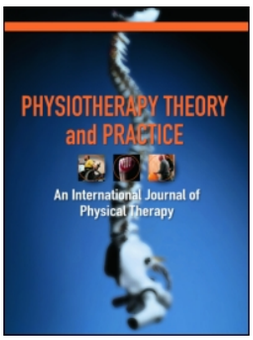

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ARTICLE

Beyond the individual: population health and physical therapy

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ABSTRACT

Improving the health of populations is critical to meeting global health targets. The purpose of this article is to define population health and differentiate it from related concepts and introduce a framework that can be used to inform the population-based practice of physical therapists. The Population-Based Practice (PBP) Framework is modified from the Public Health Nursing Intervention Wheel and can be used to understand levels (i.e., systems, community, and individual) and types (i.e., screening and outreach, referral and follow-up, health teaching and coaching, consultation and collaboration, advocacy and policy development, and social marketing) of population-based practice. Several physical therapy examples illustrate selected cells within the model. The PBP Framework provides practitioners, educators, and scholars with a new way to envision population-based practice for physical therapists. Such a shift in both thinking and practice is needed if physical therapists are to use their unique skills to move beyond the individual, embracing population-based practice to improve health outcomes and reduce health disparities while controlling costs.

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Introduction

Improving the health of populations as distinguished from focusing health care and prevention services toward the care of individuals is critical to meeting global health targets. The difference between intervening with individuals who are sick and controlling the causes of disease in sick populations was articulated well in a seminal 1985 paper by Rose. He illustrated the differences between individual and population approaches with memorable descriptions of the advantages and disadvantages of each. For example, one stated disadvantage of trying to persuade an individual to implement a preventive strategy was that "if we try to eat differently from our friends it will not only be inconvenient, but we risk being regarded as cranks or hypochondriacs." In contrast, he described population strategies as seeking to normalize healthier population behaviors so that "if non-smoking eventually becomes 'normal', then it will be much less necessary to keep on persuading individuals." When Rose authored this article more than 30 years ago, he did so in the context of medical practice (Rose, 1985). In today's health care environment, many other practitioners, including physical therapists, should play important roles in improving the health of populations. Indeed, physical therapy professional organizations around the world, including the World Confederation for Physical Therapy (2015), the American Physical Therapy Association (2017), the Australian Physiotherapy Association (2016), the Canadian Physiotherapy Association (2012), and the Chartered Society of Physiotherapy (United Kingdom) (2016), all recognize the role of physical therapy in promoting population health (Table 1).

This role was reinforced at the First and Second Physical Therapy Summits on Global Health in 2007 and 2011. One of the conclusions of the summits was that physical therapists should play a prominent role in the prevention and treatment of noncommunicable diseases, recognizing that health-focused practice by physical therapists can play an important role in promoting global health (Dean et al, 2011, 2014). In addition, the summits supported the International Classification of Functioning, Disability, and Health (ICF) as a useful model for contemporary physical therapy practice, as it classifies health conditions not only by changes in individual body functions and structures, but also as they are modified by environmental factors, activities, and participation (World Health Organization, 2001). This beyond-the-individual perspective of the ICF is an important element of population health approaches.

At the same time that the role of physical therapy in population health was being promulgated in organizational statements and at global health summits, the

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Table 1. Statements from physical therapy professional organizations that include population health.

Organization	Statement
World Confederation for Physical Therapy	"Physical therapy is services provided by physical therapists to individuals and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan. The service is provided in circumstances where movement and function are threatened by ageing, injury, pain, diseases, disorders, conditions or environmental factors and with the understanding that functional movement is central to what it means to be healthy." (World Confederation for Physical Therapy, 2015)
American Physical Therapy Association	"The professional scope of practice (of physical therapy) consists of patient and client management, which includes diagnosis and prognosis, to optimize physical function, movement, performance, health, quality of life, and well-being across the lifespan. In addition, the professional scope of practice includes contributions to public health services aimed at improving population health and the human experience." (American Physical Therapy Association, 2017)
Australian Physiotherapy Association	WCPT statement, above, is incorporated within the Australian Physiotherapy Association scope of practice statement. (Australian Physiotherapy Association, 2016)
Canadian Physiotherapy Association	The "Canadian Physiotherapy Association endorses a population health approach to address the present and future health needs of Canadians. Physiotherapists, as essential primary health providers, must consider population health needs and incorporate population health approaches into program planning and treatment interventions in order to have the greatest impact on clients' and communities' health status and health outcomes." (Canadian Physiotherapy Association, 2012)
Chartered Society of Physiotherapy (United Kingdom)	"The fourth pillar (of the scope of practice of physiotherapy), kindred treatment, facilitates the inclusion of related areas of practice into scope. This enables members and the profession to move into new areas of practice and respond to changing population needs, healthcare environments and the evolving evidence base, within the parameters of patient safety, patient centeredness and effectiveness." (Chartered Society of Physiotherapy, 2016)

