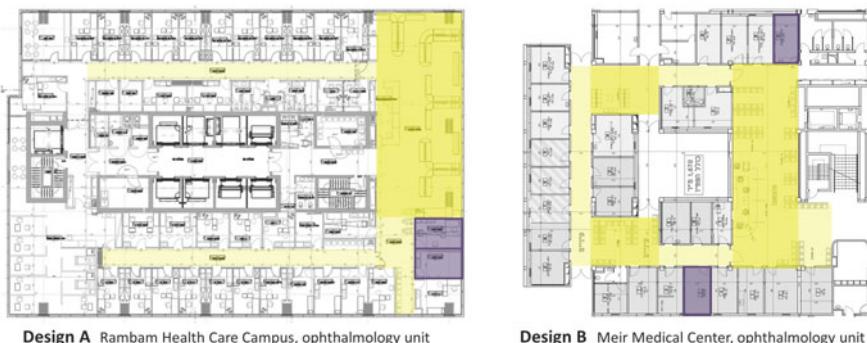
team believed this approach would increase patient's satisfaction by enhancing their sense of control.

## 22.3 Different Architectural Design Solutions

Each approach led to a different architectural design solution. The main difference is apparent in the relation between the treatment area and the waiting area. In Design A, the waiting area is centralized and separated from the treatment area by closed doors and two isolated corridors leading to the treatment rooms. In Design B, the waiting area is decentralised and is spread out in the treatment area in three different locations close to the treatment rooms (Fig. 22.2). Another difference is the location of the two nurse rooms. In Design A, the two rooms are adjacent to each other to enhance collaboration between the two nurses, and in Design B, the two rooms are located in separate areas to improve clinical efficiency (Fig. 22.2).

## 22.4 Simulating Professional Practices

The case study included simulation of the future performance of the two clinics to evaluate potential outcomes of the design in comparison to the original design objectives and goals. The simulation method was developed to represent the clinical processes taking place at the outpatient clinics during a full, busy day of operations. The simulations present a diversity of narratives that integrate the clinics'



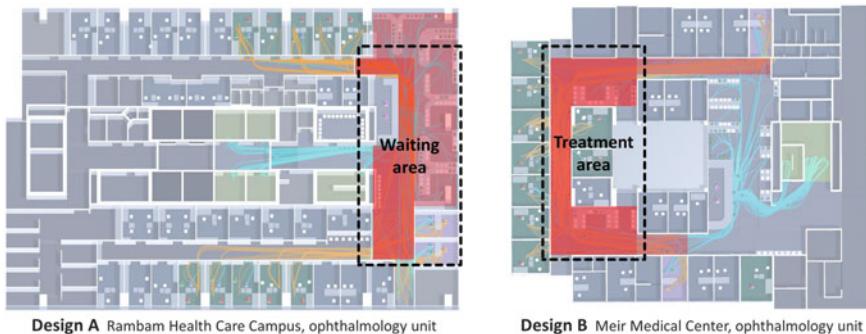
**Fig. 22.2** Architectural layouts of the ophthalmology outpatient units with centralised waiting area and nurse rooms (Design A) and decentralised waiting areas and nurse rooms (Design B). *Source* Design A: Mochly-Eldar Architects, 2016; Design B: Faten Kattouf Architects, 2016

spatial environment, its procedures, and users, including patients, staff, and family members. Based on interviews and observations in the existing outpatient clinics, patterns of behaviour of the staff and the patients were defined and implemented in the simulation model (Schaumann et al., 2019). Collaboration with the design teams constituting of the architects, medical managers, head nurses, administrative directors, project managers, and consultants was crucial for the definition of goals and objectives, collecting data, key performance indicators (KPI), benchmarks, weights for evaluation, and an expert validation of the results. The collaboration was also beneficial for evaluating the contribution of the system to the design and decision-making processes, and for receiving feedback on the evaluation process and future implications of the research (Pilosof, 2019).

