Ethical Responsibility in Environmentally Sustainable Health Care

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Abstract

Environmental issues gained momentum in recent years, with consequences of climate change already being felt across the world. As the environment worsens health, human activities also influence the environment, by worsening this process, creating an uninterrupted cycle which might speed up climate change. The health sector plays a role as important as the other sectors, as one of the human activities with high impact on the environment, owing to the high consumption of resources, water and energy, and the production of millions of tons of waste daily across the world, overall contributing to high levels of greenhouse gases. This is especially important as health care institutions need to operate 24/7 to satisfy medical needs of the populations. However, few green measures have been implemented in this field, as it is perceived as costly and ineffective. Ethical concerns arise from this scenario, as corporate social responsibility and accountability weight in the decision of investing in green infrastructures. Efficiency and optimal financial management play a role on minimizing costs of existing activities, while trying to provide the best care to patients. This paper explores the rationale for implementing green measures, reviewing the current status on environmental sustainability within the health care sector, as it discusses different perspectives on ethical issues emerging when managing health institutions and how these can be instrumental to drive policy-based change.

Keywords: ethics; environment; sustainability; responsibility; health

Introduction

Since the beginning of the century, environmental issues have gained more prominence, with a focus on the impact we have on the environment and how it can affect the present and future generations. The United Nations has created in 2015 the Sustainable Development Goals (SDGs), aiming to achieve seventeen different goals by 2030, introducing several objectives related to the environment and sustainable cities and communities (SDG11) and climate action (SDG13). (United Nations General Assembly, 2015)

Climate change refers to long-term shifts in conditions and patterns that cause extreme weather events. These may lead to change in health threats in human beings, which in turn multiplies pre-existing health conditions. (Wu et al., 2016) Effects of climate change are thus a cause of major public health issues. On the other hand, health institutions also play a part in feeding the cycle, by aggravating environmental issues with its activities, which account for around 8% of all greenhouse gases emitted in the United States. (Eckelman and Sherman, 2016)

Ethical concerns related to the health sector's role in the environment has emerged in recent years, (Paraizo and Begin, 2020) with studies showing a great environmental footprint of global healthcare. (Lenzen et al., 2020) Discussions on the benefits of putting in place green measures have emerged in the past years, bringing more accountability to institutions, strengthening leadership, educating communities, and saving money. (Institute of Medicine of the National Academies, 2007)

Some policy-based solutions have been put forward to regulate energy consumption in buildings. (UN Environment and International Energy Agency, 2017) This has only been

possible with the existence, in the various sectors, of pondered decisions on the ethical implications of health care activities. The application of sustainable practices in this specific sector, of environmental measures within health institutions, as well as green financing and investment which tackles more upstream, are the solutions needed to break this vicious cycle.

The issue: impact of health institutions in the environment

Health institutions are open systems, where material exchanges occur between them and the environment. Just as the environment has a negative influence on health, (Institute of Medicine of the National Academies, 2007) health organizations will also have an impact on the environment, which in turn increases negative health consequences. (Skolnik, 2020)

According to the United Nations, in its report on buildings and the construction sector, it reports that they represent around 35% of the global energy consumed, leading to almost 40% of energy-related CO2 emissions, playing an important role in sustainable transformation. (UN Environment and International Energy Agency, 2017, Khasreen et al., 2009)

The health sector also accounts for a big part of this consumption, coming in third just after the food sales and services sectors, consuming around twice as much as the average of all accounted sectors, stated a report in 1995 (Figure 1). (Institute of Medicine of the National Academies, 2007)

The consumption has ever since increased, with hospitals in the United States consuming an average of 738.5 kWh/m^2, 2.6 times higher than other commercial buildings, (Bawaneh et al., 2019) which accounts for 8% of all greenhouse gases

emissions in the country (Figure 2). (Chung and Meltzer, 2009) In the United Kingdom, the National Health Service consumed energy that accounted for 21.3 million metric tons of CO_2 equivalents in 2007, which sums up to around 3% of all greenhouse gases emissions in England. (Brown et al., 2012) Regarding hospitals in Brazil, their energy consumption reaches 10.6% of the total energy utilized for commercial purposes. (Dhillon and Kaur, 2015)