literature of the profession began to reflect the role of physical therapists in population health. For example, Dean (2009) advocated that physical therapists "ensure that non-invasive interventions…are being maximally exploited in the provision of lifelong health in every person, patient, and client across all settings." The noninvasive interventions included structured exercise programs, as well as education about smoking cessation, basic nutrition, weight control, guidelines for regular physical activity, stress and sleep management, and alcohol management. This call for action included elements of population-based practice, suggesting that physical therapists go beyond the presenting complaint to include practices that focus on broad-based global health concerns. She also referred to ways in which physical therapists could work at community and systems levels to reach beyond individual patients.

In a paper published by Sullivan et al. (2011) they challenged the profession to think about the role of physical therapy as partners in the health agenda of the United States. They advocated for a population-based, life-stage health promotion/risk reduction model for physical therapy, contrasting episodic medical models of care with a public health model, explicitly naming "population health" as an area for physical therapist practice.

Bezner (2015) published a paper that advocated for physical therapists as promoters of health and wellness, identifying noncommunicable diseases as a major cause of morbidity and mortality. She advocated for physical therapists to pay routine attention to such factors as tobacco use, physical activity, and nutrition and weight management. In addition, she advanced the idea of an "ecological model" that acknowledges the interplay between intrapersonal, interpersonal, organizational, community, and public policy influences, clearly aligned with population health and population-based practice.

Dean and Duncan (2016) authored a point-of-view paper arguing for enhanced preparation of physical therapists for population health management. They proposed that physical therapist educational programs include expanding the role of physical therapists in population health management.

Parra et al. (2017) published a point-of-view paper about population and community-based promotion of physical activity in physical therapy. By focusing on physical activity, their work is narrower in scope than either the work of Dean (2009) or Bezner (2015), who also included other factors such as nutrition and sleep quality.

Despite the formal acknowledgment of the role of physical therapists in population health and the decade of literature related to the role of physical therapy in population health, it appears to us that many physical therapists are unfamiliar with the concept of population health and uncertain of the ways in which they can participate in population health initiatives. Therefore, the purpose of this article is to define population health and differentiate it from related concepts and introduce a framework that can be used to inform the population-based practice of physical therapists.

Population health and related concepts

Population health

Kindig and Stoddart (2003) define population health as "the health outcomes of a group of individuals including the distribution of outcomes within the group," which includes "health outcomes, patterns of health determinants, and

policies and interventions that link these two." They also emphasize that population health relates to health outcomes that develop over years or a lifetime. Health determinants include anything that can influence a person's health condition, including a wide range of social, physical, and environmental, health care, genetic, behavioral, and biological factors (Mayzell, 2016). Social determinants include factors such as education, income, and access to health care.

Although the Kindig and Stoddart (2003) definition encompasses most of the concepts included in other definitions, Young (1998) is more explicit in the policy dimension, describing population health as a "conceptual framework for thinking about why some populations are healthier than others, as well as, the policy development, research agenda and resource allocation that flow from this framework." Others, including Health Canada (1998), focus more on the goal of reducing health inequity. For the purposes of this article, we consider population health to be the distribution of health outcomes based on a broad set of determinants, with an emphasis on eliminating health disparities, and supported by practice that promotes change at systems, community, and individual levels.

