

COMMENT

Urgent need for planetary health education for healthcare professionals and students in India

ANANDITA PATTNAIK, MANJULIKA VAZ

Abstract

The current climate crisis has had a significant negative impact on human health across the globe including India. Climate change is leading to global heating, rising sea levels and more severe extreme weather events such as floods, cyclones and droughts. These events have direct and indirect detrimental impacts on human health such as increased risk of water-related illnesses, vector-borne diseases, malnutrition due to food insecurity and pollution-related poor health. These effects are disproportionately borne by vulnerable communities, primarily low socioeconomic groups, women, children, and the elderly. Health professionals need to be upskilled to anticipate, diagnose and manage climate-related health issues and respond to environmental emergencies. The emerging transdisciplinary field of planetary health is based on the principle of protecting the planet to protect the health of humans. The authors argue that it is an ethical imperative to include planetary health education in the curricula of medical and other health professions in a way that would help ensure both climate resilience and social justice.

Keywords: Climate change, planetary health, medical education, ethics, India

Planetary health

Human health and the health of our planet are inextricably linked. Planetary health is the field that deals with human health and the natural environment on which human health depends, hence, the climate crisis is, inevitably, a health crisis. The World Health Organisation (WHO) has declared climate change as the greatest threat to global health in the 21st

century, that can affect health directly (through heat waves, floods, droughts, wildfires, or storms), or indirectly (through food insecurity or social instability)[1]. It is also well-known that the adverse impacts of the climate crisis are disproportionately borne by those least responsible for it and most vulnerable — the economically and socially disadvantaged, and children, among others [1]. This brings to the fore key elements of social justice and inequitable harms that result from climate change, making it imperative to understand this phenomenon through an ethical lens. It is essential to critically appraise state policies, current development paradigms, lifestyles (individual and collective), and the indigenous responses of individuals and communities.

South Asia is a highly climate-vulnerable region and will continue to bear the brunt of different catastrophic events, as evidenced by the recent floods in India and Pakistan. Fossil fuel combustion, the most significant contributor of greenhouse gases leading to anthropogenic climate change, also has serious health consequences, causing air pollution and depletion of natural biodiversity. New Delhi has become the air pollution capital of the world. A recent *Lancet* study reported that poor air quality is responsible for 1.6 million premature deaths in India, and particularly affects those with pre-existing illnesses and impaired immunological status [2]. Continuous exposure to air pollutants — such as particulate matter (PM_{2.5} and PM₁₀), carbon monoxide (CO), sulphur dioxide (SO₂), nitrogen oxides (NO_x) and ozone (O₃) — leads to chronic obstructive pulmonary disease, acute pneumonia, lung cancer, ischaemic heart disease and stroke [2]. Climate change results in more severe and frequent extreme weather events, causing significant casualties that overwhelm healthcare systems, and also result in morbid mental health outcomes (post-traumatic stress disorders, depression and anxiety).

These extreme weather events, the rise in global temperatures, and changes in precipitation patterns lead to a change in the distribution of infectious diseases. For example, a case of a patient with fever and delirium mystified doctors in the US, in 2018 [3]. After a lot of brainstorming and investigations, it was diagnosed as West Nile virus — a potentially fatal tropical disease that can affect the brain, and never before seen in the US. As global temperatures rise, the spread of such diseases to colder regions and higher altitudes — where the local population

Authors: **Anandita Pattnaik** (pattnaikandita@gmail.com, <https://orcid.org/0000-0002-4114-6124>), Regional Lead, Planetary Health Report Card, INDIA; Policy Officer, UK Health Alliance on Climate Change, BMA House, Tavistock Square, London, UK; **Manjulika Vaz** (corresponding author — manjulikavaz@sjri.res.in, <https://orcid.org/0000-0001-5867-1665>), Division of Health and Humanities, St John's Research Institute, St John's Medical College, Sarjapur Road, Bengaluru 560034, INDIA

To cite: Pattnaik A, Vaz M. Urgent need for planetary health education for healthcare professionals and students in India. *Indian J Med Ethics*. Published online first on December 7, 2023. DOI: 10.20529/IJME.2023.075

Manuscript Editor: Sunita Sheel Bandewar

Peer Reviewer: Angus Dawson, Arima Mishra, and an anonymous reviewer.

Copyright and license

© Indian Journal of Medical Ethics 2023: Open Access and Distributed under the Creative Commons license (CC BY-NC-ND 4.0), which permits only non-commercial and non-modified sharing in any medium, provided the original author(s) and source are credited.

lacks immunity — is increasing. Similarly, the Zika virus, another mosquito-borne infection, has been reported in non-endemic regions in higher altitudes, such as the Himalayas in India [4]. A lack of population immunity can result in more severe manifestations of the disease: just as the SARS-CoV-2 virus (Covid-19) rapidly spread across populations with no previous immunity to it, causing high fatalities.

