Fronteiras: Journal of Social, Technological, and Environmental Science
http://periodicos.unievangelica.edu.br/fronteiras/
ISSN 2238-8869

Article

When the Environment Gets Sick, Do People Get Sick Too? What Health Systems Can Do for Planetary Health

Iel Marciano de Moraes Filho[1], Jeovana Menezes de Souza[2], Priscila Amaral de Oliveira[3], Giovana Galvão Tavares[4]

[1] PhD in Environmental Sciences. Evangelical University of Goiás. ORCID: 0000-0002-0798-3949. E-mail: ielfilho@yahoo.com.br

[2] Bachelor's Degree in Nursing. Paulista University. ORCID: 0009-0000-6549-9402. E-mail: jeovanasouza12@gmail.com

[3] Bachelor's degree in Nursing. Universidade Paulista. ORCID: 0009-0002-4558-4479. E-mail: priscila665@outlook.com

[4] PhD in Science. Professor at the Evangelical University of Goiás. ORCID: 0000-0001-5959-2897. E-mail: gio.tavares@gmail.com

ABSTRACT

This research seeks to discuss the relationship between disease development and environmental imbalance, with the aim of reflecting on the literature on how diseases develop from environmental imbalance. It is therefore the connections between these factors and proposes strategies to mitigate the impacts on health. In addition, the research aims to offer *insights* into how health services can adapt and respond to these challenges in their local communities. To achieve these objectives, a descriptive study was conducted, using a theoretical-reflective analysis. Thus, the integration of Planetary Health and Planetary Health Education into Primary Health Care (PHC) and Primary Environmental Care (PEC) practices becomes crucial to address issues of quality of life, environmental conservation, and prevention of environment-related diseases, because teaching the population that environmental imbalance affects quality of life and is related to an increase in diseases is essential to these services, especially in times of so much climate disruption. Therefore, health education, supported by environmental education and Planetary Health education, plays a fundamental role in mediating and mitigating such problems, promoting an increase in population resilience and, consequently, an increase in environmental, health, and Planetary Health literacy.
Keywords: sustainable development; environmental health; primary health care; public health; health literacy.

RESUMO

Essa pesquisa busca discutir a relação do desenvolvimento de doenças e o desequilíbrio ambiental, tendo como objetivo refletir perante a literatura sobre como se dá o desenvolvimento de doenças a partir do desequilíbrio ambiental. É logo as conexões entre esses fatores e propor estratégias para mitigar os impactos na saúde. Além disso, a pesquisa visa oferecer *insights* sobre como os serviços de saúde podem se adaptar e responder a esses desafios em suas comunidades locais. Para alcançar os objetivos, foi realizado um estudo descritivo, tipo análise teórico-reflexiva. Assim, a integração da Saúde Planetária e da Educação em Saúde Planetária às práticas da Atenção Primária em Saúde (APS) e Atenção Primária Ambiental (APA) tornam-se cruciais para abordar questões de qualidade de vida, conservação ambiental e prevenção de doenças relacionadas ao meio ambiente, pois ensinar a população que o desequilíbrio ambiental afeta a qualidade de vida e está relacionado ao aumento de doenças é primordial a esses serviços, especialmente em momentos de tantos desarranjos climáticos. Logo, a educação em saúde, respaldada pela educação ambiental e educação em Saúde Planetária, desempenha um papel fundamental na mediação e mitigação de tais agravos, promovendo um aumento da resiliência populacional e, consequentemente, um aumento do letramento ambiental, em saúde e em Saúde Planetária.
Palavras-chave: desenvolvimento sustentável; saúde ambiental; atenção primária à saúde; saúde pública; letramento em saúde.

Submission: 04/12/2025 Accepted: 04/03/2026 Publication: 18/06/2026

v.15, n.2, 2026 • p. 1-12. • DOI http://dx.doi.org/10.21664/2238-8869.2026v14i4.8541

Introduction

This study addresses the growing problem of how environmental imbalance, resulting from human activities, contributes to the development and worsening of various diseases. Thus, in the context of interactions between human activities and the environment, environmental impacts are defined as any changes in the physical, chemical, and biological properties of the environment, considered to be a direct result of human actions (Cruz et al. 2014).

These impacts can generate positive and negative effects, the latter being particularly worrying as they directly or indirectly affect the health, safety, and well-being of the population. This occurs mainly when humans do not understand that their own activities contribute to the emergence and worsening of various diseases, revealing the profound interdependence between society and nature. Thus, the balance of ecological systems is directly related to the quality of human health, reinforcing that we depend on harmonious coexistence among all beings, human and non-human, that inhabit the planet. Maintaining this balance is essential for us to truly achieve the principles and practice of Planetary Health (Cruz et al. 2014).