Population health vs. population

To understand population health, it is helpful to differentiate the term "population" from the concept of "population health." Physical therapists frequently speak about the populations they serve, for example, children with developmental disabilities, older adults, professional athletes, or those served within a certain health system. The term population can include "groups of individuals living in a similar locale or sharing the same or like characteristics or concerns" (American Occupational Therapy Association, 2014). A population can also be based on income or disease burden or be geographically defined (Berwick, Nolan, and Whittington, 2008; Institute of Healthcare Improvement, 2017; Kindig and Stoddart, 2003; Pestronik, 2010). However, simply identifying a population of interest is not the same as taking a population health approach to that group of interest. Solely focusing on a group of individuals with a certain condition may cause providers to miss the "big picture" of population health (Diez Roux, 2016). Taking a population health approach requires a move away from individual care paradigms to embrace systems- and community-focused approaches that foster the health of entire populations.

Population health vs. public health

It is also useful to differentiate population health from public health. The American Public Health Association (2017) states that "public health promotes and protects the health of people and the communities where they live, learn, work, and play." Public health encompasses many fields ranging from restaurant inspectors and nutritionists to public health nurses and epidemiologists. Conducting research, educating the public, setting safety standards, and tracking disease outbreaks are some facets of public health. Public health is distinguished from other health approaches because of its primary objective of affecting and managing the causes of disease, rather than working with health problems that have already occurred (Hughes and Shawn, 1997). Public health has also been defined by the roles and responsibilities of the government in preventing epidemics, containing environmental hazards, and encouraging healthy behaviors (Mayzell, 2016; University of Wisconsin, 2017a). Although some advocate for a broader definition of public health, calling for "building a new generation of intersectoral partnerships that draw on the perspectives and resources of diverse communities and actively engage them in health action" (Institute of Medicine, 2002), major population health determinants like access to health care, education, and income remain outside public health authority and responsibility (University of Wisconsin, 2017b). For our purposes, the key differentiator between public health and population health is that population health encompasses a full range of determinants of health, including those like education, family income, and access to health care that fall outside the realm of public health. Population health is a broad concept that should be seen as encompassing a "broader array of the determinants of health than is typical in either healthcare or public health" (Stoto, 2013).

Health systems within population health

As defined earlier, access to the health system is one determinant of the broad, overarching phenomenon of population health. The type of care provided within health systems can also be an important contributor to the health of populations. A popular framework for optimizing health system performance, the Triple Aim (Berwick, Nolan, and Whittington, 2008), encourages health systems to adopt population-based practices. The three aims include improving the patient experience of care, improving the health of populations, and reducing the per capita cost of health care (Institute of Health Care Improvement, 2017). Since its initial articulation in 2008, the Triple Aim framework has proved to be popular with a variety of practitioners, researchers, and policy makers in the United States and beyond, influencing "health care organizations and providers to 'think outside the box' and look at some of the consequences of their health care improvement initiatives, beyond the immediate outcomes

of the intervention" (Mery, Majumder, Brown, and Dobrow, 2017).

Within the profession of physical therapy, two of the three Triple Aim concepts appear to already be widely used and understood. The experience-of-care arm of the Triple Aim is familiar to practitioners who attend to a variety of dimensions of quality care and patient satisfaction, including safety, effectiveness, timeliness, efficiency, and patient-centered care. Attention to reducing the cost of care is also familiar to physical therapy practitioners, who must attend to factors such as the cost of an episode of care, timely discharge planning, and ways to reduce readmissions. The final aim, improving the health of populations, appears to us to be the least understood within the profession.

Population-based practice (PBP) frameworks

One useful model for population-based practice is the Intervention Wheel developed to describe population-based public health interventions in nursing (Keller, Strohschein, Lia-Hoagberg, and Schaffer, 2004). The Public Health Nursing Intervention Wheel was developed through a grounded theory process and later validated through an extensive literature synthesis. The Wheel, shown in Figure 1, and available through the Minnesota Department of Health (Minnesota Department of Health, 2018) consists of three concentric circles representing different focus areas for population-based practice: 1) systems; 2) community; and 3) individual-focused, and 17 different types of population-based interventions. As useful as this model is, we believe its complexity limits its application to physical therapy, which is in the early stages of defining its role in population health and population-based practice.

