ACTA MÉDICA PORTUGUESA
A Revista Científica da Ordem dos Médicos

The Role of Ethical Responsibility in the Management of Environmentally Sustainable Health Care

Responsabilidade Ética na Gestão da Sustentabilidade Ambiental dos Cuidados de Saúde

José CHEN-XU[1,2]
Acta Med Port (In Press) ▪ https://doi.org/10.20344/amp.20883

Keywords: Bioethics; Climate Change; Delivery of Health Care; Environment; Environmental Monitoring; Health Facilities; Social Responsibility
Palavras-chave: Ambiente; Alterações Climáticas; Bioética; Estabelecimentos de Saúde; Prestação de Cuidados de Saúde; Responsabilidade Social

INTRODUCTION

In recent years, climate change has gained more prominence, with a focus on the environmental impact on present and future generations, and on the creation of objectives for sustainable cities and communities and climate action. The long-term temperature shifts related to extreme weather events are increasing health threats, by worsening chronic diseases and expanding the geographic distribution of infectious diseases.[1] Therefore, they constitute a major cause of public health concern.

Health institutions play a part in climate change, by aggravating environmental issues with its activities, which account for 4% - 10% of all greenhouse gas (GHG) emissions.[2] Ethical concerns related to the health sector's role have emerged,[3] and have led to environmental footprint assessments.[4] Discussions on the benefits of green measures bring more accountability to institutions, which may strengthen leadership, educate communities, and save money.

Policy-based solutions have been put forward to regulate energy consumption in buildings. This has only been possible with the existence of weighed decisions on the ethical implications of health care activities. The application of sustainable practices and environmental measures within health institutions, as well as green funding and investment in disease prevention, are possible solutions needed to break this vicious circle.

The aim of this article is to provide ethical arguments on the responsibility of the health care sector in adopting environmental sustainability as a central pillar in their practice, which reflects the urgent need of reviewing and adjusting current practices towards a greener health care.

The issue

Health organizations have environmental impacts, which result in negative health consequences. Overall, buildings represent 40% of energy-related CO_2 emissions. The consumption within the health sector outruns that of other tertiary sector buildings, constituting 10.6% of the total energy used for service provision purposes.[5] In England, this may reach up to 21.3 million metric tons of CO_2 in a year, equivalent to 3% of the national GHG emissions.

Common energy waste practices include the use of air conditioning in unoccupied spaces, failure to maintain or repair equipment and neglect to check for air or water leaks, which increases inefficiency and costs. In addition, buildings consume a large amount of water throughout their lifecycle, adding to the increasing amount of energy needed for supply and use, and leading to a greater negative environmental impact.[6]

In the health sector, the main impact is downstream, namely produced waste. Resource use can originate 7000 tons of hospital waste daily across US health care institutions and an annual cost of 10 billion dollars in their management.[7] Additionally, 85% of the waste produced in a general hospital is not hazardous (groups I and II) and is often placed in the biological waste container, which leads to increasing waste management costs and environmental impact through inadequate waste disposal and treatment.

Hospital building management largely contributes to environmental impacts, with 31% - 37% of the overall health sector impact, followed by prescription drug expenditures (33%), medical devices (22%) and hospital care (15%). Power generation and supply chains were the primary processes contributing to acidification of rain, which in turn affects soils and surface waters, whereas surgical and medical instrument manufacturing and pharmaceutical manufacturing contributed to ozone depletion, increasing ultraviolet radiation, exposure and risk of skin cancer.[2] Supply chains have been found to

1. National School of Public Health. Universidade NOVA de Lisboa. Lisbon. Portugal.
2. Unidade de Saúde Pública. Unidade Local de Saúde do Baixo Mondego. Figueira da Foz. Portugal.
✉ **Autor correspondente:** José Chen-Xu. josechenx@gmail.com
Recebido/*Received*: 01/11/2023 - **Aceite/*Accepted*:** 24/01/2024 - **Publicado *Online*/*Published Online*:** 05/06/2024

contribute to 62% of the carbon footprint of the National Health Service in England, whereas healthcare workers' commuting and patient and visitor travel accounted for 10% of GHG emissions.[8] Furthermore, waste management was the main contributor to ecotoxicity and human health toxicity.[2]

