



SUSTAINABLE NURSING PRACTICE IN THE ERA OF CLIMATE CHANGE: A GLOBAL HEALTH REVIEW

Nursing

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ABSTRACT

Climate change is a global health emergency with widespread implications for healthcare systems and nursing practice. As frontline caregivers and health advocates, nurses play a pivotal role in mitigating climate impacts, promoting sustainability, and ensuring community resilience. This review synthesizes current literature on sustainable nursing practices in the context of climate change, focusing on education, advocacy, clinical care, and policy. The article highlights best practices, global initiatives, and research gaps while proposing an integrated framework for climate-resilient nursing.

KEYWORDS

climate change, sustainability, nursing, environmental health, global health, nursing education, disaster preparedness

INTRODUCTION

Climate change has become one of the most critical global challenges of the 21st century, significantly impacting public health systems worldwide (Watts et al., 2023). Rising temperatures, extreme weather events, air and water pollution, and the spread of vector-borne diseases are increasing the burden on healthcare systems, especially in vulnerable communities (Ebi & Semenza, 2008). The nursing profession, which constitutes the largest segment of healthcare providers globally, must adopt a leadership role in addressing the consequences of climate change (Nicholas et al., 2021).

Climate change is no longer a distant environmental concern—it is an immediate public health crisis that disproportionately affects vulnerable populations, including low-income communities, women, children, the elderly, and those with pre-existing health conditions (Watts et al., 2023; WHO, 2021). The frequency and intensity of climate-sensitive health outcomes—such as vector-borne diseases, respiratory disorders, heat-related illnesses, and mental health conditions—have increased significantly over the past decade. These growing health threats demand an urgent response from health systems, especially from nurses who constitute the largest segment of the global health workforce. As frontline caregivers, educators, and advocates, nurses are uniquely positioned to mitigate the health impacts of climate change and lead the transition to sustainable healthcare systems (Nicholas et al., 2021; Leffers & Butterfield, 2018).

2. Climate Change And Health Impacts

The health consequences of climate change are profound and multifaceted. Direct impacts include heat-related illnesses, respiratory conditions due to poor air quality, and injuries from natural disasters such as hurricanes and floods (IPCC, 2022). Indirect effects stem from disruptions in food and water supply, mental health deterioration, and the spread of infectious diseases like malaria and dengue due to shifting ecosystems (Patel et al., 2020).

Pathways Of Climate Change Impacting Health

Climate Drivers → Environmental Changes → Health Determinants (e.g., air, water, food) → Health Outcomes (e.g., morbidity, mortality)

3. Role Of Nurses In Climate Change Response

3.1. Education And Awareness

To foster climate-resilient healthcare, nursing education must integrate environmental health and sustainability into curricula (Anåker et al., 2015). Topics should include the science of climate change, health vulnerabilities, sustainability practices in healthcare, and risk communication (Santos et al., 2021).

3.2. Clinical Practice And Green Healthcare

Sustainable nursing practice in clinical settings involves reducing the environmental impact of healthcare delivery (Karlner et al., 2020). Nurses can lead green initiatives such as energy-efficient hospital operations and reducing single-use plastics (Demers, 2021).

3.3. Advocacy And Leadership

Nurses have an ethical responsibility to advocate for policies that protect both human and environmental health (Butterfield et al., 2019). Organizations like the Alliance of Nurses for Healthy Environments (ANHE) exemplify advocacy leadership in action (Leffers & Butterfield, 2018).

3.4. Disaster Preparedness And Resilience

Climate change has increased the frequency and severity of natural disasters, making emergency preparedness a critical nursing function (Fernandez et al., 2002). Nurses must be equipped with trauma care and triage skills and support mental health post-disaster (Polivka et al., 2012).

4. Global Initiatives and Best Practices

4.1. WHO And UN Frameworks

The World Health Organization (WHO) and the United Nations (UN) have established robust global frameworks to support climate-resilient healthcare systems. The WHO's Health and Climate Change Global Survey Report outlines national-level strategies to integrate climate change into health policy and planning (WHO, 2021). These initiatives emphasize health system strengthening, early warning systems, and climate-resilient infrastructure. Similarly, the UN's Sustainable Development Goal 13 ("Climate Action") explicitly calls for urgent action to combat climate change and its impacts. Nurses, as part of national and global health workforces, are key stakeholders in operationalizing these frameworks through advocacy, implementation of climate adaptation strategies, and participation in global coalitions (UN, 2015).