Therefore, we have modified the Intervention Wheel to create the PBP Framework (Figure 2). We believe the PBP Framework offers a useful model for conceptualizing population-based practice in physical therapy, and potentially for other professions that are in the early phases of conceptualizing their roles in population health. The PBP Framework retains the concentric circles representing the three levels of focus (i.e., systems, community, and individual) within population-based practice. However, we have collapsed the 17 interventions into six broad population-based practice activities: 1) screening and outreach; 2) referral and follow-up; 3) health teaching and coaching; 4) consultation and collaboration; 5) advocacy and policy development; and 6) social marketing.

Focus areas within the PBP framework

The PBP Framework includes three focus areas: systems-focused, community-focused, and individual-focused. Population-based practice that focuses on systems is designed to effect changes in organizations, policies, and laws that will improve the health of populations. Hinze (2017) is a physical therapist who used systems-focused practice to promote physical activity by working with elected officials in his community to design a built environment that was safer for cyclists including variables such as bike lanes, lighting, surfaces, and parking. On a broader professional level, physical therapists and professional

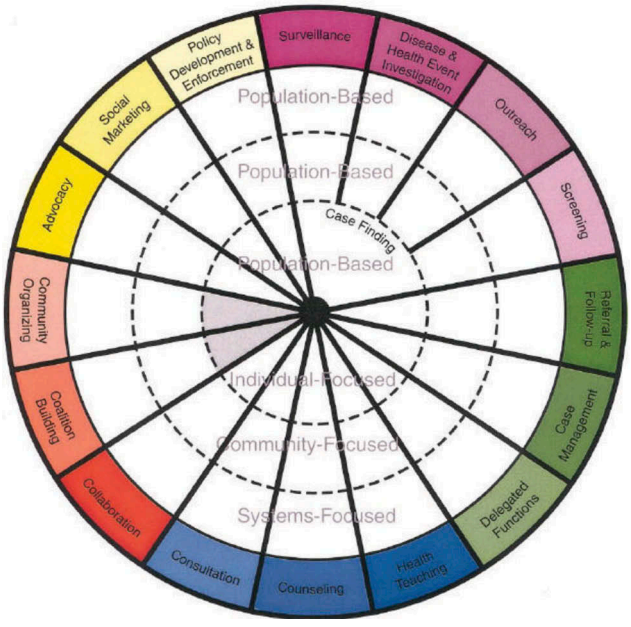

Figure 1. Public Health Nursing Intervention Wheel (Keller, Strohschein, Lia-Hoagberg, and Schaffer, 2004).

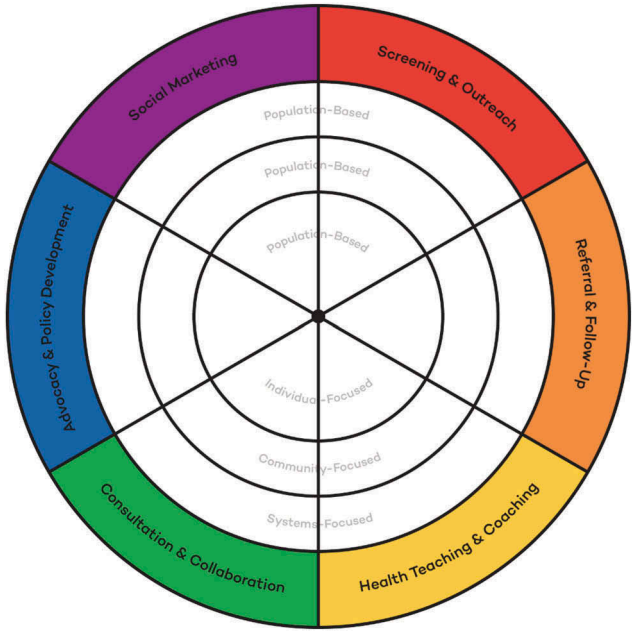

Figure 2. Population-based practice framework.
Modified from the Intervention Wheel shown in Figure 1.

physical therapy organizations have participated in legislative and policy development efforts to permit direct access or patient self-referral to physical therapy services (Bury and Stokes, 2013). To the extent that these legislative changes improve access to physical therapy services and contribute to controlling the cost of health care, they are an example of systems-focused advocacy and policy development.