However, it is well known that, over the years, human knowledge about the processes of environmental degradation has expanded, allowing for a deeper understanding of the relationship between environmental issues and public health, even though many ignore it. Nevertheless, this understanding is essential for identifying the main factors that contribute to the spread of disease and for developing effective strategies for the prevention, control, and eradication of disease (Barcellos et al. 2008).

Human activity often results in environmental damage that has complex and unpredictable effects on human health. For example, air and water pollution are directly related to the emergence or worsening of infectious diseases. Air pollution can increase susceptibility to respiratory infections, while contaminated water can transmit diseases such as cholera, hepatitis A, and typhoid fever. In addition, changes in ecosystems, such as deforestation and loss of biodiversity, can increase contact between wild animals, domestic animals, and humans, leading to the transmission of zoonotic diseases (World Health Organization 2016).

These environmental changes can result in significant negative impacts, enabling the emergence of more intense epidemics. Scientists are increasingly considering the hypothesis that global climate change is directly linked to the increase in infectious diseases, since humans are not immunologically adapted to new mutations of pathogens (Barcellos et al. 2008).

According to Article 196 of the 1988 Federal Constitution of Brazil, health is a right of all and a duty of the State, guaranteed by social and economic policies. However, beyond government policies, health is also the result of individual actions and the interaction of the population with the environment. Therefore, it is extremely important to develop alternatives that do not compromise existing resources and, consequently, the health of the population (Brazil 1988).

Therefore, the promotion of environmental education strategies, which constitute a process of recognizing values and clarifying concepts, aims to develop skills and change attitudes towards the environment, understanding and valuing the interactions between people, their cultures, and their biophysical environment, which can mitigate such developments (Melo & Fernandes 2012; Tavares & França 2023) .

Meanwhile, in 2015, the United Nations (UN) established the 2030 Agenda, which defines 17 Sustainable Development Goals (SDGs) and 169 targets to promote global sustainable development in the coming years. One of the key focuses of this agenda is health, with the third SDG dedicated to ensuring healthy lives and well-being for all. In addition, the sixth SDG highlights the importance of the availability and sustainable management of water and sanitation for all. Another aspect addressed is the eleventh SDG, which highlights the need to make cities and human settlements inclusive, safe, resilient, and sustainable. This implies reducing

carbon emissions from irregular urban areas, minimizing the environmental impacts that contribute to the development of diseases (Cruz et al. 2022).

In summary, the 2030 Agenda and its SDGs aim to create a healthy society by promoting well-being for all. This is achieved by mitigating risk factors related to the development of diseases, improving water quality, and promoting sustainable cities, while strengthening health systems to address new public health challenges (Cruz et al. 2022).

This reflection presents an integrated perspective between Planetary Health and Public Health, highlighting preventive measures and sustainable actions to mitigate these impacts.

Its current relevance is reinforced by the increase in epidemics associated with environmental factors and accelerated changes in the global climate, already widely documented by recent studies. By highlighting gaps in the literature, especially the need for interdisciplinary and preventive approaches, this reflection justifies its importance by proposing analyses and strategies capable of strengthening environmental and health protection systems, mainly in the primary health sectors within urban areas, accompanying the daily lives of populations and socio-environmental inequalities.

In this context, the objective of this study is to reflect on the literature on how diseases develop from environmental imbalance. It is therefore the connections between these factors and to propose strategies to mitigate the impacts on health. In addition, the research aims to offer *insights* into how health services can adapt and respond to these challenges in their local communities.

Method

To achieve the objectives, a descriptive study was conducted, using a theoretical-reflective analysis (Cardoso et al. 2022), developed from two guiding questions, namely: How do diseases develop from environmental imbalance? How can health services adapt and respond to these challenges in their local communities?

To answer the research questions, documents related to the topic were consulted, including reports from *the World Health Organization* (WHO) and the *Pan American Health Organization* (PAHO), as well as publications and official documents from the Brazilian Ministry of Health (MS) and the Ministry of the Environment and Climate Change (MMA). In addition, scientific articles were retrieved in November 2025 using two different search strategies. The first was conducted at *the U.S. National Library of Medicine* (PubMed), using the controlled descriptors of *Medical Subject Headings* (MeSH) *"Planetary Health" AND "Environmental Health" AND "Community Health Services*." The second was conducted on the Regional Portal of the Virtual Health Library (VHL), using the controlled descriptors of the Health Sciences Descriptors (DeCS) *"Planetary Health" AND "Environmental Health" AND "Community Health Services*." The searches resulted in 995 and 82 articles, respectively. Thus, 29 documents comprised the sample due to their direct relevance to the theme.

