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Urban Flooding and Its Impact on Public Health and Livelihoods in Dhaka: Sustainable Mitigation Strategies

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Research Aim

This research paper aims to investigate the various impacts of flooding in Dhaka. Focusing mainly on public health risks and socio-economic consequences for vulnerable communities. This paper will analyze: The health problems related to frequent urban flooding including waterborne diseases and mental health effects. The economic and livelihood challenges caused by flooding in flood-prone urban city. The effectiveness and limitations of current flood mitigation strategies. This paper will also propose friendly and sustainable mitigation approaches to improve communities.

Research Questions

1. What are the main impacts on public health due to flooding in Dhaka?
2. In what ways can flooding affect the livelihood, economy and income of people in flood-prone areas?
3. What are the advantages and disadvantages of flood mitigation strategies?
4. How can climate friendly and sustainable solutions be developed to minimize impacts of flood?

Introduction

The capital of Bangladesh, Dhaka, is being rapidly urbanized, but surprisingly faces frequent and worse flooding. This is mainly because of Dhaka's topography, unregulated urbanization, poor drainage system and increased rainfall from climate change. Flooding causes traffic, safety problems, floods houses and worsens public health challenges such as cholera, typhoid, dengue and other illnesses. People especially those from low-income households living in slum, mostly experience the most of these impacts compared to other communities. This causes people to lose income, have food insecurity and health issues. The government has acted to mitigate impacts through drainage improvement projects and early warning systems, but due to inadequate community input, lack of preventive health and socio-economic integrated planning models, these solutions could not be much effective. This research paper ⁴ seeks to fill these gaps by providing a holistic analysis of flooding impacts and propose sustainable, community based mitigation strategies only for Dhaka city. [1][2][3][4]

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Literature Review

Urban Flooding and Climate Change: Climate change has made rainfall more severe and harsh and have increased flooding risk, especially in quickly developing cities, such as Dhaka. But, challenges with urban planning and issues like insufficient drainage can make flooding worse. [6][7]

Impacts on Public Health: Flooding causes water-borne disease (for example: cholera, typhoid, dengue fever) due to water being perfect place for these pathogens to grow. Not only that, it also impacts mental health issues such as stress and anxiety, but there is very less research in this part. [2][8]

Socioeconomic Impacts: Flooding also impacts people's livelihoods from damage to homes, markets, and transportation. Overall, workers in the informal economy and lower-income workers are particularly vulnerable than higher-income workers as they have no savings and do not have social safety nets to fall back on.

Flood Mitigation Efforts in Dhaka: Government efforts in Dhaka have focused on infrastructure improvement with drainage system upgrades and flood early warning systems, but have been constrained by funding, maintenance, or citing community involvement. [10]

Research Gaps: As the cited literature illustrates, outcomes are addressed separately as either environmental or health research outcomes, and very few studies incorporate health, economic or infrastructure considerations in community-based flood mitigation plans.

Methodology

Mixed-Methods Approach

Quantitative Data Collection: Collect data from hospitals and clinics located in flood-vulnerable communities on cases of water-borne disease during and after flood events in the last 3 years. Structured household surveys (N=400) will be taken from selected flood-affected communities to capture economic losses, livelihood disruptions, coping strategies, and access to health services. [2][3][9]

Qualitative Data Collection: Interviews (n=30) will be conducted with public people and community leaders, doctors, nurses and key figures to gain insights into community impacts of flooding and find out mitigation strategies that were successful and identify community needs. Additionally, group discussions will be organized to understand these impacts and bring out creative solutions. [4][10]

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Data Analysis: Descriptive and inferential statistics will be utilized to assess survey and health data and correlation and regression analyses will be employed to identify important health and economic outcome factors. Finally, thematic analysis will be used to code qualitative data to extract recurring themes related to flooding impacts, community effects, and potential successful strategies.

Project Timeline: (Weeks 1–3) Design of surveys and interviews and seeking ethics approvals, (Weeks 4–7) Data collection - surveys, interviews, health data, (Weeks 8–10) Data analysis and synthesis, (Weeks 11–12) Report writing.

Ethical Considerations

1. Get consent from every participant involved in the research study.
2. Keep participant's information confidential and anonymous throughout the study.
3. Allow participants to withdraw from the study at any time without punishment.
4. Store all data in a secure setting and keep the sample data anonymous.

Expected Outcome

1. Understand trends of the health and economic impacts of flooding in Dhaka.
2. Help find any gaps or problems in existing flood prevention strategies and infrastructure.
3. Successfully help in developing many practical and community-based strategies for flood.

Conclusion

Urban flooding in Dhaka is a complex issue with impactful public health and socio-economic ramifications. This research will offer an integrated and synthesis of these impacts, as well as sustainable, community-based mitigation approaches. This paper aim to assist government and communities in developing a more flood-free Dhaka and mitigate health and livelihood outcomes against future flood disasters.

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