Common energy waste practices in these sectors include the usage of air conditioning in completely unoccupied spaces, failure to maintain or repair equipment and neglect to check for air or water leaks, increasing inefficiency and costs for institutions. (Kaplan et al., 2012) In addition, buildings consume a large amount of water throughout their life cycle, in addition to the energy needed for supply and use, which has increased in recent decades, (Rothausen and Conway) leading to an increase in emissions and consequently, a greater negative environmental impact. (Mannan and Al-Ghamdi, 2020) In the health care sector, the main obvious impact of its activities is related to downstream products, namely the waste produced. (Institute of Medicine of the National Academies, 2007) Particularly at the hospital level, a study reports the experience of the United States, whose use of resources leads to the production of about 7000 tons of hospital waste daily and an annual cost of around 10 billion dollars in their management. (Senay and Landrigan, 2018) In addition, it is also reported that in this country, 85% of the waste produced in a general hospital is not hazardous (groups I and II), often placed in the biological waste container, increasing waste management costs and the environmental impact through inadequate waste treatment. (Kaplan et al., 2012)

A study conducted in 2013 in the United States evaluated the impact of health care activities in the environment. Hospitals were the largest contributor to environmental and health impacts, with 31–37% of the total, while prescription drug expenditures were the largest contributor to ozone depletion (33%), medical devices contributing with 22% and hospital care being responsible for 15% of the impact. This study also revealed that power generation and supply of health care facilities and their supply chain were the primary processes contributing to acidification, whereas surgical and medical instrument manufacturing and pharmaceutical preparation manufacturing contributed more for ozone depletion. Waste management was the most preponderant contributor to ecotoxicity and human health toxicity. (Eckelman and Sherman, 2016)

Another study evaluated the global environmental footprint of health care in 2015 (Figure 3), with categorization by direct (lightest shade), first-order (middle shade), and supply-chain (darkest shade) impacts caused by health care directly, by health care's immediate suppliers, and the remainder, respectively. The impact of health care is shown as a percentage of total impact, for the world (segments) and selected countries (spokes). Regarding greenhouse gas emissions, health care contributes with around 4.4%, while it is responsible for 2.8% of particulate matter emissions, 3.4% of NOx emissions and 3.6% of SO2 emissions. (Lenzen et al., 2020)

Organizational ethics in building sustainable health institutions

Ethical issues often arise in clinical settings, being one of the subjects studied in medical schools across the world. (Shamim et al., 2020) However, another field within this context and which is often forgotten is organizational ethics, a field of the applied ethics

which focus on the health environment, resource allocation and decision-making processes associated with the organization. (Paraizo and Begin, 2020)

Problems that emerge in organizational ethics are varied, and professionals tend to focus on costs management and saving, efficiency, quality of care and the effects of their decisions on patient care. (Castlen et al., 2017)

Sustainability issues of buildings have also been addressed in the literature within this topic. Many of the issues discussed by the end of the 20th century are related to the durability of buildings – many of the health facilities built in the 1950s and sometimes even recent ones are now obsolete, being dysfunctional and costly to construct and maintain. Such decisions are only short-term and lead to increasing costs and problems that are preventable. (Institute of Medicine of the National Academies, 2007) As such, there is a need to design health facilities in a pragmatic, ethical, and holistic manner, which might influence the health environment and even workers' productivity. (World Green Building Council, 2014)

More recent research reported issues related to organizational vulnerabilities, with associated conditions that weaken the organization, as public money management, and respective risk analysis in health care management, in order to assess and prevent ethical risks, including the ones linked to quality of care and financial allocation of resources. (Paraizo and Begin, 2020, Sepetis, 2020) These issues contribute to the sustainability of health care institutions and should also be taken into consideration in decision-making processes.

