Role of Medical Education in the Era of Anthropogenic Climate Change

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❑ Abstract

This review delves into the indispensable role of medical education in addressing the complex challenges of anthropogenic climate change. The anthropogenic climate change, primarily driven by human activities, poses profound repercussions for public health. As the healthcare sector significantly contributes to environmental threats, incorporating climate change education into medical curricula is imperative. This review elucidates the multifaceted impacts of climate change on health, encompassing dangers such as heat-related illnesses, vector-borne diseases, injuries, psychological distress, and malnutrition. Vulnerable populations, including children, outdoor workers, and the geriatric age group, are at heightened risk in the face of a changing climate. Recognizing the pivotal role of medical education, the review underscores the imperative to integrate climate change topics across medical disciplines, equipping future healthcare professionals with the knowledge and skills to identify climate-related health issues and advocate for sustainable healthcare practices. An interdisciplinary approach and collaboration with environmental experts are crucial elements. Despite the challenges and barriers, medical schools, educators, and healthcare professionals are implored to take action by integrating climate change into curricula, addressing climate scepticism within the medical community, and preparing for climate-resilient healthcare systems. This approach can positively impact public health and the environment, contributing to a healthier and more sustainable future.

Keywords

Medical Education
Anthropogenic climate change
Public health
Climate-related health issues
Climate-resilient healthcare systems

Introduction

Climate change is the long-term shifts in temperature and weather patterns. In earlier times, such shifts occurred due to natural causes like sun activity or large volcanic eruptions. Since the 1800s, there has been a sudden climate change, mainly due to human activities like burning fossil fuels. (1)

Even the necessary healthcare services have contributed to a threat to the environment and human health. (2) This footprint on the environment by healthcare services has a long-lasting impact on air, water and soil. Global healthcare accounts for about 1 to 5% of global environmental impacts, depending on the type of indicator. (2) The healthcare sector alone contributes to 4.4% of the greenhouse gas footprint. (2)

Given such implications of climate change and the impact of healthcare on climate change, it becomes fundamentally important to include and integrate climate change in the current medical education curriculum. (3) This will help future doctors to develop insights into their role as public health professionals in a climate-changing world. (3)

❑ Understanding Climate Change and Health

Extreme heat events are dangerous and, at times, fatal. Such events lead to heat-related illness, even cardiovascular and respiratory disorders, heat stroke being the most serious.(4) Heat stroke requires emergency care, which, if not available, can cause permanent disability or death.(5)

Climate change also has made it conducive for various vector-borne diseases. There has been a rise in certain vector-borne diseases, including infectious diseases like Lymes, waterborne and mosquito-borne diseases like malaria and dengue. (6) There is also an increased burden of injury and psychological diseases due to extreme weather events.(7) Studies indicate a daily maximum temperature of more than 90°F is strongly associated with injury-related hospital visits.(8)

Climate change threatens to reverse the progress made so far in the fight against hunger and malnutrition. (9) Climate change affects food safety in varied ways. It causes grave social and economic consequences due to its impact on crops, livestock, and fisheries. Other than food availability, it impacts food access and absorption. (10)

Climatic factors like droughts can lead to stress and impaired mental health, including PTSD (posttraumatic stress disorder), adjustment disorders and depression. Increased rates of physical illness also lead to psychological distress. (11)

Climate migration is rising due to extreme weather events like floods, heat waves, and droughts. Slower and gradual events are rising sea levels, and its effects are also causing people to leave their homes. (12) Studies project much larger mass migrations if global efforts fail to address this climate crisis.(12)

Few individuals/groups are more likely to be affected due to climate change compared to others. (13) Children are more prone to airborne allergens due to their still-developing immune systems. Workers with their occupation in outdoor settings are at greater risk of heat-related illnesses. Geriatric people are less likely to adapt or respond to extreme weather events. (13)