Furthermore, as this is a reflective article, with data available in the aforementioned databases, which are in the public domain, there is no need to submit the study to ethical review procedures.

Results and Discussion

How do diseases develop from environmental imbalance?

Natural transformations throughout history have had a profound impact on human societies. Extreme weather events, such as hurricanes, *tsunamis*, and cyclones, have often resulted in natural disasters, triggering disease outbreaks. After these disasters, various communicable diseases arise due to water and food contamination, such as cholera, hepatitis A and E, leptospirosis, as well as respiratory infections, vector-borne

diseases, and accidents involving venomous animals, as well as trauma-related skin infections, such as tetanus, staphylococcus, and streptococcus (Jafari et al. 2011).

Meanwhile, it is indisputable that planet Earth has its own natural climate change mechanisms, considering the glacial and interglacial phases. We can thus consider the expression "Ice Age," which aligns perfectly with climatic processes, evidencing that the Earth's climate is constantly changing. In this way, climate cycles are explained by natural phenomena, including changes in the Earth's rotation, solar flares, and aerosols expelled by volcanoes (Barcellos et al. 2008).

However, climate change is currently intensified more by human lifestyles than by natural phenomena on the planet. Thus, a variety of vectors can adapt to different climatic conditions, reproducing and spreading their pathogens and hosts to new locations. For example, dengue and yellow fever, transmitted by *Aedes aegypti and Aedes albopictus,* can result in epidemics in regions not previously exposed to these vectors, causing environmental inequalities (Campos et al. 2018).

Therefore, human impacts on nature have led to marked changes that cause alterations in natural biomes, allowing diseases to migrate to non-predominant *habitats*. The WHO points out that climate change is strongly linked to outbreaks of diarrhea and malaria, especially in developing countries, due to compromised water quality. Climate phenomena such as *El Niño*, which causes abnormal warming of the Pacific Ocean, can trigger diseases such as malaria, dengue, and diarrhea due to extreme weather conditions that favor the spread of these diseases (WHO 2003).

The relationship between human health and the environment is a crucial area requiring in-depth study. For example, environmental degradation has alarming consequences, including the potential increase in pandemics and the emergence of new diseases. Human activities that lead to environmental degradation have altered not only the Earth's surface but also the atmosphere due to concentrations of greenhouse gases such as $CO_2$and CH_4, contributing to global warming and climate change (Gioda 2018).

In addition, these activities result in the depletion of natural resources, such as soil fertility due to lack of crop rotation, inappropriate use of pesticides, and unsustainable agricultural practices, as well as overexploitation of aquifers and ocean fisheries, leading to significant biodiversity loss and eutrophication (IBAMA 2002).

Therefore, it is of utmost importance to understand natural changes, human activities, and their impact on health, as they are considered essential for addressing the growing challenges posed by infectious diseases and worsening public health problems. Thus, the process of degradation and environmental changes currently observed are largely driven by human activities (Jones et al. 2008). It is in this context that the configuration of environmental inequality processes is problematized, and how governments can act to promote socio-environmental equity.

Thus, such human influences lead to the intensification and acceleration of their occurrences, which have the potential to destabilize the balance and amplify the probability of rapid outbreaks of epidemiological epidemics that are capable, in certain scenarios, of evolving into pandemic events such as the pandemic caused by the SARS-CoV-2 coronavirus, which causes COVID-19 (Jones et al. 2008; Cardoso et al. 2022).

Therefore, the WHO considers these changes to have devastating potential, affecting economic activities and infrastructure worldwide. In addition, they pose a direct threat to human health in several ways. These anthropogenic climate changes, i.e., everything caused or produced by human activity, can lead to drinking water shortages due to contamination and overexploitation of water resources (WHO 2003).

In addition to climate change, there are other factors that contribute to the risk of a pandemic. The speed of processes such as the decline in biodiversity due to the expansion of agriculture and unplanned urbanization can increase contact between humans and vectors of infectious diseases. For example, as natural ecosystems

are replaced by urban areas and agricultural systems, contact with wild animals and disease vectors may increase, adding to the potential for transmission of pathogens to the population (WHO 2010).

In addition, the consumption of wild animal meat, often motivated by cultural habits or economic necessity in low-income environments, also plays a significant role in the risk of pandemics, as this practice can create opportunities for the transmission of zoonotic diseases (those that originate in animals and affect humans). The transmission of pathogens from animals to humans can result in outbreaks of potentially infectious diseases (Karesh et al. 2012).

