

Environmental Changes and Emerging Health Problems

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Abstract- Environmental changes have become an important public health concern, particularly for local communities that are highly dependent on natural resources and are exposed to changing climatic and environmental conditions. Rising temperatures, irregular rainfall, water scarcity, air pollution, poor waste management and changes in disease patterns can adversely affect community health and well-being. This study examines the relationship between environmental changes and emerging health problems among local communities. The study proposes the collection of primary data through a structured questionnaire from selected households. The major dimensions covered include awareness of environmental changes, exposure to environmental risks, health problems experienced by households, preventive practices, access to healthcare services and community-level adaptation measures. The study is expected to identify the major environmental health challenges faced by local communities and assess their awareness and preparedness. The findings can help policymakers, local authorities and public health agencies develop community-oriented environmental health interventions.

Keywords- Environmental Change, Public Health, Local Communities, Climate Change, Health Problems, Community Awareness, Adaptation.

I. Introduction

Environmental conditions have a direct influence on human health. Changes in temperature, rainfall patterns, water availability, air quality, sanitation and waste management can create new health risks for communities. Climate change has further intensified several of these challenges by increasing the frequency and intensity of heat waves, extreme rainfall, floods and other environmental stresses.

According to the World Health Organization (WHO), 'In its broadest sense, environmental health comprises those aspects of human health, disease and injuries that are determined or influenced by factors in the environment. This includes the study of both direct pathological effects of various chemical, physical and biological agents, as well as effects on health of the broad physical and social environment, which include housing, urban development, land use and transportation, industry and agriculture'. The WHO estimates that 24% of the global disease burden and 23% of all deaths can be attributed to environmental factors. Moreover, environmental factors have a much bigger impact in developing countries than developed ones, and this effect is seen much more in the vulnerable population such as children and elderly.

In a developing country like India, the burden of various diseases is increasing due to environmental factors and the changes in our environment. It is estimated that 94% diarrhoeal disease burden may be attributed to environmental factors such as unsafe food and drinking water, as well as poor sanitation and hygiene. Similarly, in India

there is strong evidence linking lower respiratory tract infection to indoor air pollution caused by the use of solid fuels in household. Almost 42% of acute lower respiratory tract infections in developing countries are attributable to environmental factors. Besides this, a close association of vector-borne diseases and environmental conditions has been established. Furthermore, factors such as deforestation, increasing vehicular traffic, migration from rural to urban areas, decreasing water resources and inadequate drainage system are important environmental and ecological factors that contribute to infectious diseases.

Local communities are particularly important in environmental health research because households experience environmental changes directly in their everyday lives. Changes in the availability and quality of drinking water, increased mosquito breeding, air pollution, excessive heat and poor waste disposal may contribute to various health problems.

Environmental changes can affect both communicable and non-communicable diseases. For example, changing environmental conditions may increase the risk of vector-borne diseases such as dengue and malaria, while air pollution and extreme heat can aggravate respiratory and cardiovascular problems. Water scarcity and contaminated water may also contribute to gastrointestinal and other water-related illnesses. Therefore, understanding how local communities perceive environmental changes and how these changes affect their health is essential for developing effective public health policies.

This study focuses on the experiences, awareness, health impacts and adaptation practices of local communities.

Statement of the Problem

Environmental changes are increasingly affecting the living conditions and health of local communities. Although government agencies undertake various environmental and public health initiatives, the effectiveness of these measures depends partly on community awareness and participation.

Many households may experience environmental problems without clearly understanding their connection with health outcomes. At the same time, vulnerable groups such as children, elderly persons, outdoor workers and low-income households may face greater exposure to environmental risks. Hence, there is a need to examine the environmental changes experienced by local communities, identify associated health problems and understand the preventive and adaptation measures adopted by households.

II. Review of Literature

Environmental change and public health are closely interconnected. Changes in temperature, precipitation, air quality and water availability can influence disease patterns and human vulnerability. The World Health Organization identifies climate change as a major threat to human health and highlights heat, extreme weather, food and water insecurity, vector-borne diseases and other climate-sensitive health risks. Studies on environmental health have increasingly focused on the vulnerability of

communities to climate-related hazards. Research indicates that the health consequences of environmental change are not distributed equally. Socio-economic conditions, occupation, housing quality, access to healthcare and availability of clean water can influence the level of vulnerability.

Community awareness is also an important component of environmental health management. Communities with greater awareness may be more likely to adopt preventive measures such as safe water practices, mosquito control, appropriate responses to extreme heat and timely healthcare-seeking behaviour. However, community-level studies that simultaneously examine environmental exposure, emerging health problems, adaptation can provide useful evidence for local planning. This study attempts to address this gap through primary data collection.

Objectives

- To study the socio-economic profile of the selected households.
- To identify the major health problems associated with environmental changes.
- To examine the preventive and adaptation practices followed by households.

