



## The Impact of Climate Change on Area-Based Disease Management

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### Article Info

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### ABSTRACT

Climate change has become one of the major challenges in area-based disease management. This article investigates the impact of climate change on the dynamics and strategies of area-based disease management. We use historical climate data and climate change models to analyze its impact on disease spread, and explore adaptation and mitigation that can be applied in the context of area-based disease management. The results of this study indicate that climate change has affected the geographical distribution of diseases, seasonality of spread, and prevalence rates. In addition, this article also provides insights into strategic steps that can be taken to strengthen area-based disease management in the face of climate change challenges.

#### Keywords:

Climate change, Area-based Diseases

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## INTRODUCTION

Climate change has emerged as one of the major challenges of the 21st century, affecting all aspects of human life. Due to increasing greenhouse gas emissions from human activities such as fossil fuel combustion and deforestation, the Earth's climate is undergoing a dramatic transformation that includes rising temperatures, unstable weather, and unpredictable climate patterns. The impacts of climate change not only affect ecosystems and economies, but also have the potential to seriously threaten human health. One area of increasing concern is its impact on area-based disease management. Rising temperatures and changing rainfall patterns can affect the spread of infectious diseases, such as malaria and dengue fever, and worsen respiratory diseases such as asthma due to air pollution, creating complex challenges in efforts to protect public health.

Climate change also opens the door to the spread of zoonotic diseases, which are transmitted from animals to humans, such as emerging viruses such as COVID-19. Climate change can affect the habitats of animal vectors such as mosquitoes and rodents, which in turn can increase the risk of disease outbreaks. Therefore, area-based disease management is increasingly important in the face of climate change, with a more holistic and collaborative approach between the health, environment and research sectors to identify, prevent and control these emerging health threats from climate change.

Area-based disease management encompasses understanding, preventing, controlling, and managing diseases that are influenced by geographic, environmental, social, and economic factors in a particular area. In this context, climate change has become a fundamental factor in changing disease susceptibility and spread. Rising global

temperatures, changing rainfall patterns, and intensification of extreme weather events have affected ecosystems and the behavior of disease vectors such as mosquitoes, ticks, and rats.

An in-depth literature review on the impact of climate change on area-based disease management is an urgent need. The link between climate change and human health is no longer mere speculation, but has become a reality felt in various parts of the world. In this context, scientific research and up-to-date information are essential foundations for policy makers and health practitioners in facing this challenge.

In this introduction, we will briefly discuss the complexity of climate change, its impacts on human health, and the urgency of understanding how climate change affects area-based disease management. This paper will then present a comprehensive literature review of how climate change affects the spread of infectious, water-borne, and nutrition-related diseases, and the adaptation and mitigation measures that have been proposed to address these issues.

With a deeper understanding of the relationship between climate change and area-based disease management, we can hopefully develop more effective strategies to protect public health in an increasingly challenging future. Human safety and well-being must be a top priority in the face of climate change, and this effort requires strong global collaboration and strong scientific knowledge.

## **METHOD**

Research methods used to investigate the impact of climate change on area-based disease management must be carefully designed to provide in-depth and relevant insights. The use of secondary data from sources such as the World Health Organization, environmental agencies, and previous research can provide initial insights into how climate change is affecting area-based diseases. This data can include epidemiological statistics, historical climate data, and public health information. Field surveys can be conducted to collect primary data from areas affected by climate change and specific diseases. These surveys can include demographic data, community health-related behaviors, and direct impacts of climate change. Interviews with public health experts, farmers, fishermen, and local residents can provide qualitative insights into how climate change is affecting area-based disease management at the community level.

## **RESULTS AND DISCUSSION**

Epidemiological studies have shown that climate change, such as rising average temperatures and changing rainfall patterns, has contributed to an increase in vector-borne diseases such as malaria and dengue in certain regions. These changes create conditions that are more conducive to the development of disease vectors, such as mosquitoes, which can develop larger populations and extend the disease-carrying season. The impacts of climate change on disease vector ecology create additional challenges for area-based disease management, requiring more sophisticated adaptation strategies to address these health threats.

The importance of this understanding is to guide disease prevention and control efforts and inform public health policies that are responsive to climate change. Epidemiological studies continue to provide valuable insights into the relationship between environmental factors influenced by climate change and the spread of infectious diseases,

helping us plan effective and proactive interventions to protect public health from these increasingly visible impacts. **Disruption of Clean Water Availability:** Data analysis shows that increasing temperatures and consistent lack of rainfall have disrupted clean water supplies in some areas, increasing the risk of water-related diseases such as diarrhea and skin diseases.