In the meantime, we are experiencing the "Anthropocene," which is represented by an intrinsic interaction between human and natural systems, meaning that human activity has become the dominant force in changing the planet. During this period, intensive human activities such as large-scale agriculture, fossil fuel combustion, and massive industrialization have left an indelible mark on the Earth. These practices significantly shape global ecosystems, affecting the conditions essential for human well-being and the development of civilizations (Folke et al. 2021). Even though it has been rejected by the Subcommission on Quaternary Stratigraphy of the International Commission on Stratigraphy (CIES), responsible for defining the geological time scale, many authors consider the Anthropocene to be a new geological era (Casa de Oswaldo Cruz 2024).

This context highlights that local actions can have global repercussions and vice versa. Extreme weather events and geopolitical issues, when intertwined with the dynamics of food systems, can trigger synchronized challenges in geographically distant areas, quickly crossing national and regional borders. The increase in antibiotic resistance, the rapid spread of pandemics such as COVID-19, and the redistribution of moisture between different regions highlight the profound interconnectedness of the contemporary world (Folke et al. 2021).

It is important to note that the probabilities and consequences of these changes are not only linked to spatial and temporal scales, but also evolve over time due to human activities. These activities have the power to both amplify and mitigate the probability and consequences of specific adverse events. Thus, the Anthropocene alerts us to our shared responsibility for preserving natural and human systems, recognizing that our present actions will shape the future of our planet and all forms of life that inhabit it (Folke et al. 2021).

Similarly, the intersection between health and the environment presents a new challenge for the health sector. In this context, it is crucial to consider a wide range of environmental factors, such as air pollution, noise and visual pollution, deforestation, burning, climate change, floods, storms, and earthquakes, all of which are relevant to housing analysis, as they can contribute to the emergence of various diseases (Porto 2013).

The understanding that humanity plays a fundamental role in environmental changes on the planet is becoming evident, and the need to integrate environmental issues into discussions about the health and disease process is emerging. This highlights the need to consider the environment as an essential dimension in health actions and to promote strategies that rethink health practices, with significant implications for environmental sustainability (Moreschi et al. 2012).

Thus, a new global movement has emerged that aims to develop evidence-based solutions to minimize the environmental problems caused by climate change. It is dedicated to the study of the interdependencies between the health of the planet's natural systems and the health of human civilization, taking an interdisciplinary approach, with the aim of understanding the impacts of human activity on the environment and on individual and collective health, and recognizes that human health is closely linked to the health of the planet, and that environmental degradation can lead to large-scale diseases and health problems. This new movement has been called Planetary Health (Moraes-Filho & Tavares 2023).

This movement was sparked by the World Organization of Family Doctors (WONCA) declaration on Planetary Health and the SDGs, highlighting the importance of scientific evidence in understanding the impacts

of environmental pollution and climate change on human health (WONCA 2017; Floss & Barros 2019). This statement recognizes that environmental degradation can lead to large-scale diseases and health problems, also allowing for an understanding of the widening inequalities among peoples and, consequently, the difficulty of achieving equity.

How can health services adapt and respond to these challenges in their local communities?

The development of public policies that provide direct assistance to the population, such as the model proposed by Barbara Starfield (2002), which consists of Primary Health Care (PHC) services that include attributes such as a gateway (first contact service), longitudinality, comprehensiveness, coordination of care, community orientation, family centrality, and cultural competence, are places where there is great opportunity for the development of aspects of Planetary Health, such as the promotion of Planetary Health Education, as it recognizes and accompanies the individual in their territory and in their daily experiences (Starfield 2002; Moraes-Filho & Tavares 2023; Moraes-Filho & Tavares 2025).

In the Brazilian context, the 2007 National Primary Care Policy (PNAB) stands out as a set of individual and collective actions, as established by Ordinance No. 2,436, of September 21, 2017/MS. These measures aim at the promotion, prevention, and substantial reduction of health problems, with a significant focus on household registration. Through a detailed diagnosis of the territory, the aim is to obtain an accurate understanding of the situation, which is fundamental for an adequate prognosis. In this way, it is possible to integrate and organize the family, empowering it to build citizenship, with the clear objective of protecting and improving both health and the environment (Silva 2011).