III. Methodology

The researcher collected Primary data directly from households using a structured questionnaire. A sample of 50 households was selected for the study from K. Pudur, Madurai District. The researcher adopted the simple random sampling method to select the households from the study area.

Hypotheses

- There is no significant association between environmental exposure and reported health problems.

IV. Analysis and Interpretation

Socio Economic Conditions

Socio Economic status is the measure of the influence that the social environment has on individuals, families and communities. In many ways socio economic status is related to the concept of social class. The concept of social class is considered to be continuous throughout one's lifetime and from one generation to the next. The study analysed respondents according to age, gender, education, occupation, income. These characteristics are important because socio-economic conditions may influence exposure to environmental risks and access to healthcare.

Table – 1
Socio – Economic Conditions of the Respondents

S.No	Socio Economic Conditions	No. of Respondents	Percentage
1.	Age		
	Below 20	13	26
	21-40	9	18
	Above 40	28	56
2.	Gender		
	Male	21	42
	Female	29	58
3.	Education Qualification		
	School Education	12	24
	Graduates	18	36
	Other	20	40
4.	Occupation		
	Employee	18	36
	Home maker	19	38
	Student	13	26
5	Household Income		
	Below 10,000	12	24
	10,001 – 20,000	20	40
	Above 20,000	18	36

Source: Primary data

The socio-economic profile reveals that the majority of the respondents are above 40 years of age (56%), female (58%), possess other educational qualifications (40%), are homemakers (38%) and belong to the monthly household income group of ₹10,001–₹20,000 (40%). These characteristics suggest that the study findings largely reflect the perceptions and experiences of middle-income households represented predominantly by female and older respondent.

V. Environmental Exposure and Health Problems

Environmental exposure was classified into high exposure and low exposure, while health status was classified based on whether respondents reported environment-related health problems.

Testing of Hypothesis

- **H₀:** There is no significant association between environmental exposure and health problems.
- **H₁:** There is a significant association between environmental exposure and health problems.

Table – 2
Chi Square test on Environmental Exposure and Health Problems

Particular	Value
Calculated Value	8.012
Table Value	3.841
Degrees of Freedom	1
Significance level	5%

Source: Computed data

It is clear from the above chi-square test revealed a significant association between environmental exposure and health problems among the respondents ($\chi^2 = 8.012$, $df = 1$, $p < 0.05$). Hence, the Null Hypothesis (H_0) was rejected indicating that environmental exposure is significantly associated with health problems among the selected respondents.

Major Health Problems associated with Environmental Changes

Environmental changes have a significant impact on the health of local communities. Changes in temperature, rainfall, water quality, air pollution and mosquito breeding can contribute to various health problems. The study identified mosquito-borne diseases, respiratory problems, heat exhaustion, waterborne diseases, skin diseases and dehydration as major health concerns.

Table -3
Likert Scale Analysis of Major Health Problems associated
with Environmental Changes

Health Problem	Mean Score	Rank
Mosquito-borne diseases	4.14	I
Respiratory problems	4.08	II
Heat exhaustion	4.04	III
Dehydration	3.80	VI
Waterborne diseases	3.98	IV
Skin diseases	3.82	V

Source: Computed data

The table shows that the respondents' perception of major health problems associated with environmental changes based on the mean scores obtained through the Likert scale. Mosquito-borne diseases received the highest mean score of 4.14 and secured Rank I, indicating that respondents considered them the most significant health problem associated with environmental changes. Respiratory problems ranked second with a mean score of 4.08, followed by heat exhaustion, which obtained a mean score of 4.04. Waterborne diseases secured Rank IV with a mean score of 3.98, while skin diseases ranked fifth with a mean score of 3.82. Dehydration received the lowest mean score of 3.80 and occupied Rank VI.

VI. Preventive and Adaptation Practices

Households adopt various preventive and adaptation practices to reduce the health impacts of environmental changes. The major practices include drinking more water

during hot weather, using mosquito nets and repellents, ensuring safe drinking water, avoiding outdoor activities during extreme heat, maintaining household sanitation, and proper waste disposal.

Table - IV
Ranking of Preventive and Adaptation Practices

Preventive and Adaptation Practices	Mean Score	Rank
Drinking more water	1.86	I
Avoiding outdoor activities during extreme heat	3.05	III
Planting trees / increasing green spaces	4.15	V
Maintaining household sanitation	3.42	IV
Using mosquito nets	2.24	II

Sources : Computed data

The table shows that drinking more water was ranked first, with a mean rank of 1.86, indicating that it was the most commonly followed preventive practice among the households. Using mosquito nets and repellents secured second rank, with a mean rank of 2.24, followed by avoiding outdoor activities during extreme heat in the third position. Maintaining household sanitation and Planting trees occupied the fourth and fifth ranks respectively.

VII. Conclusion

The study concludes that environmental changes constitute an important public health concern at the community level. Strengthening household awareness and encouraging preventive practices, together with coordinated action by local authorities and health agencies, can reduce environmental health risks and improve community resilience.

Reference

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