## 22.5 Evaluation of the Clinic's Future Performance

The process of evaluation by simulation demonstrates the impact of the architectural design on the future performance of the clinics. The results, illustrated by spatial data maps, visualised the organisation of healthcare services by expected use of the space and the influence of the locations of waiting areas and the nurse rooms' on quality of care by the clinics' performance, patients' waiting time, staff walking distances, density, noise levels, and potential for interactions between staff and patients.

To evaluate the design alternatives, we compared the simulation results with each clinics' objectives and goals based on a benchmark for each KPI included in the simulation. The KPI benchmarks are based on the client's vision and goals, professional standards, norms and regulations, evidence from other hospitals, or expert experience. They can be general for all ophthalmology clinics or specific based on the clinics' social and cultural context. The specified benchmarks allow the evaluator



**Fig. 22.3** Areas of intensity in the ophthalmology outpatient clinics

to make changes in the system and evaluate the results in comparison to different standards or different stakeholders' objectives.

## 22.6 Identifying Challenges for Healthcare Delivery in the Design

The analysis of the simulation results in both numerical and visual output demonstrates the implications of the design on how well the ophthalmology clinics will perform in general and where and when there might be challenges in their performance. For example, the perceived density and social interactions illustrations on the architectural drawings demonstrate a potential bottleneck in different areas in the two ophthalmology clinics (Fig. 22.3). In Design A, the densest zones with the most social interactions between nurses and patients are in the central waiting area near the entrance to the closed clinical corridors. In Design B, the densest zones with the most social interactions are in the treatment area near the doctors' rooms. This spatial difference shows the major implications of the organisational practices and its objectives for efficiency of operations. While the numerical results of density, waiting times, and interactions might be similar in the two design alternatives, the spatial evaluation of the results leads to significantly different conclusions.

## 22.7 Participatory Co-design Processes to Obtain Healthy Healthcare

The results of the simulations were presented to the design teams in both hospitals, including the hospital CEO, clinic manager, head nurse, administration managers, and architects. The response was highly positive. Both teams shared new insights on

how the proposed design will affect the organisation of the clinic, their workers and quality of care for patients.

In both cases, the evaluation by simulation had a significant impact on the design process and the management decisions (Pilosof, 2019). The presentation made the design team reconsider their approach and decision regarding the division of the clinic to two operation zones, centralised versus decentralised waiting area, location of the nurses, clinical processes, and staff capacity. They realised that their design objectives reflected their professional background as leaders, with the objectives of the doctors in Design A, and the objectives of the nurses in Design B, not considering each other's professional objectives in their respective design. Accordingly, evaluation brought up critical questions: whose work is more important and should not be interrupted—that of the doctors or nurses? What should be the main goal of the design—staff efficiency or patient experience? How will each design alternative impact the health and wellbeing of the different staff members?

The evaluation enhanced the communication between the multi-disciplinary team members and advanced the discussion on possible optimisation of the design to obtain interdisciplinary goal of Healthy Healthcare. The design process enabled stakeholders to communicate practical knowledge, to consider complexities abstracted in the simulation and to discuss the trade-offs between the stakeholder's objectives. The process identified different conceptions of management, relationships between doctors and nurses, design team dynamics, and discrepancy between the architect and the client. The process contributed to the validation or reconsideration of the design team assumptions regarding the outcomes of the chosen model of care on the quality of care and supported the development of innovative solutions to obtain efficient organisational practices optimal for workers and quality of care.

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## References

- Cawood, T., Saunders, E., Drennan, C., Cross, N., Nicholl, D., Kenny, A., & Laing, R. (2016). Creating the optimal workspace for hospital staff using human centred design. *Internal Medicine Journal*, 46(7), 840–845. <https://doi.org/10.1111/imj.13124>
- Joseph, A., Bosch, S., Frederick, C., & Jackson, M. (2007). Researching the effectiveness of a participatory evidence-based design process. *Healthcare Design*, 7(3), 8–12.
- Peavey, E. K., Zoss, J., & Watkins, N. (2012). Simulation and mock-up research methods to enhance design decision making. *Health Environments Research & Design Journal*, 5(3). <https://doi.org/10.1177/193758671200500313>
- Pilosof, N. P. (2019). *Planning for change: Evaluation of hospital design strategies* (Doctoral dissertation). Technion—Israel Institute of Technology.
- Pilosof, N. P., Schaumann, D., Sopher, H., Yahav, J., & Kalay, Y. E. (2019). Models of care: Comparative evaluation of ophthalmology outpatient clinic design by digital simulation. In *Europen healthcare design 2019: Blurring the boundaries: Designing place-based health system*, 90.