PHC is crucial because it empowers individuals and organizations by being located close to them in the territories, encouraging active participation in minimizing the impacts caused by agents harmful to human health. Phenomena such as the greenhouse effect, air pollution, waste accumulation, environmental contamination, and water pollution are among the main agents that directly affect human health, and their exponential growth has generated widespread concern. Thus, these services have the potential to provide education on planetary health by identifying risk factors and socio-environmental characteristics (Silva 2011; Moraes-Filho & Tavares 2025*).*

These practices are possible through the interconnection between Brazilian health policies, especially between Primary Health Care and Primary Environmental Care (PEC), which play a crucial role in promoting health in the face of environmental degradation and its influences on the population. The concept of PEC is applied according to the definition established by the Pan American Health Organization (PAHO). PEA is conceived as an environmental action strategy, predominantly preventive and participatory at the local level. It recognizes the fundamental right of human beings to live in a healthy and adequate environment, while also guaranteeing access to information on environmental risks related to health, well-being, and survival, recognizing inequalities. At the same time, APA defines people's responsibilities and duties in relation to the protection, conservation, and recovery of the environment and health (PAHO 1999; Silva & De Loreto 2010).

According to Mendes (2006), the concept of APA encompasses the logic of health surveillance based on detailed knowledge of a territory. This knowledge allows for the identification, description, and explanation of existing problems, defining critical points and intervening in a coordinated manner through intersectoral organized operations. This collaborative approach allows for a more comprehensive and effective approach to solving the environmental and health challenges faced by local communities. It is necessary to emphasize concepts such as environmental health and healthy housing during home visits and community meetings.

In doing so, actions for prevention, promotion, and recovery of health are promoted, making it possible to implement more effective and efficient changes in the environment of families and the community in general

(Silva 2011). The widespread adoption of these concepts will trigger the promotion of more comprehensive health, that is, planetary health (Mendes 2006).

Therefore, health professionals working in PHC play an extremely important role of social influence, given the trust that the population places in them. This trust can be leveraged for recommendations and the promotion of Planetary Health, which has a direct impact on the health of society and the construction of a healthier, more sustainable, and equitable future for all. In addition to their technical skills, it is essential that these professionals cultivate ethical and humanistic aspects, enabling the identification, dialogue, and preparation of communities at risk for local events that affect the community (Silva & Andrade 2013; Rosa 2022; Moraes-Filho & Tavares, 2023).

Therefore, the integration of Planetary Health is the promotion of Planetary Health Education practices in PHC services, which is indispensable, providing opportunities for reflection and actions that promote quality of life, ranging from environmental conservation to the implementation of strategies for the prevention and control of environment-related diseases. In summary, PHC health professionals play a crucial role in promoting Planetary Health, empowering the population, raising awareness about the impacts of human activity on the environment and health, encouraging the adoption of healthy and sustainable behaviors, and thus contributing to the resilience of communities in the face of global challenges (Silva & Andrade 2013; Rocha 2022; Moraes-Filho & Tavares 2023).

Thus, some "Insights" actions can be adopted by health teams in their local communities in PHC services to promote Planetary Health and, of course, human health, such as: promoting education and awareness among health professionals, patients, and the community in general about the impacts of climate change and environmental degradation on health; encouraging sustainable practices in PHC services, such as the efficient use of resources, waste reduction, recycling, and energy conservation; prioritizing the prevention and control of diseases that are directly related to climate change and environmental degradation, such as respiratory diseases, vector-borne diseases (such as dengue, Zika, and chikungunya) (Moraes-Filho & Tavares 2024), and diseases related to exposure to environmental pollutants; conserving green areas near homes; planting trees in front of houses to reduce heat; conscious consumption; monitoring and translating ecological assessment data on risks and human impacts on communities and systems; affirming the sacredness of nature, ecological unity, and the interdependence of all species for the populations assisted in their territories (Moraes-Filho & Tavares 2023).

Furthermore, health services must be able to sensitively identify and mitigate the environmental, social, and mental health risk factors to which climate migrants are exposed as a result of their displacement and insertion into new contexts. This action is essential to defend Universal Health Coverage and renew commitments to Primary Health Care. In addition, it is essential to develop environmental awareness through transformative experiences rooted in the territory, using art, storytelling, percussion, and dance, as well as learning from indigenous knowledge about how to build social systems based on living well together, being kind, being attentive, and communicating honestly (Moraes-Filho & Tavares 2024).

Health professionals must also confront worldviews that reproduce racism, classism, sexism, ageism, ethnocentrism, and anthropocentrism, promoting environmental health, planetary health, and human rights in their practices. This includes promoting health and care actions in educational systems and adopting the 17 United Nations Sustainable Development Goals, aligning with the Decade of Action to achievethem at local, national, and international levels, especially in the case of professionals such as nurses and doctors, who are respectively at the forefront of coordinating care and diagnosis for populations around the world (Moraes-Filho & Tavares 2024).