It is already acknowledged that extreme weather conditions due to climate change may cause around five million additional deaths every year, with the healthcare sector presenting a relevant contribution to the disease burden, amounting to around 98 000 annual deaths in the United States of America alone.[2]

Organizational ethics in building-up sustainable health institutions

Ethical issues often arise in clinical settings, with medical ethics being a subject lectured in medical schools. However, organizational ethics, a field of applied ethics focusing on environmental health, resource allocation and decision-making processes, is often forgotten.[3] Professionals tend to focus on cost management and saving, efficiency, and quality of care instead.[9]

The sustainability issues regarding buildings are related to their durability – many of the health facilities built in the 1950s and sometimes more recent ones are obsolete, dysfunctional, and costly to maintain. Health facilities must be designed to be pragmatic, ethical, and holistic, considering how they influence the health environment and productivity of healthcare professionals. Organizational vulnerabilities, including management of public funding and risk analysis in health care management, are relevant to assess and prevent ethical risks, including the ones linked to quality of care and allocation of financial resources.[3]

'Social responsibility and health' has been promoted as a bioethics principle. This holistic approach expands bioethics into social issues, determinants of health and health policies, adding aspects of justice and fairness.[10] As a result, health care is an ethical responsibility of governments towards the people they serve. 'Social responsibility and health' is displayed through the criteria used in decision-making in health policy, climate change mitigation, and global health management. Failing to provide mitigation and adaptation actions for climate change would be to disrespect the social responsibility principle. This entails the need to act upstream – to build green, and by implementing green measures before issues appear, through public policies, regulations and procedures in health care management and green funding.[11]

Ethical issues related to the environment are often discussed separately from health issues.[2,6] One way to connect them is through its instrumental value for population health, which comprises climate, food source and green spaces, and by perceiving the environment as an ecosystem service provider. Environmental ethics looks at the potential harmful effects of human health care in the environment, and therefore becomes a driver for change towards more sustainable health care.[10]

Frameworks on environmental health ethics have emerged, as environmental health is an integral part of public health. Even though discussions on climate change and its effects on human health have emerged, as well as political and economic dynamics related to funding climate change research, little mention is made on the role of healthcare institutions. Instead, industries with direct impact on the environment, like the ones related with fossil fuels, are the main focus when discussing environmental health ethics. These frameworks do, however, account for principles such as utility, justice, stewardship, sustainability, and precaution,[10] which will inherently include healthcare institutions in tackling climate change, through the adoption of prevention, mitigation and adaptation measures.

Ethical responsibility of health institutions on environment issues

Ethical issues often arise in decision-making processes, as the environmental impact of healthcare and the need for sustainable healthcare raise questions on environmental stewardship.

The main environmental responsibility in health care is to avoid unnecessary emissions, and this is to be implemented by the management body and guided by ethical values. These values consist of social responsibility, good care, and professionalism, acting together as a driver for improving the organization's environmental practices. Organizational commitment is key, along with training, clear procedures and roles, and a motivational culture, ensuring that health facilities are prepared for implementing green measures.[11]

Environmental sustainability can further be achieved through planning, policies, adaptation of buildings and energy management. This can entail the use of technology to improve efficiency, using solar energy for heating and cooling, water transport pumps, and smart lighting.[5] These measures require investment in energy efficiency, which still represents a small portion of expenditure.

Regarding health institutions, efforts have been made in transforming them into green hospitals. Measures such as the application of energy-saving measures and the reprocessing of single-use materials, can lead to a cost reduction of 15

billion dollars over ten years in US healthcare institutions alone, proving their long-term cost-effectiveness. Another measure is digitalization, with smart controls and connected devices contributing to major energy savings.

Implications for the health care sector

There are many arguments for increasing climate action across all sectors, including health care. As mentioned, every year, five million deaths are caused by extreme weather events due to climate change,[4] and our sector plays a role in this. In turn, this contributes to overburdening the already burdened healthcare systems, such as the Portuguese National Health Service. Consequently, the health sector itself has an ethical responsibility to break this cycle and improve both management and hospital practices, in order to decrease its contributions to climate change. Six high-priority domains include investments in improving building energy, transportation, and anesthetic gases, as well as pharmaceuticals, medical devices, and sustainable food systems.

