



The COVID-19 pandemic and its impact on planetary health

A pandemia de COVID-19 e o seu impacto à saúde planetária

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ABSTRACT

The COVID-19 pandemic has painted a clear picture of what a multidimensional planetary crisis is, revealing the central role played by the health sector and the deep inequalities in access to health care that exist between and within each country. Decreasing the environmental effects of the health sector and reducing greenhouse gas emission may not only improve people's health, but also reduce health care costs. The health care sectors around the world directly and indirectly release greenhouse gases by providing their services and purchasing products, services, and technologies within a carbon-intensive supply chain. Further educating health care professionals about the effects of climate change may lead to more sustainable clinical practices, improving patient outcomes and providing substantial impetus to increased efforts to reduce carbon emission. The health sector must take responsibility for its climate footprint by responding to the growing climate emergency not only by assisting the sick, injured, or dying from the climate crisis, but also by doing primary prevention and drastically reducing its own carbon emission.

Keywords: Pandemic, carbon emission, planetary health.

RESUMO

A pandemia de COVID-19 deu ao mundo uma imagem clara do que é uma crise multidimensional em escala planetária, revelando o papel central que ocupa o setor de saúde e as profundas desigualdades no acesso aos cuidados em saúde que existem entre os diferentes países, e dentro de cada um deles. Melhorar os efeitos ambientais do setor e reduzir as emissões de gases de efeito estufa pode não apenas melhorar a saúde de todos, mas também reduzir os custos com os cuidados em saúde. O setor de saúde de cada país libera direta e indiretamente gases de efeito estufa ao fornecer seus serviços e ao comprar produtos, serviços e tecnologias em uma cadeia de fornecimento de carbono intensivo. Educar os profissionais de saúde mais profundamente sobre os efeitos das mudanças climáticas pode levar a práticas clínicas mais sustentáveis, melhorando os resultados para os pacientes e fornecendo um impulso substancial para aumentar os esforços para reduzir as emissões de carbono. O setor da saúde deve assumir a responsabilidade por sua pegada climática respondendo à crescente emergência climática, não apenas prestando assistência aos doentes, feridos ou moribundos como resultado da crise climática e suas causas, mas também fazendo a prevenção primária e reduzindo drasticamente suas próprias emissões.

Descritores: Pandemia, emissões de carbono, saúde planetária.

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Introduction

Effects of climate change are manifested in human health as a result of the impacts of air pollution, severe weather, forest fires, extreme temperatures, changes in vector ecology, problems with food supply, among other stressors.¹

These health threats are not experienced uniformly across geographic regions or populations, as they disproportionately affect the most vulnerable and disadvantaged groups, such as people of lower socioeconomic status, the sick, women and children.²

Much attention has been paid to the role that health systems play in combating climate change.³ They are necessary to sustain and enhance human well-being, but they have an environmental footprint that contributes to environment-related threats to human health.⁴

Improving the sector's environmental effects and reducing greenhouse gas emissions can not only improve everyone's health, but also reduce healthcare costs.¹

The World Health Organization (WHO) estimates that the costs generated by the direct damages of climate change to health (not including the costs of damage mediated by the effects on agriculture, water and sanitation) will reach between US\$ 2 billion and US\$ 4 billion per year by 2030,⁵ to meet the Development Goal Targets for universal health coverage.⁶

In this way, achieving these health goals could result in the generation of an additional 382 million tonnes of CO₂ equivalent (tCO₂e) in one year. This would increase the global healthcare carbon footprint by around 16% or 2.4 billion tonnes, accentuating the environmental impact of healthcare, thus running counter to its core mission.⁴

Differences in health challenges between high- and low-income countries, and how these challenges relate to environmental impact, are important considerations. In many low-income countries, the provision of health care is insufficient and the health of the population is often compromised. Unlike what happens in high-income countries, which have high health expenditures, accompanied by significant wasteful practices.^{4,7}

Health services participate in this cycle by producing waste and not segregating and disposing of it correctly, by consuming a lot of water or energy in a non-rational way, by not carrying out adequate

selective collection, discarding packaging or other materials that could be recyclable in white waste, or continue using disposable cups for their team. There is also environmental damage by continuing to build unsustainable buildings, with poor lighting and without natural ventilation, without thinking about more sustainable energies such as photovoltaics, and not building cisterns to collect rainwater or reuse water, among others; that is, by continuing with these unsustainable actions, they are increasing their carbon footprint,⁸ generating more greenhouse gases and contributing to global warming, that will harm the health of people, who will return to services more often and sick. It is necessary to break this cycle.⁹

