Research Title: Analyzing the Correlation Between Stagnant Water Density and Dengue Infection Rates in Dhaka City: A Comparative Study of Selected Areas

Faculty: SAEEDA SHARMEEN RAHMAN (FST Department, AIUB)

1. Introduction Dhaka, the capital city of Bangladesh, has been experiencing recurrent dengue outbreaks, particularly during the monsoon season. One of the primary breeding grounds for Aedes mosquitoes, the vector of the dengue virus, is stagnant water. **This research aims to examine the relationship between stagnant water density and the number of dengue-infected patients in different parts of the city. Drone Video Data / satellite remote sensing will be used to find the data.** By comparing two 4 km × 4 km areas (or as suitable) with varying amounts of stagnant water, **we seek to establish a correlation between higher stagnant water density and increased dengue incidence**.

2. Research Objectives

- To map and quantify stagnant water areas in two selected zones of Dhaka by Drone / satellite image.

- To collect and analyze health data on dengue cases from relevant authorities.

- To establish a correlation between stagnant water presence and dengue infection rates.

- To provide policy recommendations for targeted resource allocation for mosquito control measures.

3. Methodology 3.1 Study Area Selection Two 4 km × 4 km areas within Dhaka will be selected:

- **Area A:** High density of stagnant water (based on satellite imagery/drone and ground surveys)

- **Area B:** Low density of stagnant water

3.2 Data Collection

- **Environmental Data:**

  o Satellite imagery and drone surveys to identify stagnant water zones.

  o Ground validation surveys for accuracy.

- **Health Data:**

  o Dengue patient records from the Infectious Disease Hospital, DG Health, and the Health Ministry.

  o Dengue case density maps to correlate with stagnant water areas.

o

3.3 Data Analysis

- Statistical comparison of stagnant water area coverage between the two zones.

- Dengue incidence rates in both areas.

- Correlation analysis to determine the strength of the relationship between stagnant water and dengue prevalence.

4. Expected Findings

- Areas with a higher percentage of stagnant water will likely exhibit a greater number of dengue cases.

- This correlation will highlight the need for increased larvicide application and vector control efforts in high-risk zones.

5. Policy Implications

- **Short-Term:** Dhaka City Corporation should allocate more resources, such as larvicide distribution, mosquito control teams, and public awareness campaigns, to high-risk areas.

- **Long-Term:** The City Corporation and the Ministry of Local Government and Rural Development (LGRD) should develop a sustainable strategy for water drainage improvement and mosquito breeding prevention.

- **Urban Planning Measures:** Implementation of improved drainage infrastructure, regular water flow management, and community engagement in stagnant water reduction efforts.

6. Conclusion This research will provide empirical evidence linking stagnant water density to higher dengue prevalence, thereby assisting policymakers in prioritizing mosquito control efforts. By focusing interventions in high-risk areas, the government can mitigate the impact of dengue outbreaks in Dhaka city.

7. References

- Data from the Infectious Disease Hospital, DG Health, and the Health Ministry.

- Satellite and environmental studies on urban water stagnation.

- Previous research on vector-borne diseases in urban settings.