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Publications 2024

OPEN ACCESS
ONLINE ISSN: 2992-5460
PRINT ISSN: 2992-6041

NEWPORT INTERNATIONAL JOURNAL OF RESEARCH IN MEDICAL SCIENCES (NIJRMS)

Volume 5 Issue 3 2024

https://doi.org/10.59298/NIJRMS/2024/5.3.3437

The Impact of Climate Change on Public Health

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ABSTRACT

Climate change is becoming increasingly recognized as a major hazard to public health, with rising temperatures, irregular weather patterns, and environmental degradation all contributing to poor health outcomes worldwide. This study investigates the complex relationship between climate change and public health, focusing on major health concerns such as heat-related sickness, respiratory and cardiovascular disorders, and the expansion of vector-borne diseases. Vulnerable groups, such as those in lower socioeconomic levels and marginalized areas, incur greater risks. The paper also examines mitigation and adaptation methods that are critical for reducing the public health consequences of climate change. Addressing these difficulties would necessitate interdisciplinary collaboration and policy reform in order to protect health and resilience against future climate-related dangers.

Keywords: Climate change, public health, environmental health, air pollution, heat-related illness.

INTRODUCTION

Climate change is a critical public health issue that is gaining increasing attention around the world. Record global temperatures, increasing sea levels, and erratic weather patterns are all part of the complex set of factors that are causing significant negative impacts on human health, and these health impacts are likely to increase. More than 90% of the global population breathed in damaging air during the period from 2014 to 2016. In the same three-year period, more time was directly related to deteriorating climate conditions [1, 2]. These intensity and frequency patterns reflect the significance of considering climate change as "the biggest global health threat of the 21st century." Therefore, it is an imperative matter that must be addressed, and this process could be conducted with an interdisciplinary approach involving individuals who are academically familiar with both public health and climate change. This review aims to make readers aware of: the necessity of critically thinking about the negative impacts of climatic parameters on the health of living creatures; and the urgency of training more scientists in public health to be aware of the burden of adverse health outcomes associated with climate change; the vulnerabilities of countries around the world to a range of direct and indirect effects; the likelihood of encountering multi-stressors of environmental harms; and the need to predict and ultimately prevent or minimize problems concerning adverse public health outcomes.

Understanding The Link Between Climate Change and Public Health

Human health is inextricably linked to the atmosphere. Changes in the atmosphere can be natural or human-induced and can impact health directly or indirectly. For instance, atmospheric changes associated with climate change have the potential to exacerbate existing health challenges, such as air pollution. In addition, they can introduce fundamentally new health challenges, such as the spread of infectious diseases. Several studies suggest that the Earth's warming surface temperatures are already responsible for a large number of direct and indirect health effects or will be in the future [3]. Several additional features of modern societies and their industrial and commercial activities link atmospheric changes to changes in health conditions. Key reasons for this are the impacts of the social determinants of health, which include the unequal distribution of economic and political power, income, goods, and services, different physical environments, and working conditions. People's vulnerability to environmental impacts on health ultimately depends on where they live, their age, gender, income, and health status.

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ONLINE ISSN: 2992-5460
PRINT ISSN: 2992-6041

Increasingly, climate change phenomena drive the occurrence of a wide range of environmental impacts that cause direct harm to health, such as the increase in the frequency and intensity of extreme weather events, and the rise in temperatures that spontaneously drive a rise in cardiopulmonary disease in urban areas. The complexity of these relations and how they change over space and time pose significant challenges for research into predicting the trajectory of future health impacts of changes in regional and global climates. Impacts that are likely to occur in the future include large increases in population exposed to malarial mosquitoes, increased heat-related mortality, and exacerbations of respiratory disease. The impacts of these health challenges, which will help define the extent to which climate change impacts public health, are determined by the way that governments and communities respond to the rapid and substantial changes in the prevailing natural environment [4, 3].

Climate Change-Related Health Risks

The substantial association between climate and health has been well established, detailing the ominous implications climate change will pose for the public health community. Climate change can negatively affect every level of the biosystem. It directly impacts the environment, with effects that include dwindling biodiversity and ruined ecosystems. Altered weather patterns such as heating, acid rain, hail, and hurricanes, which negatively affect people, are among the other intermediate impacts. Climate sensitivity indicates how sensitive a system is to the influences of climate change. Impacts like heat waves, wildfires, increased precipitation, and air pollution are directly linked with climate change [5]. Symptoms such as respiratory disorders associated with greater air pollution and cardiovascular disease are reported to be rising. The prognosis of cardiovascular disease is currently increased by elevated wastewater pollution, elevated temperatures, and air pollution. Heat exhaustion, dehydration, and even deaths from extreme temperatures are potential consequences of climate warming. The danger of drought is expected to worsen as climate change increases and leaves people and companies at critical risk regarding water security. On a more permanent basis and across the globe, vector-borne problems such as malaria and dengue could spread as a result of changing temperature and precipitation regimes and humidity due to an increase in vector populations from extreme hot or cold weather periods. People are at risk of contracting new infections in warmer times than in the past. Other future temperatures could not only lead to the redistribution and transformation of water-borne diseases, including cholera, Clostridium difficile, bio-aerosol trophozoites, and other diseases, as well as disease vectors. Severe damage due to flood-related mental disturbances and illnesses and tornadoes for ill health may also be revealed. It seems that climate change influences the health of millions around the world and that its consequences are only to be exacerbated in the future [6, 7].

