

Climate Change, the Environment, and Health: A Call to Action

Alterações Climáticas, Ambiente e Saúde: Um Apelo à Ação

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In 2021, the United Nations Food and Agriculture Organization (FAO), the World Organization for Animal Health (WOAH), the United Nations Environment Programme (UNEP), and the World Health Organization (WHO) defined the concept of One Health as an integrated and unifying approach that recognizes the close interconnection and interdependence of human, animal, plant, and environmental health.¹ Following this vision, on July 28, 2022, the United Nations General Assembly recognized a new human right: a clean, healthy, and sustainable environment.² However, this right increasingly seems utopian. There is substantial evidence that climate change and ecosystem degradation are progressing according to the most pessimistic scenarios and significantly impacting public health. The influence of environmental determinants on health may be the greatest future challenge for healthcare systems. Conversely, it is known that the healthcare sector — indispensable for addressing the ongoing epidemiological transition and the heightened risk of climate disasters — also contributes to a large carbon footprint, accounting for 4.8% of greenhouse gas (GHG) emissions in Portugal, a percentage higher than the European average.³ Over 168 million trees would need to be planted to absorb this amount of CO₂ from the atmosphere.

Environmental determinants affecting human health

The primary environmental determinants impacting human health include overpopulation, climate change, ecosystem degradation, biodiversity loss, and the depletion of natural resources.

Regarding overpopulation, it took humanity 200 000 years to reach a population of one billion in 1803 and only 220 years to reach 8 billion people, which happened on November 15, 2023. Since 1970, the Earth system has lost its regenerative capacity to support this population, and currently, we would need 1.75 planets to sustain our needs.⁴

Climate change is due to GHG emissions. We need to cut 43% of these emissions by 2030, compared to 2019, to

limit temperature rise to 1.5°C by the end of this century.⁵ The year 2023 was the hottest ever recorded, and it may have been the coolest year for the rest of our lives. Some scientists predict that with current policies, we could reach 2°C of global warming by the end of this decade compared to the pre-industrial period. Climate change is already increasing the frequency of floods, droughts, and fires. For instance, in 2023, about 11 000 people died in Libya due to floods, and forest fires in Canada burned an area equivalent to 17 million football fields. Additionally, tipping points such as changes in Atlantic Ocean currents could trigger unpredictable climate shifts. Some of these changes, especially in oceans, ice sheets, and sea levels, are irreversible and may persist for millennia.

Ecosystem degradation has intensified over the past century. Since the Industrial Revolution, human activities have destroyed forests, grasslands, and wetlands, threatening human lives and well-being.⁶ An estimated 75% of the ice-free land surface has been significantly altered, and over 85% of wetlands have been lost. Globally, nine out of ten people breathe air with pollutant levels exceeding WHO guidelines.

Biodiversity loss is stark: in the past 50 years, populations of mammals, birds, amphibians, reptiles, and fish have decreased by an average of 70%, and there are a million endangered species.

The depletion of natural resources, particularly water, is alarming, with global drought potentially impacting over 75% of the world population by 2050.

Impact of environmental factors on human health

According to the WHO, environmental factors account for about one in four global deaths. The most affected diseases include cardiovascular and cerebrovascular diseases, chronic respiratory conditions, allergies, cancer, vector-borne diseases, zoonoses, diseases related to water and food quality, and direct effects of extreme weather events like floods, droughts, and fires. Additionally, migrations,

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conflicts, and mental health issues such as eco-anxiety are increasing. A 2021 survey of 10 000 young people in 10 countries revealed that 76% of young people in these countries and 80% in Portugal view the future as 'frightening'. These impacts mainly affect vulnerable groups such as children, the elderly, people with multimorbidity, the homeless, and the poor. Heat-related diseases among the elderly have increased by over 50% in the last 20 years.