Ethics and social responsibility in health

The Universal Declaration of Bioethics and Human Rights refers in its Article 14 - "social responsibility and health" as a principle of bioethics. (Unesco, 2005) This holistic approach broadens the scope of bioethics into other areas, such as social problems, determinants of health and health policies, (Vivanco, 2018) adding aspects of justice and fairness to these problems. (Jennings et al., 2016) As a result, health care is seen as a responsibility of governments towards the people they serve, which focus in four main areas: medical care; research; industry; and education. (UNESCO, 2018)

Some of the concrete actions enunciated in the UNESCO report on social responsibility and health are related to the criteria in decision-making in health policies and the mitigating actions of environmental deterioration and pandemic management. (UNESCO, 2018, Vivanco, 2018) Failure to provide mitigation and adaptation actions for issues as climate change would be to disrespect the principle of social responsibility. (UNESCO, 2018)

Despite referring to environment issues and natural disasters as part of the social responsibilities within bioethics, UNESCO fails to address the issue upstream – the need to tackle the issues where they emerge, by building green, and by implementing green measures before issues appear. These changes might be enacted by creating public policies, (Watts et al., 2015) changing regulations and procedures related to health care institutions' management (Kallio et al., 2018) and providing green financing opportunities (OECD, 2016).

Environmental Health Ethics

Ethical issues related to environment have been discussed by other ethicists, but oftentimes in a separate way from health issues. This is due to the focus of environmental ethics on the environment itself and the value of non-human nature, which can lead to a separation of these issues from human health ethics. (Jennings et al., 2016) One way to connect this concept to human ethics is its instrumental value, as a means to influence positively the health of populations, through climate, food source and green spaces aesthetics, which perceives the environment as an ecosystem service provider. (Jax et al., 2013) This perspective removes the nature's intrinsic value and positions nature according to human needs, being a framework that is severely criticized. (Jennings et al., 2016) Conversely, environmental ethics brings forward the potential harmful effects of human health care in the deterioration of the environment, which has been recognized by hospitals, becoming a driver for change to more sustainable health care management practices. (Jameton and Pierce, 2001)

On the other hand, frameworks on environmental health ethics have emerged, (Gribble, 2017) as environmental health is an integral part of public health. Within this field, climate change and its effects on human health are studied, as well as political and economic dynamics related to funding research on climate change, but little mention is made regarding the role of health care institutions in fighting global warming. Instead, a more general mention of industries with direct impact on the environment, as the ones related with fossil fuels, are the main focus when discussing environmental health ethics. (Resnik, 2012) These frameworks do, however, account for principles as utility,

justice, stewardship, sustainability, and precaution, (Gribble, 2017) which will inherently include the role of health institutions in the fight against climate change.

Ethical responsibility of health institutions regarding the environment

Ethical issues arise in the decision-making processes, as the environmental impact of health care and the need for sustainability in health institutions raise ethical questions regarding the environmental stewardship. (Jameton and Pierce, 2001) Not only bioethics and social responsibility are involved, but also organizational and environmental health ethics.

The main environmental responsibility in hospital care is to avoid unnecessary emissions, and this is guided by the management body and by ethical values. These values consist on social responsibility, good care, and professionalism, (Kallio et al., 2018) which together act as a driver for changing and improving environmental practices in health care institutions.

Accordingly, organizational commitment of the management and staff is key for implementation of environmental measures. (Pisters et al., 2017, Kallio et al., 2018) However, this is not sufficient. Health care organizations need to go further in the commitment and support these measures, by providing education and training, clear procedures, defined roles, and a motivational culture and health facilities that are prepared for the implementation of green measures. (Kallio et al., 2018)

Environmental measures in health institutions

The United Nations report published in 2017 lists a set of objectives for achieving the environmental sustainability of buildings, which includes planning policies, adaptation of buildings and energy management, among others.