The objective of this study was to assess and relate environmental health footprints not only to health expenditures, but also to the quality of health service delivery, health outcomes and inequality.¹⁰

Data source

Non-systematic literature review, searching for articles in PubMed, Google Scholar, SciELO and Embase published between 2017 and 2022, in English, French or Spanish, using the search words “footprint” or “COVID-19” or “decarbonization” AND “planetary health” or “health care”. The bibliographic survey was carried out in January 2022.

Sources of the health care's climate footprint⁹

While there are significant differences in scale, each country's healthcare sector directly and indirectly releases greenhouse gases when providing its services and when purchasing products, services and technologies in a carbon intensive supply chain.

The healthcare sector contributes to greenhouse gas emissions by consuming energy, transporting and manufacturing, using and disposing of products. The following are several observations:⁹

- emissions directly from healthcare facilities constitute 17% of the sector's global footprint, and indirect emissions from purchased energy sources (electricity, steam, cooling and heating) represent another 12%;
- the largest share of emissions (71%) comes primarily from the healthcare supply chain for the production, transport and disposal of goods and services (pharmaceuticals and other chemicals, food and agricultural products, medical devices, hospital equipment and instruments);

- three-quarters of total healthcare emissions, including those from the supply chain, are generated at the national level. This means that about a quarter of the sector's total emissions are generated outside the country where the product will be used;
- the use of fossil fuels is a central factor in terms of emissions in the sector. Energy consumption, primarily the burning of fossil fuels, accounts for more than half of the healthcare sector's climate footprint.

Impact of the COVID pandemic

The COVID-19 pandemic has given the world a clear but shocking picture of what a multidimensional crisis on a planetary scale is, revealing the central role that the health sector occupies and the profound inequalities in access to health care that exist between and within different countries.¹¹

Healthcare delivery is the second biggest area of opportunity for decarbonisation.¹ The pandemic highlighted the need to strengthen and transform health systems in order to prepare them for future pandemics and the other major health challenges of the 21st century, climate change.

Educating healthcare professionals more deeply about the effects of climate change can lead to more sustainable clinical practices, improving patient outcomes and providing substantial impetus to increased efforts to reduce carbon emissions.¹²

It is necessary to enable health professionals to understand their own footprints, which will help drive change in practice, as well as result in partnerships with professional networks, policymakers, communities, for the development and implementation of joint plans.¹³

The WHO, in a recent report, urges the need for urgent improvements in waste management systems, given the thousands of tons of extra medical waste produced in response to the COVID-19 pandemic. The report warns that COVID-19-related health waste has put enormous strain on waste management systems around the world, threatening human and environmental health.¹⁴

The report estimates that one and a half billion units of personal protective equipment (PPE) that generated 87,000 tons were purchased between March 2020 and November 2021, and shipped to countries around the world through a joint emergency initiative of the Organization of United

Nations (UN). However, this represents only a small fraction of the total global waste problem, as it does not include PPE purchased outside the initiative or from publicly generated waste such as disposable face masks.¹⁴

Globally, three out of 10 healthcare facilities do not have waste segregation systems that they normally consume, much less they would have to manage the increase in waste volumes caused by the pandemic.

The report also warns that poor waste management has the potential to affect the health of workers through puncture wounds, burns and exposure to pathogenic microorganisms, and can also affect communities living in the vicinity of landfills and waste disposal sites, inhaling contaminated air, poor water quality or disease-carrying pests.¹⁴

Plastic production has more than doubled, raising concerns about short-term impacts on water, oceans and air quality (from fires) in addition to the long-term impacts of nanoplastic particles.¹⁵

One hundred and forty million COVID-19 test kits have been made available globally. This generated 2,600 tonnes of non-infectious waste and 731,000 liters of chemical waste, according to the report.¹² In addition, more than eight billion doses of vaccine were administered, producing 144,000 tons of additional waste in the form of syringes, needles and safety boxes.¹⁴

Plastic waste generated by testing and vaccines is incinerated and puts an additional burden on already strained waste management systems and increases pollution where incineration is not well controlled.¹⁶