Therefore, promoting an interdisciplinary approach in PHC, involving professionals from different areas, such as health, environment, and urban planning; continuous monitoring of health indicators related to the environment and planetary health, as well as support for research in this area and the encouragement of the use and promotion of healthy living and socialization spaces such as parks and leisure areas, facilitate social interaction and emotional well-being. By promoting healthy living and socialization spaces, we are encouraging a more sustainable and environmentally conscious lifestyle (Moraes-Filho & Tavares 2023).

These actions can be mediated by community meetings that enable issues to be addressed in a way that improves and develops literacy in Environmental Health and Planetary Health, ensuring a deeper understanding of the root causes of problems. They may include educational lectures, distribution of educational and informational pamphlets, home visits, community events focused on environmental education and promotion of collective health; such measures are capable of providing knowledge, generating visible changes, and expanding healthy habits in the short, medium, and long term throughout the community, attesting to improvements in the environment (Pereira et al. 2012).

In addition, it is necessary to consider future perspectives, identifying emerging challenges and priority areas of research in order to guide more effective interventions, especially with regard to the early identification of areas at risk for climate imbalances. Such an approach enables the implementation of coordinated and precise actions, especially in contexts where there are populations experiencing environmental racism, who suffer disproportionately from the consequences of climate inequalities due to their subsistence conditions and socioeconomic vulnerability (Araújo et al. 2024).

In this sense, it is also essential to encourage innovation and adaptation in health systems, using technology, data science, and new models of care, with a view to strengthening the resilience of communities and ecosystems. Communities with higher levels of health, environmental, and planetary literacy tend to face climate challenges more effectively, reducing vulnerabilities and expanding their capacity to respond to climate impacts (IPCC 2022).

In summary, given that the development of diseases is directly related to environmental degradation, PHC services have the autonomy to apply measures to mitigate health risks. Therefore, when considering Environmental Education as a promoter of health, the intrinsic connection between humans and the environment is emphasized. This approach does not hierarchically separate different levels of importance for the maintenance of life. On the contrary, it proposes the integration of humans into the living system, giving them responsibility for conservation as a whole. In this context, health education, supported by environmental education, plays a fundamental role. It contributes significantly to raising public awareness, broadening environmental understanding, and mitigating environmental impacts on health (Pereira et al. 2012; Dias et al. 2018; Tavares & França 2023).

Thus, environmental education should not only discuss the physical environment, but also contextualize local health, highlighting disease prevention and management of environmental factors that are harmful to health, with a view to raising public awareness, promoting better environmental literacy and health literacy, and, consequently, reducing the effects of environmental impacts on health. As Paulo Freire said, "We are the cities. We are the cities" (Freire 1991; Pereira et al. 2012).

And so, to consolidate all these roles, Planetary Health comes as the achievement of the highest possible standard of health, well-being, and equity worldwide, through careful attention to the human, political, economic, and social systems that shape the future of humanity and the Earth's natural systems. Therefore, nothing is more equitable, fair, progressive, and conservative for the future than to instill in health professionals, and through them in the population, the recognition that the degradation of the planet leads to disease and can hinder or extinguish the human race. In this way, education in Planetary Health is a great ally in this struggle,

and government leaders, through health systems and public policies, through education, are the key to transformation (Moraes-Filho & Tavares 2025*)*.

Planetary Health emphasizes that, in order to consolidate these actions in an assertive and decisive manner, there is also an important call for multisectoral actions, as there is a need for integrated actions involving different sectors of society, including governments, the private sector, local communities, and international organizations. These challenges will be easier to address with collaborative and coordinated approaches.

Given the type of study presented, it is important to highlight that the proposed issues for reflection remain open in light of new evidence, seeking greater specificity with regard to the development of diseases from environmental imbalance and forms of mitigation through the promotion of Planetary Health and Planetary Health Education, intersectoral and governmental articulations.

Conclusion

Climate change results in disease because it modifies the environmental conditions that sustain human health, creating scenarios that are more favorable to the transmission of infectious agents, the worsening of chronic diseases, and the emergence of new risks.

Health systems must act as catalysts for change by adapting and responding to emerging challenges in their communities, guiding the population to adopt behaviors that promote Planetary Health through Planetary Health Education, especially when integrated with Primary Health Care (PHC) services that accompany the population's way of life. Thus, these services must also integrate Primary Environmental Care (PEC).

These integrations are crucial for addressing issues related to quality of life, environmental conservation, and the prevention of environmentally-related diseases, as they teach the population that the more the territory is degraded, the greater the burden of disease will be. This holistic approach, therefore, has the potential to strengthen community resilience, reducing inequalities and promoting healthier, more equitable, and sustainable societies, that is, with high literacy in Planetary Health.