Vulnerable Populations and Climate Change Impacts

Climate change is expected to impact everyone to some degree, but certain populations are at greater risk. Socio-economic status, place of residence, biology, and numerous other factors create differing susceptibilities to some of the direct and indirect impacts of climate change. For instance, an individual might be more susceptible to heat waves because they do not have accessible air conditioning. The vulnerability of populations to adverse climate change health impacts is often characterized by the limited, immobile resources available to them. For example, many residents of urban informal settlements in low and lower-middle income countries are more likely to be adversely affected by environmental change because they have limited food or money to buy food, are less able to leave areas of potential danger, and have reduced access to healthcare if they do fall ill [3, 8]. There is a growing literature documenting the disproportionate impacts of climate change on the health of marginalized populations, from Indigenous peoples to individuals with lower socio-economic status. For instance, extra risks faced by Indigenous Australian communities are due to their deeper reliance on the natural environment as well as issues of equity and human rights. In the United States, communities with poverty levels above the national average were found to face considerably larger health risks from extreme heat as a result of less access to healthcare, inadequate housing, and impaired rates of physiological adaptation compared to wealthier neighborhoods. In the Canadian Arctic, Inuit are exposed to a "double jeopardy," whereby systemic inequalities such as poverty and food insecurity exacerbate climate change health impacts. Importantly, indirect effects of climate change, such as mental health impacts or climate change-related migration, can intersect with direct impacts in complex ways. Systemic approaches towards addressing health inequities in a warming world are likely required in order to implement effective, just solutions. While targeted interventions exist or are in the process of being developed to reduce these health-related inequities, climate action can both directly and indirectly result in improved health equity, such as by increasing the accessibility of active transportation. Interventions related to building adaptive capacity in vulnerable populations must be tailored to these specific needs to be effective. Empowerment is key to addressing many environmental change health impacts, such as food insecurity, and policies need to be designed to

address prevailing barriers and ineffectiveness to change within the most vulnerable communities to protect public health. Both social adaptive capacity building and climate and health governance techniques are needed to effectively reduce health inequities in the context of an uncertain future. The greatest challenge for both climate change and climate change-related adaptation lies in the already marginalized, as well as impoverished, population, who also live in areas prone to environmental and health risks. Additionally, climate change adaptation may fail if attention is not paid to existing health inequalities [9, 10].

Mitigation And Adaptation Strategies

There is a complex web of factors to consider when working to lessen and foresee the impacts of climate change on public health. The potential for health sector climate change adaptation and mitigation strategies is an essential step to lessen the harm that may occur. Several of these options encourage further research in the area, make use of additional public health solutions, and request that primary care clinicians recognize and take more initiative in dealing with climate change. Reducing climate change and protecting public health share policy strategies in numerous cases, as actions and strategies that benefit one field can also lessen harm in the other. Given adequate efforts, there are significant opportunities to mitigate the impacts of climate change on public health. Strategies range from structural and policy measures that can be mostly implemented at the government level to encouraging public health initiatives and actions driven by concerned community members. All of these strategies require robust and collaborative interdisciplinary action, which can only occur well if a much larger portion of society takes climate change seriously. Only about 25% of Americans hear about climate change in the media often, signaling a low degree of public concern and engagement that must be challenged. Remarkably, in developed countries, larger allocations to healthcare infrastructure can make areas more resilient to climate vulnerabilities. Additionally, it serves as an essential form of climate change mitigation that is underappreciated using less energy and preventing unnecessary goods production can help reduce global CO2 emissions, thus improving not only the environment but also public health. Steps to further the use of these economic stimuli have been proposed and could be highly beneficial in protecting human health. Through several possible courses of action, rights workers, environmentalists, and public health policymakers have the opportunity to effectively identify, test, and lessen the impacts of climate change on both the environment and human health [11, 12].

CONCLUSION

Climate change offers an unparalleled threat to global public health, increasing current problems while creating new ones. Vulnerable people are disproportionately affected, and socioeconomic, geographical, and biological variables exacerbate health hazards. Public health policies that incorporate mitigation and adaptation measures, as well as interdisciplinary collaboration, are critical for reducing the impact of climate change on human health. Immediate action is required at the local, national, and international levels to address this serious issue and ensure long-term health resilience in the face of ongoing environmental changes.

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PRINT ISSN: 2992-6041

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CITE AS: Omeye Francis I. (2024). The Impact of Climate Change on Public Health. NEWPORT INTERNATIONAL JOURNAL OF RESEARCH IN MEDICAL SCIENCES, 5(3):34-37.
https://doi.org/10.59298/NIJRMS/2024/5.3.3437