- Retrieved from <https://www.salus.global/article-show/models-of-care-comparative-evaluation-of-ophthalmology-outpatient-clinic-design-by-digital-simulation>
- Schaumann, D., Pilosof, N. P., Sopher, H., Yahav, J., & Kalay, Y. E. (2019). Simulating multi-agent narratives for pre-occupancy evaluation of architectural designs. *Automation in Construction*, 106. <https://doi.org/10.1016/j.autcon.2019.102896>

# Chapter 23

## Evidence-based Design in Action—Dublin Methodist Hospital, Ohio, USA



Johan Van der Zwart

**Abstract** This case study of the Evidence-Based Design process of the Dublin Methodist Hospital in Ohio USA describes how a conscious design process in which the client continuously asks for the best available evidence for each important design decision created a hospital that fits architecturally and culturally into the community; reduces feelings of fear and intimidation on arrival; provides a clear and simple wayfinding system and; empowers patients and family with a sense of control in a restorative environment.

**Keywords** Evidence-based Design · Healthcare design · Hospital architecture · Co-design process · Evaluation · Quality of care

### 23.1 Introduction

Ohio Health’s Dublin Methodist Hospital is an example of an Evidence-Based Design project. The CEO of the hospital challenged the project team continuously throughout the planning and design process to use available key research findings, national benchmarks and best practices. This approach resulted in a design process that includes several studies about safety, the patient and family experience, work processes, culture and return on investment (CHD, 2018).

The goal was to change the way healthcare services are delivered from a nurse’s perspective, to improve the patient experience and efficiency by parallel designing the physical environment and healthcare practices. OhioHealth’s core organisational values—caring for patients, medically, spiritually and emotional; respecting the family of the patients and staff; encouraging and promoting education for our staff, patients and community and; promoting a close-knit team approach to care—were summarised in the project’s mission statement: ‘*to create a community hospital that revolutionises healthcare delivery by optimising the medical, spiritual and emotional wellbeing of patients, family and staff*’ (Malkin, 2008). Areas of interest during the

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project included how innovative design could improve the quality of healthcare in terms of safety and recovery times, attract patients, enhance operational efficiency, recruit and retain staff, and increase philanthropic, community, and corporate support (Cama, Herbert, Mare, & Zimring, 2007). This EBD project created a hospital that fits architecturally and culturally into the community; reduces feelings of fear and intimidation on arrival; provides a clear and simple wayfinding system and; empowers patients and family with a sense of control in a restorative environment (CHD, 2018).

## **23.2 Evidence-Based Design and Center for Health Design Pebble Project**

When Dublin Methodist opened in 2008, it was considered one of the first hospitals that incorporated EBD comprehensively. From the start, the project team shared a belief that evidence-based design could improve the emotional and spiritual well-being of users—both patients and professionals—as much as it could improve operational efficiency, productivity and the quality of clinical care (Cama et al., 2007). This project followed all eight steps of the Evidence-based design process, as defined by the Centre for Health Design (CHD), including: (1) define EBD goals and objectives; (2) find sources for relevant evidence; (3) critically interpret relevant evidence; (4) create and innovate EBD concepts; (5) develop hypothesis; (6) collect baseline performance measures; (7) monitor design and construction; (8) measure post occupancy results (CHD, 2018).

Dublin Methodist Hospital is one of the Pebble projects supported by the CHD, which implies that the project team set on beforehand hypotheses on how the design will increase healthcare outcomes, and measure three years after the building is taken into use if and how the architectural design contributes to obtaining the pre-set healthcare outcomes. As Pebble project, the project team has access to the knowledge and evidence that is available within the CHD, who act in this process as a creator of knowledge, research and support by defining the research program, including the involvement of leading EBD researchers in setting the research agenda and evaluating the outcomes. The research carried out at by the project team included: documenting the planning process; developing the business case on how EBD measures reduces hospital costs; improving patient and family experiences, work processes and organisational culture; increase safety and risk reduction (Malkin, 2008).