Population-based practice that focuses on the community is designed to effect changes in the health or health behaviors of a particular community or subgroup within a community. A community can be defined as those who live or work in the same place (i.e., residents of a particular neighborhood), or who share common characteristics (e.g., age groups or diagnostic groups). A community example that involved physical therapists is the work of Rowe et al. (2016), which was undertaken in an effort to integrate safe sleep practices into a pediatric hospital. One purpose of the project was to model the American Academy of Pediatrics "Safe to Sleep" guidelines (American Academy of Pediatrics task force on sudden infant death syndrome, 2016) within the inpatient hospital environment, serving as a form of social marketing directed at parents and visitors. Physical therapists and other rehabilitation professionals were important stakeholders in the project, modeling the safe sleeping practices that the hospital was seeking to promote. Another example of a population-based approach with a community focus comes from the Management of Falls in Community-Dwelling Older Adults Clinical Guidance Statement from the Academy of Geriatric Physical Therapy of the American Physical Therapy Association. The statement recommends that "physical therapists should routinely ask older adult patients if they have fallen in the previous 12 months" (Avin et al, 2015). Because of the call for routine screening of all members of a particular group (i.e., older adults), this recommendation is a community-focused example of a population-based screening activity.

The final focus for population-based practice is the individual. This focus may seem paradoxical, as the definitions in this article have differentiated population-based approaches from individual-focused care. According to Keller, Strohschein, Lia-Hoagberg, and Schaffer (2004) "service to individuals and families are population-based only if they meet these two specific criteria: individuals receive services because they are members of an identified population and those services clearly contribute to improving the overall health status of that population." It is perhaps easiest to envision this individual focus for population-based practice in the context of communicable diseases. For example, when an individual with tuberculosis is treated effectively, the treatment has a positive impact on the individual's health but also has the preventive effect of decreasing the risk of spreading the disease. Because we find Keller, Strohschein, Lia-Hoagberg, and Schaffer's (2004) definition to be overly narrow, we also consider services to individuals as population-based if they relate to important health or social concerns unrelated to the primary reason for the visit, even if services don't have an immediately apparent benefit to a wider population.

A physical therapy example of an individually focused health teaching practice within a population-based approach is Pignataro, Ohtake, Swisher, and Dino's (2012) description of the role of physical therapists in tobacco cessation. Cessation of tobacco use by individuals may contribute to improved population health by reducing second-hand smoke and by decreasing the likelihood that children will smoke (World Health Organization, 2014). Another individually focused population-based activity would be when physical therapists observe potential signs of family violence associated with a patient and refer them to domestic violence resources in the community (Dalton, 2005).

Population-based practice activities

The examples of the different focus areas (i.e., the concentric circles in Figure 2) for population-based practice in the previous paragraphs were chosen because, collectively, they also illustrate all six population-based practice activities within the framework (i.e., the wedges in Figure 2): 1) screening and outreach (i.e., fall risk screening); 2) referral and follow-up (i.e., family violence referral); 3) health teaching and coaching (i.e., tobacco cessation counseling); 4) consultation and collaboration (i.e., cycling safety); 5) advocacy and policy development (i.e., direct access); and 6) social marketing (i.e., modeling of safe infant sleeping practices). Table 2 includes Keller, Strohschein, Lia-Hoagberg, and Schaffer's (2004) definitions of the activities and places each physical therapy-related example and reference in the row with its corresponding activity.

Integrative example

Although we believe the PBP Framework is useful for understanding the various separate elements that can constitute population-based practice, it is also important to note that it can be useful to integrate approaches across the elements. Deshpande, Dodson, Gorman, and Brownson (2008), in their presentation of the socioecological model for physical therapist involvement with type 2 diabetes prevention, provided a useful integrative example. The socioecological model emphasizes the interplay between the individual and the environment, with

Table 2. Examples of population-based physical therapy practices.