4.2. Case Studies From High- And Low-Income Countries

Case studies across diverse socioeconomic contexts illustrate how nursing practices are being adapted to address climate change. In Sweden, hospitals have embraced sustainable energy systems, with nurses actively participating in initiatives that reduce hospital carbon footprints (Sachs et al., 2019). In the Philippines, a disaster-prone nation, community-based nursing programs focus on preparedness and community education, resulting in improved resilience and reduced mortality following extreme weather events (Jenkins & Germaine, 2020). In India, nursing colleges have introduced climate modules into their training curricula, helping to prepare future nurses for environmental health challenges (D'Souza et al., 2022). These examples underline the adaptability of nursing in addressing both immediate and systemic health impacts of climate change, regardless of resource availability.

5. Barriers To Sustainable Nursing Practice

Despite increasing awareness, several systemic and practical barriers hinder sustainable nursing practices. One major challenge is the lack of institutional support, including absence of policies that prioritize environmental sustainability in healthcare settings (Leffers &

Plotnick, 2011). Financial constraints limit the ability to implement green technologies and training programs. Moreover, many nurses report inadequate knowledge and training on environmental health topics, leading to low confidence in addressing climate-related health issues (Armstrong & Barsky, 2020). Cultural attitudes and resistance to change within healthcare institutions also pose significant obstacles. In low-resource settings, these barriers are magnified by infrastructural deficits, political instability, and competing health priorities such as infectious disease management and maternal health (Horton et al., 2019).

6. Recommendations And Integrated Framework

To overcome these barriers, a systems-thinking approach is essential. Institutions must embed sustainability into nursing curricula, hospital policies, and accreditation standards. Leadership training should focus on empowering nurses to advocate for climate-resilient practices at the community and policy levels. Interprofessional collaboration, both nationally and internationally, can amplify the nursing voice in climate policy discourse. Funding mechanisms should prioritize research and innovations in sustainable healthcare. Technological advancements, such as telemedicine and energy-efficient equipment, should be embraced. Additionally, climate change mitigation must be culturally contextualized to resonate with local communities.

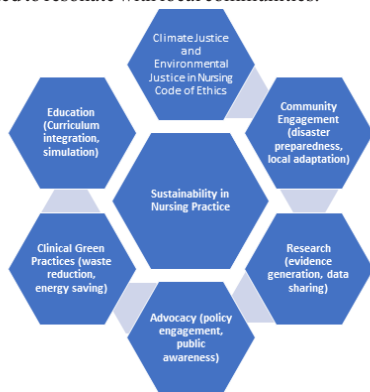


Figure 1: Integrated Framework for Climate-Resilient Nursing Practice

7. Future Directions And Research Gaps

Future research should address the cost-effectiveness of sustainable practices in healthcare settings and their outcomes on patient care. The impact of climate literacy among nurses on patient and community health outcomes is another critical area. There's a need for standardized tools to assess environmental competencies among nurses. Studies must also explore how traditional and Indigenous knowledge systems can enhance climate adaptation strategies, especially in low-resource settings (Jack et al., 2023). Moreover, research should evaluate the effectiveness of international frameworks and programs in real-world settings, particularly focusing on how nurses operationalize these guidelines in clinical and community contexts.

8. CONCLUSION

Climate change is an unprecedented threat to global health, and nurses are uniquely positioned to respond through informed, sustainable, and compassionate care. As educators, clinicians, advocates, and researchers, nurses can drive systemic changes within healthcare systems. By embracing sustainability in every facet of their practice, nurses not only contribute to environmental preservation but also ensure equitable, resilient, and future-ready healthcare for all. The integration of sustainability into nursing must move beyond discourse into action, supported by policy, education, and community-based engagement. A global alliance of nurses committed to climate-resilient health systems is not just necessary—it is imperative.