## **23.3 Organisational Practices**

From the beginning, the project team was driven by a cultural mission to create a hospital that would revolutionise healthcare delivery. As a new hospital organisation in a town where there was no hospital before, there was no existing culture neither

existing organisational practices. To identify and react to the specific needs, identity, and culture of the people seeking treatment, visiting, or working in the hospital, the project team was challenged to think outside the box and take measured risks during the planning and design process (Cama et al., 2007). Led by a CEO with expansive vision, the planning process started with cultural research undertaken by social scientists to create a vision of a new culture (Malkin, 2008). For this purpose, the overall OhioHealth organisation was observed on the culture of professional practices by evaluating current buildings and cultures of organisational practices in the hospitals, experience-mapping and walk-through. In addition, advisory groups were created from within the OhioHealth organisation, composed of leaders in their respective areas of expertise, to re-examine clinical and support functions (Cama et al., 2007). These professional ‘champions’ from different disciplines replaced the traditional user-groups, collecting professional input of people who were not going to work in the new hospital building. As a consequence, these super-user groups delivered the input purely from their professional background, without the organisational politicising of power. This resulted in a more professional focused input in the design process.

The employees of the new hospital were selected based on their willingness to work in the redesigned organisational practices and workplace architecture. During the selection process of the new employees, the building was used as a tour-guide in which the future healthcare workers received a walk-through to explain and visualise the new way of working. Even though the nurses were selected to their commitment to work in the designed culture, some redesigned working procedures did not work in practice as expected. This shows that even within this conscious EBD design process, some architectural design solutions in the new wards and patient rooms contradicted the performance capabilities of the healthcare workers as defined by the boundaries of professional practices.

### 23.4 Patient and Staff Health and Wellbeing

Building on EBD research on nature as therapeutic intervention, Dublin Methodist Hospital has 13 gardens and an extensive collection of original colour photographs of nature images that were created for the project (Malkin, 2008). One of the key design aspects found through research is the use of natural daylight and sunlight to reduce depression, shorten length of stay and lower the amount of pain medication (Herbert, 2011). Other important design interventions related to patient and staff health and wellbeing are areas for family presence and participation, areas for staff support and retreat, separation between public and service, patient and visitor orientation and wayfinding capabilities (Herbert, 2011).

The ward was designed without central nurse stations, but with decentralised desks to facilitate interaction between clinicians, caregivers, patients and families, to influence work effectiveness in terms of minimising walking distances to maximise patient care time (Herbert, 2011). Therefore, the unit layout and decentralised nursing stations

have been thoughtfully designed to improve patient visibility and time efficiency (Herbert, 2011) with the intention that nurses are a significant amount of time in the patients' rooms.

## 23.5 Quality of Care

Building upon the research about safety, all rooms are standardised in every aspect with same handed orientation in the same direction (Malkin, 2008), a handrail on the headwall provides patients support on their route to the bathroom. The rooms have clear professional-, patient- and family zoning, with the professional area near the door and the family zone near the window. Beds have deliberately been placed left facing so that the clinicians must walk around the bed to reach patients' right side in order to enhance the encounter with the family. All rooms are acuity-adaptable, which means that by making small modifications, these rooms can be used for ICU care. The intention behind the acuity adaptable rooms was that patients can remain in the same room when their acuity level change (Malkin, 2008) while nursing staff appropriate to their required level of care moved from room to room.

The location, quantity, and design of the sinks were designed to reduce infections by improving compliance of healthcare workers to handwashing protocols. Especially the patient rooms' design worships the sink, which is the first thing you see when you enter the room: a metal stripe built into the floor and up the wall draws the eye to the sink, a subliminal cue for staff to wash their hands. This sink is also visible from the patient's bed, which creates awareness and cultivates the handwashing rituals in an implicit social interaction between the patient and the healthcare professional.