References

Araújo ILF, Godoi ACR dos S, Ribeiro LP 2024. Environmental Racism, Mining, and Mental Health of the Black Population. *Cad. Saúde Pública* 40 (6):e00045324. Available from: https://doi.org/10.1590/0102-311XPT045324.

Barcellos C, Monteiro AMV, Corvalán C, Gurgel HC, Carvalho MS, Artaxo P, Sandra H, Virginia R 2009. Climate and environmental change and infectious diseases: scenarios and uncertainties for Brazil. *Epidemiol Serv Saúde* 18(3):285-304. Available from: http://dx.doi.org/10.5123/S1679-49742009000300011.

Baptista L, Pfeifer R, da Silva EC, Arbilla G 2011. Kinetics and thermodynamics of limonene ozonolysis. *J Phys Chem A* 115(40):10911-10919. Available from: 10.1021/jp205734h.

Brazil. Chamber of Deputies Portal [homepage on the Internet]. Constitution of the Federative Republic of Brazil. 2016 [cited 2025 Aug. 2]. Available from: http://www.planalto.gov.br/ccivil_03/Constituicao/Constituicao.htm.

Campos FI, Campos DMB, Vital AV, Paixão TFP 2018. Environment, Development, and Expansion of Vector-Borne Diseases. *Fronteiras: Journal of Social, Technological and Environmental Science* 7 (2):49-63. Available from: https://doi.org/10.21664/2238-8869.2018v7i2.p49-63.

Cardoso D da C, Café EP, Melo TMR, Carvalho-Filha FSS, Moraes-Filho IM, 2022. Historical evolution of COVID-19 worldwide and its implications for the mental health of Brazilian nurses. *REVISA* 11 (3):341-355. Available from: https://rdcsa.emnuvens.com.br/revista/article/view/304.

Oswaldo Cruz Foundation (Fiocruz) [homepage on the Internet]. *Beyond geologists: what history has to say about the Anthropocene*. [updated 2024 April 16; cited 2025 Sep 3]. Available from: https://coc.fiocruz.br/todas-as-noticias/discussao-sobre-antropoceno-precisa-ser-publica-e-interdisciplinar-diz-historiadora/.

Cruz FC da, Cruz AC da, Rossato MV 2014. Identification and evaluation of environmental impacts: a case study. *REGET* 18 (2):777-91. Available from: https://doi.org/10.5902/2236117013549.

Cruz DKA, Nóbrega AA da, Montenegro M de MS, Pereira VO de M 2022. The Sustainable Development Goals and data sources for monitoring targets in Brazil. *Epidemiol Serv Saúde* 31 (spe1):e20211047. Available from: https://doi.org/10.1590/SS2237-9622202200010.especial.

Dias DO, Lemes GA, Oliveira HA de 2018. Environmental education as a means of promoting health. *Environmental education in action* XXI (84):1-21. 2018. Available from: http://revistaea.org/artigo.php?idartigo=3408.

Floss M, Barros EF 2019. Planetary health: a call to action for family doctors worldwide. *Brazilian Journal of Family and Community Medicine* 14 (41):1992. Available from: https://doi.org/10.5712/rbmfc14(41)1992.

Folke C, Polasky S, Rockström J, Galaz V, Westley F, Lamont M, Scheffer M, et al. 2021. Our future in the Anthropocene biosphere. *Ambio 50*(4):834–869. Available from: https://doi.org/10.1007/s13280-021-01544-8.

Freire P 1991. *Lifelong education and educational cities***.** Vila das Letras. Available from: https://acervoapi.paulofreire.org/server/api/core/bitstreams/21072ff3-b8d3-45c7-87a9-aec616190ccd/content.

Gioda A 2018. Comparison of pollutant levels emitted by different fuels used for cooking and their influence on global warming. *Química Nova* 41 (8):839-848. Available from: doi:10.21577/0100-4042.20170260.

IBAMA 2002. *GEO Brazil 2002: perspectives on the environment in Brazil*. Vol. I, IBAMA Editions, Brasília (DF), 447pp.

Intergovernmental Panel on Climate Change (IPCC) 2023. Climate Change 2022 – *Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.

Jafari N, Shahsanai A, Memarzadeh M, Loghmani A 2011. Prevention of communicable diseases after disaster: A review. *J Res Med Sci* 16(7):956-962. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC3263111/.

Jones KE, Patel NG, Levy MA, Storeygard A, Balk D, Gittleman JL, Daszak P 2008. Global trends in emerging infectious diseases. *Nature* 451(7181):990-993. Available from: 10.1038/nature06536.