REFERENCES

- Anåker A, Nilsson M, Holmner Å, Elf M. Nurses' perceptions of climate and environmental issues: A qualitative study. *J Adv Nurs*. 2015;71(8):1883–91. <https://doi.org/10.1111/jan.12655>
- Armstrong F, Barsky J. Nursing and climate change: An integrative review. *Nurs Inq*. 2020;27(1):e12334. <https://doi.org/10.1111/nin.12334>
- Butterfield PG, Leffers JM, Fahey E. Environmental health and nursing: An integrative review. *Public Health Nurs*. 2019;36(5):577–86. <https://doi.org/10.1111/phn.12628>
- Demers M. Greening healthcare: How nurses can lead the charge. *Am J Nurs*. 2021;121(4):36–44. <https://doi.org/10.1097/01.NAJ.0000737293.39285.ab>
- D'Souza MS, Suresh S, Zubair MM. Incorporating climate change into nursing

- education: An Indian perspective. *Indian J Contin Nurs Educ*. 2022;23(1):15–22.
- Ebi KL, Semenza JC. Community-based adaptation to the health impacts of climate change. *Am J Prev Med*. 2008;35(5):501–7. <https://doi.org/10.1016/j.amepre.2008.08.018>
- Fernandez LS, Byard D, Lin CC, Benson S, Barbera JA. Frail elderly as disaster victims: Emergency management strategies. *Prehosp Disaster Med*. 2002;17(2):67–74. <https://doi.org/10.1017/S1049023X0000010X>
- Horton G, Hanna L, Kelly B. Drought, drying and climate change: Emerging health issues for ageing Australians in rural areas. *Australas J Ageing*. 2009;29(1):2–7. <https://doi.org/10.1111/j.1741-6612.2009.00424.x>
- Intergovernmental Panel on Climate Change (IPCC). *Climate Change 2022: Impacts, Adaptation and Vulnerability* [Internet]. 2022 [cited 2025 Jun 12]. Available from: <https://www.ipcc.ch/report/ar6/wg2/>
- Jack I, Wilson C, Ajiyoye D. Integrating Indigenous knowledge into climate adaptation for community health. *Health Place*. 2023;80:102940. <https://doi.org/10.1016/j.healthplace.2023.102940>
- Jenkins TL, Germaine M. Nursing leadership in disaster risk reduction: A case study from the Philippines. *Int Nurs Rev*. 2020;67(3):347–55. <https://doi.org/10.1111/inr.12608>
- Karliner J, Slotterback S, Boyd R, Ashby B. Health care's climate footprint: How the health sector contributes to the global climate crisis and opportunities for action [Internet]. *Health Care Without Harm*; 2020 [cited 2025 Jun 12]. Available from: <https://noharm-global.org/>
- Leffers JM, Butterfield P. Nurses play key roles in environmental health. *Am J Nurs*. 2018;118(1):34–41. <https://doi.org/10.1097/01.NAJ.0000529701.05847.70>
- Leffers J, Plotnick J. Global health nursing: A review of the literature. *J Nurs Scholarsh*. 2011;43(2):163–71. <https://doi.org/10.1111/j.1547-5069.2011.01391.x>
- Nicholas PK, Breaky S, Tagliareni E, Leners DW. Climate change, environmental health, and nursing: A call to action. *Nurs Outlook*. 2021;69(5):757–64. <https://doi.org/10.1016/j.outlook.2021.04.002>
- Patel V, Mathur A, Sinha D. Climate change and emerging infectious diseases in India. *Indian J Med Res*. 2020;152(2–3):115–20. https://doi.org/10.4103/ijmr.IJMR_944_20
- Polivka BJ, Chaudry RV, Crawford J. Public health nursing practice and disaster preparedness. *Public Health Nurs*. 2012;29(4):321–8. <https://doi.org/10.1111/j.1525-1446.2012.01022.x>
- Sachs JD, Schmidt-Traub G, Kroll C, Laforune G, Fuller G. *Sustainable Development Report 2019* [Internet]. Cambridge: Cambridge University Press; 2019 [cited 2025 Jun 12]. Available from: <https://sdgindex.org/reports/sustainable-development-report-2019/>
- Santos MS, Godoy MR, Andrade JS. Environmental health in nursing education: An integrative review. *Rev Latino-Am Enfermagem*. 2021;29:e3456. <https://doi.org/10.1590/1518-8345.4386.3456>
- United Nations. *Transforming our world: The 2030 Agenda for Sustainable Development* [Internet]. New York: UN; 2015 [cited 2025 Jun 12]. Available from: <https://sdgs.un.org/2030agenda>