## 23.6 Evidence-Based Design in Action

The project team conducted a post-occupancy evaluation (POE) in 2015. All the original EBD design hypotheses were reviewed, to determine if they had been accomplished and maintained (CHD, 2018). One of the outcomes of the POE was the observed commitment to the core values of the new culture cultivated at the beginning of the project. The most significant change was that the hospital abandoned the acuity-adaptable nursing model. Although the patient rooms support everything from general acute care to critical care, allowing patients to remain in one place when their health situation changes, the hospital found the required change of organisational practices too difficult and therefore decided to return to an aggregated model of care. Other observed changes were that one consultation room became an office for the nursing director and that the multidisciplinary collaboration space was replaced with staff teaming and break rooms (CHD, 2018).

This project shows that Evidence-Based design is not so much applying standardised proven solutions, moreover a process to make conscious design decisions based on the best available evidence. This design project was led by one main client and decision-maker who challenged the design team to gather all needed knowledge and evidence to make design decisions based on evidence on each step on the way. This resulted in an evidence-based informed decision process on all the levels of the design. Part of this process was the unique de-politicisation of the design decision making process, as the hospital was designed and built for a not yet existing group of professionals that were only recruited and employed during the construction process. This made it possible to design and realise for that time innovative design solutions and new working environments.

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## References

- Cama, R., Herbert, C. L., Mare, G. C., & Zimring, C. (2007). Dublin Methodist Hospital: Applying evidence-based design in a race to revolutionise healthcare. *Health Design*.
- CHD, Centre for Health Design. (2018). *EDAC champions and advocate firm projects, evidence based design in practice*. Center for Health Design.
- Herbert, C. (2011). Case study: Dublin Methodist Hospital. *Hastings Center Report*, 41(1), 23–24.
- Malkin, J. (2008). *A visual reference for evidence-based design*. Center for Health Design.

## Chapter 24

# The ‘FRIrom’ at St Olav University Hospital in Norway. A Room for Emotional Outlets, Finding Strength and Courage for the Relatives and Caregivers of the Youngest Patients



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**Abstract** The little independent structure named FRIrom (translated ‘FREEroom’) erected on the roof of the Women’s and Children’s Centre at St Olav’s university hospital in Trondheim provides relatives and workers a space to withdraw and find room for thoughts and emotions that arise under challenging circumstances in paediatrics. The room is an excellent case example of the Healthy Healthcare perspective with dynamics between a simple and environmentally sustainable organizational structure and its effect on workers wellbeing and quality of care.

**Keywords** Environmental sustainability · Paediatrics · Architecture · Workers health · Quality of care · Emotional outlets · Emotional work · Nurses · Frirom · University hospital · Norway · Caregivers · Caregiver burden · Emotional demand · Organisation · Emotional stress · Health care

### Box 24.1

‘A timeout place for me, is a place where I can be myself, without considering others. When you are parents/caregivers to a child with a serious illness which is also prolonged, you become a subject of an enormous pressure.

You try not to let your own fear affect the child and must at any time straighten up not to show despair, frustration, fear and anger. You can of course leave the room so your child not will get “influenced” by your fear.

But in the halls at the hospital it’s always a lot of other peoples. Whether there are other relatives and patients, nurses and doctors, etc. To be at a hospital over

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larger periods, exposes you to very little privacy. “Everyone” knows “everything” about you and it doesn’t always feel right or good to expose your whole range of emotions.

Timeout could have helped me with exactly what I describe above. To be “safe” when you feel like yell out or scream and let the tears flow freely.’

-Mother of a girl suffering from cancer.

## 24.1 The Idea and Purpose

People are sensitive to their physical surroundings (Huisman, Morales, van Hoof, & Kort, 2012; Ulrich et al., 2008). Even more so for people in vulnerable life situations. The idea of the FRIrom came from Mads Bøhle a paediatric nurse and, as far as we know, the world’s only formal entitled ‘wellbeing nurse’ at the Unit for childhood cancer and haematology, at St olav University Hsopital in Trondheim, Norway. The idea was based on an enquiry from a mother who needed a room at the hospital to withdraw (Box 24.1).