Case studies in several rural communities have found that climate change is already negatively impacting children's health, with serious implications for their growth and nutrition. Decreased food production instability caused by changing rainfall patterns and droughts has a direct impact on food availability, especially in communities that rely heavily on local agriculture. As a result, stunting and malnutrition rates among children have increased, as they struggle to access sufficient and nutritious food. In addition, climate change is also contributing to the spread of diseases that can threaten children's health, such as vector-borne diseases carried by mosquitoes or ticks that are becoming more prevalent due to environmental changes.

These impacts require special attention from various parties, including governments, health organizations, and local communities, to take appropriate preventive and mitigating measures. Increasing access to nutritious food, nutrition education, and strong child health programs are essential in efforts to combat the negative impacts of climate change on children's health. In addition, understanding the adaptation required in rural communities, including changes in agricultural practices and social welfare policies, is essential to protect young people from the long-term impacts of climate change. Addressing the health impacts of climate change on children also highlights the importance of global efforts to reduce greenhouse gas emissions and mitigate the impacts of climate change overall, thereby protecting future generations from serious threats to their well-being. **Climate Change Factors:**

1. **Global Temperature Increase**  
Increases the risk of heat-related illnesses, such as heat stroke and dehydration.
2. **Changes in Rainfall Patterns**  
Altering the hydrological cycle, affecting water quality and increasing the risk of flooding.
3. **Increasing Frequency of Natural Disasters**  
Increases the risk of injury, psychological stress and mental health disorders.
4. **Sea Level Rise**  
Threatening clean water supplies, increasing the risk of flooding and coastal erosion.

#### **Impact on Health**

1. **Spread of Infectious Diseases (Malaria, Dengue, Zika, Chikungunya)**
2. **Increase in Respiratory Disease Cases (Asthma, ISPA (Upper Respiratory Tract Infection), Bronchitis)**
3. **Food and Water Poisoning (Diarrhea, Cholera, Dysentery)**
4. **Psychological Stress and Anxiety (Mental Health Disorders, Depression, Anxiety)**
5. **Increased Risk of Cardiovascular Disease and Stroke (High blood pressure, Heart attack, Stroke)**

#### **Discussion**

Global average temperature increases have been one of the most visible impacts of climate change. Higher temperatures can expand the geographic areas where previously limited diseases can thrive. This can have significant impacts on the spread of diseases such

as malaria, which are often associated with specific populations of vector mosquitoes. With higher temperatures, areas previously protected from these diseases can become more vulnerable, while areas with temperatures previously favorable for vector mosquitoes can see an increased risk of disease. In addition, changes in rainfall patterns can affect the habitat of disease vectors and the ability of diseases to spread. For example, longer or shorter rainy seasons can affect the reproduction of vector mosquitoes and, consequently, the level of transmission of the diseases they carry. Climate change, therefore, substantially affects the ecological conditions that influence disease, and this is essential for effective area-based disease understanding. In order to address these challenges, further research and appropriate prevention and mitigation efforts are urgently needed to protect public health from the impacts of climate change on disease transmission. Climate Change Factors and Their Impact on Health:

- a. Climate change has a significant impact on human health. Factors such as rising global temperatures, changing rainfall patterns, increasing frequency of natural disasters, and rising sea levels trigger the spread of infectious diseases such as malaria, dengue, and Zika. In addition, climate change also worsens respiratory diseases such as asthma and ARI.
- b. The impact of climate change on health is not only limited to physical illnesses, but also affects mental health. Psychological stress and anxiety increase due to natural disasters, loss of housing, and uncertainty about the future. This can trigger mental health disorders such as depression and anxiety. Therefore, it is important to develop strategies to control and mitigate the impact of climate change on health.
- c. To address the impact of climate change on health, cooperation between the government, the community, and the health sector is needed. Strategies that can be implemented include increasing public awareness of climate change, developing disease monitoring and surveillance systems, and increasing the capacity of health workers. In this way, we can reduce the impact of climate change on health and improve the quality of life of the community.

## CONCLUSION

Climate change, such as rising average temperatures and changing rainfall patterns, has contributed to an increase in vector-borne diseases such as malaria, dengue fever, and Lyme disease. Disease vectors such as mosquitoes and ticks tend to spread to new areas with warmer climates.

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