An important question is how rapidly are medical curricula evolving to equip students with the knowledge to address these issues? Teaching–learning approaches need to be reinvented rapidly to address these new, unknown and constantly developing problems. Healthcare professionals need to be made aware of these climate change-linked diseases, be equipped with the knowledge and skills to effectively diagnose and manage these problems and know how to think on their feet and out of the box. Simultaneously, health systems must become climate-resilient and enhance surveillance to detect and prevent such outbreaks.

Planetary health report card and medical curriculum

In order to assess the climate change preparedness of medical colleges in India, we conducted a pilot project called the Planetary Health Report Card (PHRC). The PHRC is a student-led global initiative to assess and inspire climate health education and sustainable, carbon-neutral campuses. Two medical colleges in India — St. John's Medical College, Bangalore (SJMC) and SCB Medical College, Cuttack (SCBMCH) — participated in this project, and the results (published in July 2022) assessed five metrics: curriculum, research, community outreach, support for student-led initiatives and campus sustainability. SJMC, a privately-funded institution, scored an overall 64%, and SCBMCH, a publicly-funded institution, scored an average of 57%. The main difference between the two was that SJMC had a more evenly distributed score across the five domains, but SCBMCH scored mainly on the medical curriculum (>62%) with a poor score of <19% in research, community outreach and student-led initiatives [5,6]. The latter may reflect the mindset of the Indian education system and society at large, where the fixed curriculum is emphasised, but the other vital aspects of education take a backseat. While community medicine covers environmental health which focuses on the natural and built environments and their consequences on human health, the phenomenon of climate change and its consequences on human health and earth systems health are still missing.

The Indian healthcare system has a significant carbon footprint (7th largest in the world in terms of absolute values), and assessments in our campus sustainability section suggest we need to decarbonise rapidly [7]. There is also enormous potential to increase planetary health-related research and community outreach activities to raise awareness about the health impacts of climate change among the public. Evidently, there is a considerable gap in the current Indian medical curriculum, and an urgent need to provide more holistic medical training with equal emphasis on all five domains

mentioned above. There should be longitudinal integration of planetary health into the core learning curriculum of medical, nursing, dental and other allied health professional courses.

Recently, Harvard Medical School announced that they were embedding climate change and its health impacts into their MD curriculum [8]. Similarly, the Medical Schools Council, UK, has published its *Education for Sustainable Healthcare*, a curriculum for medical students in the UK [9]. Here are a few examples of how climate change and health can be embedded into the Indian medical curriculum:

- In Paediatrics, studying the impact of climate change on children's health is vital, as children are most at risk of health consequences, having to live with the implications of the climate crisis now and in the future. These range from malnutrition due to food insecurity, to vector-borne diseases due to epidemiological changes.
- In Psychiatry, air pollution and extreme weather events leading to loss of life, ecosystems and infrastructures, forced displacement of people, and food insecurity have neuropsychological effects and threaten mental well-being.
- The relationship between rising temperatures and health risks such as the cardiovascular effects of climate change could be taught in both General Medicine and Community Medicine. The mandatory ethics classes in the AETCOM modules incorporated into the National Medical Commission (NMC) could cover the social injustice aspect of the health impacts of climate change through case presentations and audio-visual triggers. Research in these areas should be encouraged [10].
- Some innovative ways of including planetary health have been using the humanities in the medical education route, such as the Citizen Doctor programme [11]. The programme highlights the role medical students' and professionals can play in addressing food and water insecurity, ecosystem health, climate change, the carbon footprint of healthcare systems, and the value of traditional lifestyles and indigenous knowledge as sustainable solutions towards the climate crisis.

The mode of engagement is to move from didactic lectures and the biomedical education method of knowledge enhancement through an information dump to a keener sense of observation, questioning, challenging, and exploring new understandings from our past lessons. Subjects like mathematics and health effect modelling, social anthropology, community economics, and sustainable product engineering could be included in an exciting manner.

Planetary health and bioethics

Climate change is undoubtedly a social issue; the most vulnerable communities suffering the worst repercussions of the climate crisis are those least responsible for it. Climate action needs to be just to ensure that pre-existing health inequalities are mitigated, not overlooked or exacerbated. To build climate resilience in an equitable manner, it is crucial that health professionals are well equipped to deal with the health consequences. It is also imperative that health professionals become stewards of the planet and unitedly advocate for better climate action that would help provide our children with a healthy environment to thrive, and allow nature to regenerate and biodiversity to re-flourish, as nature is quintessential for human health and the survival of civilisation [12].