In situations of symptom relapse, he often experienced that many parents restrained themselves from emotional outlets. Strong emotions were inhibited to be careful of their child, other patients, their relatives and the staff. In the end it becomes



**Picture 24.1** The FRIrom at St Olavs University Hospital. Photo: Pasi Aalto

too much to contain. Bøhle saw the need for a place where relatives could withdraw. The purpose of the FRIrom is a place to find peace and safety in a vulnerable situation, a place to react, and out-act without being restrained by the surroundings, the people around you or your child. A room for reflection and freedom. The room could also provide a sanctuary where relatives for instance can take important personal phone calls or read a book of fairy-tales with their child.

Most of all, the FRIrom shall be a good place to come to. A place that contributes to courage and strength to carry on with the important and challenging task of being a caregiver parent or relative.

## 24.2 Environmentally Sustainable Design, Nature and Symbolism to Meet Psychological Needs in Exceptional Circumstances

FRIrom is based on knowledge exchange between carpentry, architecture, music technology and stakeholders including patients and their relatives. Based on the initiative of Bøhle, the project was designed in 2010 by master students and their supervisors (Nordbø & Ødegård, 2011) at the Faculty of Architecture and Fine art at University of Science and Technology (NTNU) in Trondheim and financed by a charitable foundation and thousands of volunteers working hours. The pavilion is shaped like a spiral or snail shell with an inner circular space (Picture 24.2).

The shape encloses the visitor and provides protection from the exposed public space. The form is associated with the first healthy space experienced, the womb. Where all is safe, and life begins. The shape serves a purpose. It is said that if



**Picture 24.2** The spiral shape of FRIrom. Photo: Pasi Aalto



**Picture 24.3** A space of natural materials, light and air. Photo: Pasi Aalto

you walk a spiral to the left, you seek your own psyche. Turn right and you want to escape your own psyche. FRIrom aim to guide the visitor to find themselves.

The room was to be different than the other rooms at the hospital. In contrast to straight white painted walls, chairs or hospital beds, the space relies on how important nature is for people in general and Norwegians in special on their physical and psychological wellbeing in terms of light, air and natural materials (Nasar, 2000). There are curved pine walls with pattern of tree rings with a smell that takes you into the forest and nature (Picture 24.3).

It is built entirely in wood an insulated with wood fibre, that is recyclable, and has twice the heat storage capacity of normal mineral wool isolation often used in Norwegian houses due to the climate. There are sounds of trickling water and birdsong. If they want, visitors can play their own music. The inner circular room has a matress of wool where visitors can lay down and look up on the lighted origami cranes in the roof (Picture 24.4). A large centred skylight provides a view to the sky and light that constantly changing through the day and year. When dark, the lit origami ceiling becomes more visible (Picture 24.5).

Children, relatives and collaborators have folded the cranes as a symbol of planting hope in the FRIrom. Origami is an ancient Japanese art form associated with happiness and hope. The crane in Japan is a symbol of peace and a mystical or holy creature that is said to live for a thousand years. An old Japanese legend says that anyone who folds 1000 cranes ('Senbazuru': 1000 cranes) within a year will have a wish fulfilled by the gods. Some stories believe you are granted happiness and good luck such as long life or recovery from illness or injury.

This makes them popular gifts as a collective effort from friends and family to a seriously ill person to wish for their recovery. The story is basis for the famous story of Sadako Sasaki, a young girl from Hiroshima who was diagnosed with leukaemia and was trying to fold cranes for recovery (Hiroshima Peace Memorial Museum,



**Picture 24.4** Wool matress under the lighted roof. Photo: Pasi Aalto

2020). The story is about hope and strength and the use of origami in this sense is to give visitors strength and support.



**Picture 24.5** The lit origami ceiling of FRIrom. Photo: Pasi Aalto

### 24.3 The Healing Healthcare of FRIrom

FRIrom opened on the 7th of June 2013 by the mum who initially had an enquiry about a room at the hospital to react. The space is designed for all regardless of disability for instance with respect to those who use wheelchairs. Each unit at the Women and Children clinic have their key-card to FRIrom so patients, their relatives and workers can use the space whenever they want to.