Population-based practices	Definition (Keller, Strohschein, Lia-Hoagberg, and Schaffer, 2004)	Physical therapy example
Screening and outreach	Identifies individuals with unrecognized health risk factors or asymptomatic disease conditions in populations. Locates populations-of-interest or populations-at-risk and provides information about the nature of the concern, what can be done about it, and how services can be obtained.	Fall risk screening (Avin et al, 2015)
Referral and follow-up	Assists individuals, families, groups, organizations, and/or communities to identify and access necessary resources to prevent or resolve problems or concerns.	Family violence (Dalton, 2005)
Health teaching and coaching	Communicates facts, ideas, and skills that change knowledge, attitudes, values, beliefs, behaviors, and practices of individuals, families, systems, and/or communities. Establishes an interpersonal relationship with a community, a system, and family or individual intended to increase or enhance their capacity for self-care and coping.	Tobacco cessation counseling (Pignataro, Ohtake, Swisher, andDino, 2012)
Consultation and collaboration	Seeks information and generates optimal solutions to perceived problems or issues through interactive problem solving with a community, systems, and family or individual. The community, system, and family or individual select and act on the option best meeting the circumstances. Commits two or more persons or organization to achieve a common goal through enhancing the capacity of one or more of the members to promote and protect health.	Cycling safety and the built environment (Hinze, 2017)
Advocacy and policy development	Places health issues on decision-makers' agendas, acquires a plan of resolution, and determines needed resources. Policy development results in laws, rules and regulation, ordinances, and policies. Pleads someone's cause or acts on someone's behalf, with a focus on developing the community, system, and individual or family's capacity to plead their own cause or act on their own behalf.	Direct access and patient self-referral (Bury and Stokes, 2013)
Social marketing	Utilizes commercial marketing principles and technologies for programs designed to influence the knowledge, attitudes, values, beliefs, behaviors, and practices of the population-of-interest.	Modeling safe infant sleeping practices (Rowe et al, 2016)

environment conceived broadly to include the policy, information, sociocultural, and natural environments.

Physical therapists can be engaged in population-based practice for type 2 diabetes prevention at many levels: providing school-based consultation about physical activity programs (i.e., consultation and collaboration focused on school communities); worksite exercise prescriptions for at-risk employees (i.e., health teaching and coaching focused on individuals); community advocacy to increase neighborhood walkability scores (i.e., advocacy and policy development with a systems focus); referral of patients for nutritional and behavioral counseling (i.e., referral and follow-up with a focus on individuals); and participation in professional association advertising campaigns related to physical activity (i.e., social marketing focused on communities).

This example also illustrates the importance of interprofessional population-based practice. While physical therapists have important roles to play in promoting population health, they cannot work effectively in isolation from other health care practitioners or from experts in a variety of domains encompassed by the socioecological model. In the previous examples, it should be easy to envision physical therapists working collaboratively with: teachers and school nurses; human resource professionals and occupational health practitioners; city officials and urban planners; nutritionists and psychologists; and associations and public relations professionals.

Further development

The original Intervention Wheel and the modified PBP Framework are useful tools for visualizing how physical therapists may participate in PBP. The PBP Framework is presented as a thought-provoking model to help practitioners, educators, and leaders within the profession further the discussion of population-based physical therapist practice. Validation of this model is needed, in particular, to determine whether robust physical therapy examples can be found for all 18 cells of the model and whether the six activities encompass the full range of population-based approaches in physical therapy.

Conclusion

Although improving the health of populations is critical to meeting global health targets, doing so requires that practitioners expand their therapeutic paradigm from one focused on treating individuals to one that includes influencing health determinants at many different levels. The role of physical therapy in influencing population health is clear, as evidenced by the formal statements of professional organizations, the conclusions from global summits on physical therapy, and the growing body of literature about physical therapy and population health. In particular, physical therapists are well-suited to address the problems of lifestyle-related noncommunicable diseases. In addition, thought leaders in the profession are advocating for roles beyond movement and activity to include those that encompass a wide range of health behaviors. Although these many sources advocate for this expanded role, it appears to us that not enough physical therapists are translating the idea of population health into actual population-based practice. The PBP Framework presented in this article provides practitioners, educators, and scholars with a new way to envision population-based practice for physical therapists. Such a shift in both thinking and practice is needed if

physical therapists are to use their unique skills to move beyond the individual, embracing population-based practice to improve health outcomes, particularly for lifestyle-related noncommunicable diseases, and reduce health disparities while controlling costs.

Declaration of interest

The authors declare no conflict of interest.

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