Several measures are suggested, such as the use of technology to improve efficiency, using solar energy for heating and cooling, and as a water transport pump, in addition to the application of efficient lighting measures, such as the utilization of light-emitting diode (LED) bulbs. (UN Environment and International Energy Agency, 2017, Dhillon and Kaur, 2015) Countries such as Canada, China and Rwanda already have regulations that establish minimum requirements for energy efficiency and resource management in buildings, although about two thirds of the countries worldwide do not have such regulations. (UN Environment and International Energy Agency, 2017)

For these measures to be applied, there must be investment in energy efficiency, which still represents a small portion of the investment made at the management level. Despite this, the European Union has proposed several projects and funding in recent years, in order to achieve the goal of carbon neutrality. (European Commission, 2020) Regarding health institutions, efforts have been made to invest in them, with a strong focus on hospitals, with the aim of transforming them into green hospitals. Green buildings seek to minimize the impact on the environment by reducing energy and water consumption and limiting environmental damage at the construction site. (Allen et al., 2015)

Other measures have been mentioned in previous studies. (Buffoli et al., 2014, McGain and Naylor, 2014) A study exemplifies the cost-effectiveness of implementing these measures, through the application of energy saving measures and the reprocessing of

single-use materials, with a cost reduction in the order of ten billion dollars over ten years. (Kaplan et al., 2012) Another study compares initiatives and measures that contribute to the institution's resilience in the face of climate change, demonstrating their long-term cost-effectiveness. (Balbus et al., 2016) Pisters et al. reinforce the importance and need for organizational commitment, combined with the reduction of energy consumption, as key elements for the success of the institution. (Pisters et al., 2017)

A major measure applied in recent years is digitalization. Even though this process also requires use of energy, it still allows for energy saving, with smart controls and connected devices saving around 230 EJ until 2040, and around 140 EJ in non-residential facilities (Figure 4). (UN Environment and International Energy Agency, 2017)

All these measures contribute for building more sustainable health care institutions, which allow for decreasing resources consumption, increasing efficiency in their processes, and overall decreasing the emission of greenhouse gases, thus decreasing their impact in the environment.

Instruments enabling implementation of Green Measures

The Green Guide for Health Care is a toolkit that advises on the steps needed to enable implementation of environmental measures, created by Health Care Without Harm, and joins several methods based on Leadership in Energy and Environmental Design (LEED) and Triple Bottom Line (TBL), and it has been used in the construction and renovation of several health care facilities. (Institute of Medicine of the National Academies, 2007)

The Pan-American Health Organization has created a *Green Checklist and Discussion Guide*, (PAHO, 2013) based on LEED rating system. This type of tools help institutions analyse and prepare the implementation of green measures.

Another valuable instrument is the *Green Hospital Procurement Policy and Procedure Manual, and Implementation Guide*, (Canadian Coalition For Green Health Care, 2016) created by the Canadian Coalition for Green Health Care, as well as the *Green Purchasing in Health Care* guide developed by Health Care Without Harm, (Health Care Without Harm, 2006) assisting institutions in putting in place environmentally-friendly purchasing practices, taking into account life cycle perspective, resource efficiency and pollution prevention.

Conclusion

The health care sector has an ethical responsibility to evaluate its impact through meaningful research and implement sustainable measures that cause less harm to the environment, decreasing its long-term impact and ensuring more sustainability in their practices.

There is still a long way to go as the COVID-19 pandemic has had a profound impact in waste production, with increasing single use materials and worsening waste management processes. As such, the post-pandemic world must focus on building back better, by investing in green measures and ensuring resilience of health care systems.

However, green financing is not the sole duty of health care institutions, since ethical concerns and corporate social responsibility are also part of other private business and public service sectors. This role is as important, if not even more pressing as health care institutions need to operate continuously to provide the needed care to populations.

The investment in environmentally friendly solutions is urgent, so that a joint change in all sectors can have a stronger and lasting positive impact in the environment and thus delaying the consequences of climate change.

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