Karesh WB, Dobson A, Lloyd-Smith JO, Lubroth J, Dixon MA, Bennett M, Aldrich S et al. 2012. Ecology of zoonoses: natural and unnatural histories. *The Lancet* 380(9857):1936-1945. Available from: 10.1016/S0140-6736(12)61678-X.

Mendes EV 2006. A new health paradigm: the social production of health. In: *An agenda for health*. 2nd ed. São Paulo: Hucitec.

Moraes Filho IM de, Tavares GG 2023. Improving planetary health through primary health care: possibilities for implementation. *REVISA* 12 (3):439-442. Available from: https://doi.org/10.36239/revisa.v12.n3.p439a442.

Moraes Filho IM de, Tavares GG 2024. Current and future nursing in promoting planetary health: actions for sustainable development. *Text & Context - Nursing* 33 (2024):e20230415. Available from: https://doi.org/10.1590/1980-265X-TCE-2023-0415en.

Moraes Filho IM de, Tavares GG 2024. Distribution of Cases of the Main Arboviruses in Goiás, from 2015 to 2021: A Planetary Health Perspective. *Fronteiras: Journal of Social, Technological and Environmental Science* 13 (2):192-202. Available from: https://doi.org/10.21664/2238-8869.2024v13i2.p192-202.

Moraes Filho IM de, Tavares GG 2025. Planetary health, Cerrado, and substructure: descriptive study on arbovirus proliferation and geographical distribution in Goiás. *Revista de Pesquisa Cuidado é Fundamental Online* 17:e13530.2025. Available from: https://doi.org/10.9789/2175-5361.rpcfo.v17.13530.

Moreschi C, Siqueira DF de, Dalcin CB, Grasel JT, Backes DS 2012. Tribute to Florence Nightingale and commitment to environmental sustainability. *Rev Baiana Enferm 25* (2). Available from: https://doi.org/10.18471/rbe.v25i2.5260.

PAHO (Pan American Health Organization). 1999. *Primary Environmental Care (PEC)*. Washington (D.C): Division of Health and Environment.

Pereira CAR, Melo JV de, Fernandes ALT 2012. Environmental education as a strategy for Primary Health Care. *Revista Brasileira de Medicina de Família e Comunidade* 7 (23):108-16. Available from: https://doi.org/10.5712/rbmfc7(23)293.

Porto AL 2013. *Clinical examination: Porto and Porto*. Vol. VII, Guanabara Koogan. Rio de Janeiro, 544 pp.

Rocha da RA 2022. Oral health defending planetary health: reflective report. *ABENO Journal* 22 (2):1684. Available from: https://doi.org/10.30979/revabeno.v22i2.1684.

Silva ASC. Environmental Primary Care: in the Family Health Strategy [monograph on the Internet]. Uberaba: Federal University of Minas Gerais; 2011 [cited 2025 Dec 4]. Available from: https://hdl.handle.net/1843/BUBD-9CZFF5.

Silva NC, Andrade CS 2013. Community health workers: environmental issues and health promotion in riverside communities. *Work, Education, and Health* 11(1):113–128. Available from: https://doi.org/10.1590/S1981-77462013000100007.

Silva VA, De Loreto MDS 2010. Environmental primary care and family health: the need for intersectorality. *Social Work & Reality* 19 (1):91-124. Available from: https://ojs.franca.unesp.br/index.php/SSR/article/view/436.

Starfield B 2002. *Primary Care: balancing health needs, services, and technology*. Vol. I, Unesco, Ministry of Health, Brasília (DF), 726pp.

Tavares G, França CSB 2023. Perception, risks, and schools: environmental education in the vicinity of geophysical risks. *REVISEA* 10:1-15**.** Available from:

https://doi.org/10.47401/revisea.v10.19070

WONCA [homepage on the Internet]. WONCA Statement on Planetary Health and Sustainable Development Goals. 2017. [cited 2025 Aug. 2]. Available from: https://www.wonca.net/site/DefaultSite/filesystem/documents/Groups/Environment/planetary%20health%20espanol.pdf.

World Health Organization (WHO) 2003. Climate Change and Infectious Diseases. In: *Climate Change and Human Health: Risks and responses*. Geneva: WHO.

World Health Organization (WHO) 2010. Progress towards overcoming the global impact of neglected tropical diseases. Geneva: WHO. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/primeiro_relatorio_oms_doencas_tropicais.pdf.

World Health Organization 2018. Air pollution and child health: prescribing clean air: summary. *World Health Organization*. Available from: https://iris.who.int/handle/10665/275545.