Excessive use of gloves has been a long-standing problem even before the COVID-19 pandemic, resulting in unnecessary financial costs and adverse environmental impacts. It is necessary to ensure that adequate amounts of supplies (including water and soap or hand sanitizer) are provided in the right places and there is training and monitoring regarding targeted use.¹⁷

The report fundamentally recommends: (a) reducing unnecessary consumption of PPE by promoting its safe and rational use, (b) using smaller and more sustainable packaging, (c) developing reusable and easy-to-disinfect PPE, (d) manufacturing PPE with a higher proportion of renewable or recyclable materials, (e) use of technologies such as autoclaves as an alternative to burning, (f) investment in local production of PPE.¹⁴

In addition, strengthening health waste collection systems, with the implementation of more sustainable improvements, standards and regulations, regular monitoring and reporting, and increased investments in safe waste management, along with water, sanitation, hygiene infrastructure, energy, in addition to a well-trained and skilled workforce, capable of safely managing waste and using the necessary PPE.¹⁴

Taking all of the above into consideration, what can we do to encourage decarbonization in primary care? How can we change our practices to build adaptation and resilience to these changes?

They can be achieved by high-impact actions,¹¹ such as:

- supply the healthcare sector with 100% clean and renewable electricity;
- investments in zero-emission infrastructure and buildings;
- initiate a transition to sustainable, zero-emission modes of transport;

- provide healthy, sustainably grown food;
- encouraged the manufacture of low-carbon pharmaceutical products;
- implement circular health care and sustainable health waste management;
- and establish more efficient health systems. Reducing emissions by increasing the efficiency of the system, removing unnecessary and inefficient practices, linking emissions reduction with the quality of care and building resilience.¹⁸

How can we collaborate individually

Even private health clinics can consciously collaborate with the reduction of the carbon footprint (Table 1). Below we describe the adaptations made to achieve these decarbonization targets. Allergy and Immunology Clinic with an area of 102 m² and consisting of three offices (immunology, infectology and dermatology), an exam room and a vaccine room, with an average daily flow of care of 100 people. Because it has large glass windows in all

Table 1

Measures adopted to reduce the environmental impact in the clinic in the care of patients

Measure	Main impact
Solar energy	Clean energy
Collection of contaminated material	Prevents soil and groundwater damage
Selective garbage collection	Generates income and prevents environmental damage
Steam hand dryer	Decrease the use of paper towels
Natural lighting and ventilation	Decreases energy consumption
Biodegradable cups	Avoid using plastic
Electronic medical record	Avoid using paper
Telemedicine	Avoid traveling by vehicles
Digital prescription	Avoid using printed paper
Electric locomotion vehicle	Does not use fossil fuels

environments, natural lighting is the main source of light. In addition, the installation of solar panels on the roof of the building has been sufficient to meet the energy demand of the clinic. Another point to note concerns the generation of waste. The change from disposable cups to biodegradable ones (they are reusable and decompose in 18 months) and the replacement of paper towels with steam dryers helped in this control.

The pandemic brought the legal opportunity of telemedicine, facilitating the care of patients at any distance in the national territory, thus reducing the emission of gases and pollutants because there is no displacement of vehicles. By using electronic medical records and digital prescriptions, waste of graphic materials and consumption of paper, trees and forests are avoided.

In addition to everything mentioned above, depending on the location where we operate, to further reduce the generation of pollution, we as health professionals can replace our commuting with less polluting vehicles, such as electric vehicles or bicycles.

All these measures generate less costs in the short, medium and long term, in addition to positive impacts on global health (Table 1). Therefore, practical changes in our routine in our clinics can bring great benefits from an economic, environmental and, why not, mental point of view.

Conclusion

The health sector must take responsibility for its climate footprint by responding to the growing climate emergency, not only providing assistance to the sick, injured or dying as a result of the climate crisis and its causes, but also doing primary prevention and drastically reducing its own emissions.

The sector must take this initiative forward and, at the same time, reach global health goals, such as universal health coverage and work towards achieving the Sustainable Development Goals, by educating its professionals more thoroughly about the effects that climate change can lead to more sustainable clinical practices.

Climate change, in all its dimensions, will become a growing priority for consumers and decision-makers in all societies around the world, and the health sector must take the lead in tackling this serious problem.

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