Ecological footprint of the healthcare sector

The healthcare sector's most considerable contribution to GHG emissions is supplying goods and services like medicines and equipment. Still, transport, energy, heating and cooling systems, lighting, anaesthetic gases and inhalers are other sources of emissions. Like other sectors, healthcare must implement mitigation actions to reduce GHG emissions and adaptation actions to climate change and environmental degradation. Reducing the ecological footprint of the healthcare sector must be a political priority, requiring a national strategy and measures such as creating environmental sustainability services in hospitals, updating outdated laws like waste management laws, incorporating environmental sustainability criteria in procurement, developing and implementing guidelines across all sectors, opting for renewable energy, electric transport, and LED lighting, and setting clear decarbonization goals. The UK National Health Service aims to achieve zero emissions by 2040 for directly controlled activities and by 2045 for indirect activities. Many of these measures may require short-term investments but result in substantial medium- and long-term savings.

Efforts to reduce this ecological footprint should extend to clinical sectors as well. Anesthetic gases, which account for about 5% of healthcare sector emissions, can be replaced with alternatives. Using remanufactured catheters instead of single-use ones reduces the impact of global warming by about 50%. Operating room blue wrap can be recycled into clothing or equipment. Food services can be optimized by providing healthier, seasonal and locally sourced food while reducing waste. Organizing healthcare to integrate different levels of care in the same location, promoting proximity care, and implementing telemedicine can drastically reduce patient travel and improve convenience. Enhancing care quality and avoiding overdiagnosis and overtreatment are other ways to reduce the healthcare sector's ecological footprint.

Equipping the healthcare system for uncertainty

Preparing the healthcare system for ongoing changes and increased climate disaster risks is crucial. This requires emergency plans at all levels, flexible and scalable hospitals, optimized communication and coordination across

care levels and between public and private sectors, robust information and communication systems, sufficient and prepared human resources, and strengthening generalist specialties like Pediatrics, Internal Medicine, and Family Medicine, whose versatility and multipotentiality are essential for managing uncertainty.

Responsibility of healthcare professionals

Given their awareness of the impact of environmental changes on population health, healthcare professionals have an ethical duty to engage in this global challenge within their organizations and adopt environmentally friendly behaviors. We must not compromise the future of coming generations—our children and grandchildren—and uphold the trust society places in us. We must raise our voices to highlight that this is not just an environmentalist or radical youth issue but affects us all. We have to communicate the severity of the problem without inducing helplessness, as this paralyzes action. The climate emergency must be recognized as a public health emergency.

The WHO, several scientific societies, and professional bodies from various countries have already taken positions on the need for this involvement. The Portuguese Society of Internal Medicine was the first internal medicine society in the world to address and issue public recommendations on this topic.⁷ In 2022, the European Federation of Internal Medicine, which includes societies from 41 countries, published a similar appeal.⁸ This year, we promoted a consensus in this direction, uniting for the first time all Spanish and Portuguese-speaking internal medicine societies or associations, totaling 29 countries.⁹

The Portuguese Council for Health and the Environment (PCHE)

The PCHE was founded by the author of this article, together with José Victor Malheiros and João Queiroz e Melo, in October 2022 with the objective of bringing together the leading healthcare-related organizations to jointly address climate change, environmental degradation, and their health impacts. The PCHE advocates for reducing the health sector's ecological footprint, promotes public and professional awareness, education, and research, and helps the healthcare system respond to the epidemiological transition and increased risk of unexpected events. The rapid growth of this alliance, now with 85 members, including the Portuguese Medical Association and 21 scientific societies, highlights its timeliness and importance.

Since its inception, we have organized webinars and colloquiums, participated in multiple congresses, co-organized the International Course on Health and the Environment with the National School of Public Health, issued public statements, and we are developing environmental

sustainability recommendations across various sectors. By the end of the year, we will publish the first report of the Portuguese Observatory of Health and Environment and organize the 1st National Congress on Health and the Environment on February 7-8, 2025.

As Robert Swan, the first person to reach both of the earth's poles, said: "The greatest threat to our planet is the belief that someone else will save it."¹⁰

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