Health Care Without Harm, an international organization focused on reducing the carbon footprint of healthcare worldwide, has recently helped to calculate Portugal's carbon footprint and has set clear goals to be achieved by 2030. This includes striving for energy and water efficiency, with an ideal reduction of 40% in primary energy consumption and of 20% in water consumption, as well an increase of 10% in energy self-consumption and a 20% decrease in waste production. The rehabilitation and improvement of buildings is essential to achieve these goals.

The report also identified key areas of high carbon emission intensity, which included the manufacture of chemical products, as well as basic pharmaceutical products and pharmaceutical preparations, consumption of purchased electricity, and direct emissions originating from combustion and from unintentional emissions.

A sustainable healthcare system can only be achieved by changing the priorities on the ground, through an effective sustainability plan and a swift adoption of mitigation and adaptation measures within healthcare facilities, as well as shifting the priority to health promotion and disease prevention, by tackling health determinants, such as air pollution and food safety. As such, strengthening public health plans and interventions will contribute to decreasing vulnerability to climate risks, while also contributing to more sustainable lifestyles.[1]

CONCLUSION

The healthcare sector has an ethical responsibility to evaluate its impact on environmental health through meaningful research and the implementation of sustainable measures, which can result in high economic savings and many lives saved. In recent years, we have witnessed negative changes in waste production, with increasing single-use materials and worsening waste management processes, requiring improvements in waste separation and recycling practices. Moreover, the post-pandemic world must focus on rebuilding and investing in green measures and ensuring resilience of healthcare systems.

This is even more pressing as health care institutions need to operate continuously to provide the needed care to populations. However, ethical concerns and organizational corporate social responsibility are also a duty of other private businesses and public service sectors, making green funding everyone's concern. The investment in environmentally friendly solutions is urgent, with a joint change in all sectors generating a stronger and lasting positive impact in tackling climate change.

COMPETING INTERESTS

JCX received grants from the European Burden of Disease Network; received payment by the Council of Europe for speaking at Study Session "Mobilising Youth Towards Climate & Health Injustice" and by the New Zero World Coalition for the development of the White Paper in Climate Communications; received support from the European Burden of Disease Network for attending the 4th Working Group Meeting; was the Co-Chair of the Trainee Advisory Committee of the Consortium of Universities for Global Health and a member of the National Commission for Residents of Sindicato Independente dos Médicos.

FUNDING SOURCES

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

REFERENCES

1. Ebi KL, Vanos J, Baldwin JW, Bell JE, Hondula DM, Errett NA, et al. Extreme weather and climate change: population health and health system implications. Annu Rev Public Health. 2021;42:293-315.
2. Eckelman MJ, Sherman J. Environmental impacts of the U.S. health care system and effects on public health. PLoS One 2016;11:e0157014.

3. Paraizo CB, Begin L. Organizational ethics in health settings. Cien Saude Colet. 2020;25:251-9.
4. Lenzen M, Malik A, Li M, Fry J, Weisz H, Pichler PP, et al. The environmental footprint of health care: a global assessment. Lancet Planet Health. 2020;4:e2719.
5. Dhillon VS, Kaur D. Green hospital and climate change: their interrelationship and the way forward. J Clin Diagn Res. 2015;9:LE01-05.
6. Mannan M, Al-Ghamdi SG. Environmental impact of water-use in buildings: latest developments from a life-cycle assessment perspective. J Environ Manage. 2020;261:110198.
7. Senay E, Landrigan PJ. Assessment of environmental sustainability and corporate social responsibility reporting by large health care organizations. JAMA Netw Open. 2018;1:e180975.
8. Tennison I, Roschnik S, Ashby B, Boyd R, Hamilton I, Oreszczyn T, et al. Health care's response to climate change: a carbon footprint assessment of the NHS in England. Lancet Planet Health. 2021;5:e84-92.
9. Castlen JP, Cote DJ, Moojen WA, Robe PA, Balak N, Brennun J, et al. The changing health care landscape and implications of organizational ethics on modern medical practice. World Neurosurg. 2017;102:420-4.
10. Jennings V, Yun J, Larson L. Finding common ground: environmental ethics, social justice, and a sustainable path for nature-based health promotion. Healthcare. 2016;4:61.
11. Kallio H, Pietilä A, Johnson M, Kangasniemi M. Environmental responsibility in hospital care: findings from a qualitative study. J Hosp Adm. 2018;7:56-69.