Since the space have been used for friends visits among children. The ability to play your own music is particularly popular among youths. The room have been used for physical treatment. A boy enjoyed using his stretching exercise while listening to his own music. In addition, the pavilion has been important for alone time and time-outs not only for relatives but also for workers with demanding emotional work. This is important as parents coping have different impact on their children, their siblings and near family. Parents vulnerability is often the main obstacle for children involvement and information in the family's new situations with a hospitalized child. It is imperative that the parents have opportunity to cope with their anxiety, uncertainty and other emotional stress reactions following their child's illness (Long & Marsland, 2011; Vrijmoet-Wiersma et al., 2008). In addition, though healthcare workers are educated and trained to be capable and mentally prepared to handle emotional demands of their work, it is inevitable that they can be emotionally affected by patients they are set to help (Løvseth, 2011; Redinbaugh et al., 2003; Regehr, Goldberg, & Hughes, 2002). Compassion, grief, futility, anger, irritation, exhaustion, powerlessness and even disgust and pity are all part of everyday practice in an hospital ward. Exposure to emotional job stressors can usually not be reduced despite long training and experience. Consequently, the workers ability to cope with such emotionally demanding and unexpected situations is important in order to prevent distress. The FRIrom have shown to be important in this regard.

The room is in use every single day. Sometimes causing a queue. Consequently, gardeners have upgraded the roof terrace that provides a natural seating area around the FRIrom.

The benefits of the pavilion provide an excellent example of the Healthy Health-care perspective with dynamics between a simple and environmentally sustainable organizational structure and its effect on workers wellbeing and quality of care.

## References

- Hiroshima Peace Memorial Museum. (2020). Webpage: <https://hpmmuseum.jp/?lang=eng>
- Huisman, E. R. C. M., Morales, E., van Hoof, J., & Kort, H. S. M. (2012). Healing environment: A review of the impact of physical environmental factors on users. *Building and Environment*, 58, 70–80. <https://doi.org/10.1016/j.buildenv.2012.06.016>
- Long, K. A., & Marsland, A. L. (2011). Family adjustment to childhood cancer: a systematic review. *Clinical Child and Family Psychology Review*, 14 (1), 57–88. <https://doi.org/10.1007/s10567-010-0082-z>
- Løvseth, L. T. (2011). *The subjective burden of confidentiality*. (PhD), Norwegian University of Science and Technology, Trondheim, Norway.
- Nasar, J. L. (2000). *The evaluative image of places*. In W. B. Walsh, K. H. Craik, & R. H. Price (Eds.), Person–environment psychology: New directions and perspectives (p. 117–168). Lawrence Erlbaum Associates Publishers.
- Nordbø, S. H., & Ødegård, M. S. (2011). *FRIROM. A place for emotions at St. Olavs Hospital*. (Master Thesis), Norwegian University of Science and Technology, Trondheim, Norway.
- Redinbaugh, E. M., Sullivan, A. M., Block, S. D., Gadmer, N. M., Lakoma, M., Mitchell, A. M., & Arnold, R. M. (2003). Doctors' emotional reactions to recent death of a patient: Cross sectional study of hospital doctors. *BMJ*, 327(7408), 185. <https://doi.org/10.1136/bmj.327.7408.185>
- Regehr, C., Goldberg, G., & Hughes, J. (2002). Exposure to human tragedy, empathy, and trauma in ambulance paramedics. *American Journal of Orthopsychiatry*, 72(4), 505–513. <https://doi.org/10.1037/0002-9432.72.4.505>
- Ulrich, R. S., Zimring, C., Zhu, X. M., DuBose, J., Seo, H. B., Choi, Y. S., & Joseph, A. (2008). A review of the research literature on evidence-based healthcare design. *Herd-Health Environments Research & Design Journal*, 1(3), 61–125. <https://doi.org/10.1177/193758670800100306>
- Vrijmoet-Wiersma, C. M., van Klink, J. M., Kolk, A. M., Koopman, H. M., Ball, L. M., & Maarten Egeler, R. (2008). Assessment of parental psychological stress in pediatric cancer: A review. *Journal of Pediatric Psychology*, 33(7), 694–706. <https://doi.org/10.1093/jpepsy/jsn007>

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