❑ The Role of Medical Education

Doctors are key stakeholders in climate change mitigation and health system adaptation. Incorporating such in the medical curriculum will help them prepare for emerging health threats. (3) They need to be trained in identifying climate-related health issues in patients, including respiratory and cardiovascular diseases, injuries and premature deaths, infectious diseases and threats related to mental health. (17)

A healthy environment is vital to “ensure healthy lives and promote well-being for all ages” (SDG Goal 3). There are several modifiable risk factors, like outdoor air pollution and household air pollution, which influence the risk of disease conditions. WHO estimates that 13-32% of the global disease burden is due to environmental determinants. (14)

There is a need to integrate climate change topics such as natural disasters, disease outbreaks, air quality, and heat stress across medical disciplines. The curriculum can be started with an introduction to the broad topic of climate change followed by a topic related to the health outcomes of climate change and the role of healthcare providers in responding to such threats. (16) Even the University Grants Commission (UGC)

guidelines in India recommend including climate change as a part of environmental education at the Undergraduate level as a global movement to safeguard our environment from the impacts of climate change. It includes comprehensive knowledge of climate change and its response measures and an overview of the efforts to address it through adaptation and mitigation.

This climate change affects the health and well-being of the people directly through specific events and indirectly by threatening the capacity of the healthcare system to care for the population. (18) These healthcare facilities sometimes cannot cope with extreme climate risks such as storms, floods and droughts. Such is often particularly true in healthcare facilities in developing countries due to the lack of adequate infrastructure and a trained workforce. (18) Also, due to improper management, the healthcare facility may contribute to climate change, either due to greenhouse gas emissions or a poor waste management system. (18) It is therefore necessary that healthcare facilities are environmentally sustainable with optimized use of resources.

❑ Challenges and Barriers

Climate change is well understood as a global reality and no longer a distant future threat. Even then, the educational systems do not address the climate crisis. There needs to be standardized climate education guidelines, even when medical students perceive and recognize the threat of climate change on human health and its need in medical education. (19)

There is a need to address the climate change scepticism within the medical community in relation to doubts about the perseverance of climate change as a scientific and physical problem and regarding the efficacy of action taken to address climate change. (20)

❑ Opportunities and Future Directions

Seeing the threats and long-term challenges climate change poses and considering its effect on human health, there exists a dire need to have a climate-informed healthcare workforce. They will play an essential role in informing and preparing the public regarding the health effects of climate change. (21) There is a need to prepare healthcare professionals for climate-resilient healthcare systems. This process must involve consideration of healthcare governance and implementation while also involving stakeholders to ensure safe and patient-oriented outcomes. (21)

❑ Conclusion

In conclusion, the role of medical education in addressing anthropogenic climate change must be considered. As we witness the ongoing shifts in temperature and weather patterns, primarily attributed to human activities like burning fossil fuels, the healthcare sector's contribution to environmental threats becomes apparent. Within the healthcare sector alone, it is clear that our practices contribute to climate change and pose a significant risk to public health. This realization underscores the importance of integrating climate change education into the current medical curriculum.

Understanding the intricate relationship between climate change and health is paramount. From the dangers of extreme heat events to the rise in vector-borne diseases, injuries, and psychological distress, the impacts of climate change on health are multifaceted. Furthermore, climate change threatens to undo progress in the fight against hunger and malnutrition, affecting food availability and access and causing stress and impaired mental health.

The role of medical education is clear: doctors are vital stakeholders in climate change mitigation and health system adaptation. Integrating climate change topics into medical curricula

allows future healthcare professionals to prepare for emerging health threats and understand their role as public health advocates in a changing climate. By identifying climate-related health issues, healthcare professionals can contribute to mitigating the impacts of climate change on public health.

By integrating climate change education into medical curricula, we can empower future healthcare professionals to advocate for sustainable healthcare practices, climate-resilient healthcare systems, and improved public health. This approach will benefit individual patients and contribute to a more sustainable and healthier future for the planet. The time for action is now, and the healthcare sector must embrace its role in addressing anthropogenic climate change.

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