Planetary health hinges on global solidarity, as our planet is our universal and only home. The implications of models of unsustainable development and resource use and its consequences on those living in harm's way (such as underprivileged communities, living in low-lying areas with precarious, resource-based livelihoods) limit the options of mitigation and adaptation by those most affected [13]. From an ethical perspective, health professionals are obliged to "do no harm" and to act in the best interests of the patients, therefore, by not addressing planetary health issues, we are failing in that duty. According to bioethicist, David Resnik, it is important to raise not just awareness but the moral consciousness of those in healthcare to respond to climate change [14]. It is important to reflect on the wider determinants of health; such as understanding how the climate is changing, our causative role in it and what the direct and indirect consequences are [15]. Global bioethics recognises climate change as a neglected problem and argues that ethical analyses could enhance climate risk assessment, mitigation and adaptation policy development, and implementation [16]. It would be the ethical duty of health professionals to understand and respond to the health effects of our changing climate [13]. They need to conduct discipline-specific climate medicine research, engage in outreach and citizen activities. Further, health professionals should also demonstrate responsible leadership by using the health argument as a critical lever to advocate for equitable climate action at global, national and local levels [17]. It is vital that curricula for health professionals in India are updated swiftly to include planetary health. Apart from the formal MBBS curriculum, on-going capacity building of senior professionals through Continuing Medical Education (CME) credits would be the way to go. This would lead to a snowball effect, positively influencing the undergraduate and post graduate students they train.

Current policy and action

The *National Action Plan for Climate Change and Human Health* (NAPCCHH) of India, published in 2018, has an objective to create awareness about the health impacts of climate change

among healthcare professionals and the general population, especially those vulnerable to climate change [18]. Additional objectives include increasing the resilience of health systems and building capacity and research related to climate variables and human health. However, there has not been much progress in achieving these objectives. Understandably the Covid-19 pandemic might have delayed much of the implementation, but it is high time that everyone took notice of the health impacts of climate change. We recommend the addition of climate mitigation and adaptation targets to the remit of the National Assessment and Accreditation Council (NAAC), a government organisation that assesses and grades institutions. This would stimulate universities to strive to be more sustainable and carbon-neutral. Further, upskilling healthcare professionals and strengthening health systems could help India to become more climate resilient [19]. The NMC should consider standardising planetary health education for undergraduate and postgraduate courses in medical colleges across India. Some helpful resources that could guide individual institutions to develop educational materials include tools from the Centre for Sustainable Healthcare [20], Climate Resources For Health Education [21], and Healthcare Without Harm [22].

Implementing actions to achieve the objectives stated in the NAPCCHH needs to gain swift momentum, as we live in a world where we are constantly affected by the direct or indirect impacts of climate change. It is no longer part of a distant future that might affect us in decades to come. So, the healthcare fraternity, including medical students, must urge the government and relevant institutions to act now and incorporate planetary health into the educational curricula, with a holistic approach to improving human health, developing an ethical perspective of interconnected systems of our planet, and building climate resilience.

References

1. World Health Organisation. Climate change and health. Geneva: WHO; 2023 Oct 12 [cited 2023 Mar 4]. Available from: <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>
2. Pandey A, Brauer M, Cropper ML, Balakrishnan K, Mathur P, Dey S, et al. Health and economic impact of air pollution in the states of India: the Global Burden of Disease Study 2019. *Lancet Planetary Health*. 2021 Jan;5(1): e25–e38. [https://doi.org/10.1016/s2542-5196\(20\)30298-9](https://doi.org/10.1016/s2542-5196(20)30298-9)
3. Schmidt C. Diseases Take Flight with Climate Change. *Harvard Medicine*. 2022 Spring [cited 2023 Mar 4]. Available from: <https://hms.harvard.edu/magazine/viral-world/diseases-take-flight-climate-change>
4. Dhimal M, Dahal S, Dhimal ML, Mishra SR, Karki KB, Aryal KK, et al. Threats of Zika virus transmission for Asia and its Hindu-Kush Himalayan region. *Infect Dis Poverty*. 2018 May 15;7(1): 40. <https://doi.org/10.1186/s40249-018-0426-3>
5. Rani S, Pattanaik P. The Planetary health report card initiative. 2022 [Cited 2023 Mar 4]. Available from: <https://phreportcard.org/wp-content/uploads/2022/07/SCBMCH-2021-2022-Planetary-Health-Report-Card-Final.pdf>
6. Minz J, Rudrakumar M, Joe N, Prasad S, Subashini SB. Planetary Health Report Card 2021-22 [Cited 2023 Mar 4] Available from: <https://phreportcard.org/wp-content/uploads/2022/07/St-Johns-Medical-College.pdf>
7. Karlner J, Slotterback S, Boyd R, Ashby B, Steele K. Health Care's Climate Footprint. 2019 Sep [Cited 2023 Mar 4]. Available from:

- https://noharm-global.org/sites/default/files/documents-files/5961/HealthCaresClimateFootprint_092319.pdf
8. Buckley MRF. Connecting Climate Change and Health. [Cited 2023 Mar 4]. Available from: <https://hms.harvard.edu/news/connecting-climate-change-health>
 9. Tun SYM, Martin T. Education for Sustainable Healthcare - A curriculum for the UK. Medical Schools Council. 2022. [Cited 2023 Mar 4] Available from: https://www.medschools.ac.uk/media/2949/education-for-sustainable-healthcare_a-curriculum-for-the-uk_20220506.pdf
 10. Wigand ME, Timmermann C, Scherp A, Becker T, Steger F. Climate Change, Pollution, Deforestation, and Mental Health: Research Trends, Gaps, and Ethical Considerations. *Geohealth*. 2022 Nov 1;6:e2022GH000632. <https://doi.org/10.1029/2022GH000632.11>
 11. Hegde R, Vaz M. The making of a "Citizen Doctor": How effective are value-based classes? *Indian J Med Ethics*. 2020 Jul-Sep;5(3) NS:227-35. <https://doi.org/10.20529/ijme.2020.055>
 12. Agudelo Higuera NI, LaRocque R, McGushin A. Climate Change, Industrial Animal Agriculture, and the Role of Physicians – Time to Act. *J Clim Chang Health*. 2023;13: 100260. <https://doi.org/10.1016/j.joclim.2023.100260>
 13. Bohle H-G, Brklacich M. Assessing Human Vulnerability to Global Climatic Change. Earth System Science in the Anthropocene Emerging Issues and Problems. In: Ehlers E, Krafft T, eds. *Earth System Science in the Anthropocene. Emerging Issues and Problems* Springer Verlag; 2005. pp.51–61.
 14. Resnik DB. Bioethics and Global Climate Change. *Bioethics Forum*. 2009 [Cited 2023 Mar 4];39: 1. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/19484138>
 15. Williams PC, Marais B, Isaacs D, Preisz A. Ethical considerations regarding the effects of climate change and planetary health on children. *J Paediatr Child Health*. 2021;57: 1775–1780. <https://doi.org/10.1111/jpc.15704>
 16. Ten Have H. *Global Bioethics: An Introduction*. London, New York: Routledge; 2016. <https://doi.org/10.4324/9781315648378>
 17. Pattnaik A. Greener Leader Blog Series: Gaining support for climate policies through a health narrative: A way forward by Anandita Pattnaik – The official blog of BMJ Leader. BMJ Leader. Cited 2023 Aug 7. Available from: <https://blogs.bmj.com/bmj/leader/2023/07/26/greener-leader-blog-series-gaining-support-for-climate-policies-through-a-health-narrative-a-way-forward-by-anandita-pattnaik/>
 18. Ministry of Health & Family Welfare–Government of India. National Action Plan on Climate Change & Human Health. 2018 Oct [Cited 2023 Mar 4]. Available from: <https://ncdc.gov.in/WriteReadData/I892s/27505481411548674558.pdf>
 19. Asaduzzaman M, Ara R, Afrin S, Meiring JE, Saif-Ur-Rahman KM. Planetary Health Education and Capacity Building for Healthcare Professionals in a Global Context: Current Opportunities, Gaps and Future Directions. *Int J Environ Res Public Health*. 2022;19. <https://doi.org/10.3390/ijerph191811786>
 20. Centre for Sustainable Healthcare Resource Library. Sustainability in Quality Improvement. Cited 2023 Mar 4. Available from: <https://sustainablehealthcare.org.uk/>
 21. Climate Resources For Health Education - CHRE. In: CRHE - An evidence-based resource bank for accelerating climate and planetary health education. Climate Resources for Health Education (CRHE); 2022 May 17 [Cited 2023 Mar 4]. Available from: <https://climatehealthed.org/>
 22. Healthcare Without Harm. No Vaccine for Climate Change - A Guidance Document For Health Professionals In India. 2021 Jun [Cited 2023 Mar 4]. Available from: <https://noharm-asia.org/articles/news/asia/healthy-energy-initiative-india-%E2%80%99Cno-vaccine-climate-change%E2%80%9D-communication-guide>