

Knowledge, Attitude, Awareness, Activity, Contribution and Preventive Approaches of Dengue

By

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partial fulfillment of the requirements for the degree of
Bachelor of Science in Microbiology

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Dedication:

Dedicated to My Parents and Family.

Declaration:

It is hereby declared that:

1. The thesis submitted is my own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

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Ethics Statement:

For the completion of this study, all the necessary consents were collected. All the experiments were done at BRAC University. The ethical clearance to conduct this study was obtained from the Department Review Board.

Abstract/ Executive Summary

Dengue, the most important mosquito-borne viral disease of humans is a recurring global health problem. In Bangladesh, dengue outbreaks are on the increase despite the efforts of government and it is not clear what the understanding of the general Dhaka population towards dengue fever is. Knowledge, attitude and practice (KAP) studies are essential guides in public health interventions. This study aims to assess study recipients with regards to factors associated with dengue. A study of 100 study recipients of Brac University were reported. The study found that more than half of the study population were knowledgeable about dengue, possess an appropriate and acceptable attitude towards the disease as they shown clinical sign and symptoms. The main focuses like awareness, activity, contribution and prevention indicate different types of percentages. Amongst them, awareness and prevention show more than 90% approaches.

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Chapter 1: Introduction

1.1 Background:

Dengue is the most common mosquito based viral disease in developing countries like Bangladesh. Each year the rate of infection and mortality is increasing [1]. The disease caused by Dengue virus (DENV), dengue virus belong to *Flaviviridae* family, which is the most common vectors for transmission of virus between humans and arthropods (*Aedes aegypti* mosquito)

Dengue virus has four serotypes, which are genetically similar but have different antigenic properties thus they are named as serotype 1 to 4. DV (Dengue Virus) is a positive-stranded encapsulated RNA virus and I has three structural protein genes, which core (C) protein, a membrane-associated (M) protein, an enveloped (E) glycoprotein, and seven nonstructural (NS) proteins. *Aedes aegypti* mosquito is responsible for spreading virus into human body [1]. All four serotypes of dengue virus can cause disease in different range from a subclinical infection to a mild self-limiting disease, the dengue fever (DF), a severe disease that may be fatal, and the dengue hemorrhagic fever/dengue shock syndrome (DHF/DSS) [1]. .

Since no effective vaccine is currently available to prevent dengue, the only possible mode of prevention is to control *Aedes* as it is the main vector for transmission of the deadly virus. According to the World Health Organization; the Americas, Southeast Asia and the Western Pacific are the regions most affected by dengue. Three fourth of world's dengue cases records from Asia and there have been significant increases in the number of areas becoming hyper endemic; harboring multiple DENV serotypes [1].

Chapter 2: Literature Review

2.1 What is Dengue Virus?

Dengue virus is a viral disease that is spread by mosquitoes. It is a problem in many tropical and subtropical parts of the world, including Africa, Asia, South America and some parts of northern Queensland. Estimates suggest that around 100 million cases occur each year [2].

Dengue virus ranges in severity from a mild flu-like illness through to a severe disease. There is no specific treatment and vaccine. The best way to protect against dengue virus and other mosquitoborne diseases is to avoid mosquito bites. Seek medical attention immediately if you think you may have contracted dengue virus. Early diagnosis and management of symptoms is critical to reduce the risk of complications and avoid further spread of the virus [2].

2.2 Symptoms of Dengue Virus

The typical signs and symptoms of dengue virus may include:

- High temperature
- Severe headache
- Pain behind the eyes
- Joint and muscle aches
- Appetite loss
- Nausea and vomiting
- Insomnia
- Skin rash

In most cases, symptoms resolve within one to two weeks [3].

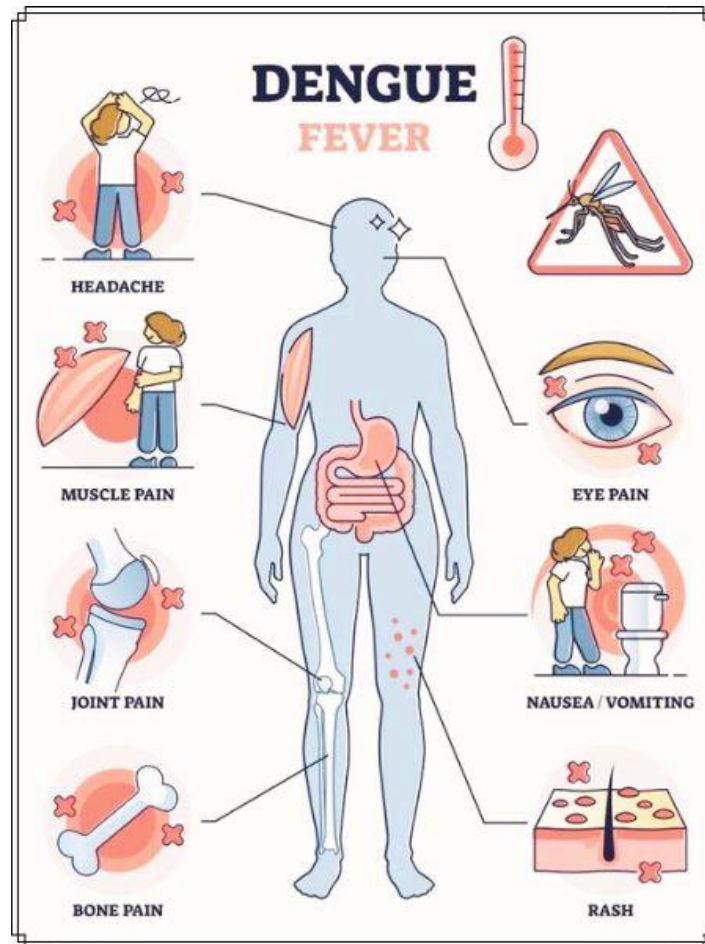


Figure 1: Dengue Symptoms **Ref:** (Article: Dengue fever - symptoms, causes and treatment, July 2023)

2.3 Symptoms of Severe Dengue Virus

Babies, young children, and people who have had dengue more than once are at increased risk of this complication.

Warning signs of more severe dengue virus include the typical signs and symptoms in addition to some or all of the following:

- Severe abdominal pain
- Restlessness and fatigue
- Persistent vomiting (which may include blood)
- Shortness of breath
- Nose bleeds and bleeding gums.

Most people who experience these symptoms recover fully. A small number of people who experience these symptoms will go on to have severe dengue which can include:

- Severe bleeding
- Extremely low blood pressure caused by blood loss (shock)
- Coma
- death. [3]

2.4 Where Dengue Commonly Occurs?

Dengue virus is common throughout tropical and subtropical areas of:

- South Asia
- The Caribbean
- Central America
- Central Pacific
- China
- The Middle East
- South America
- Africa
- The South Pacific [4].

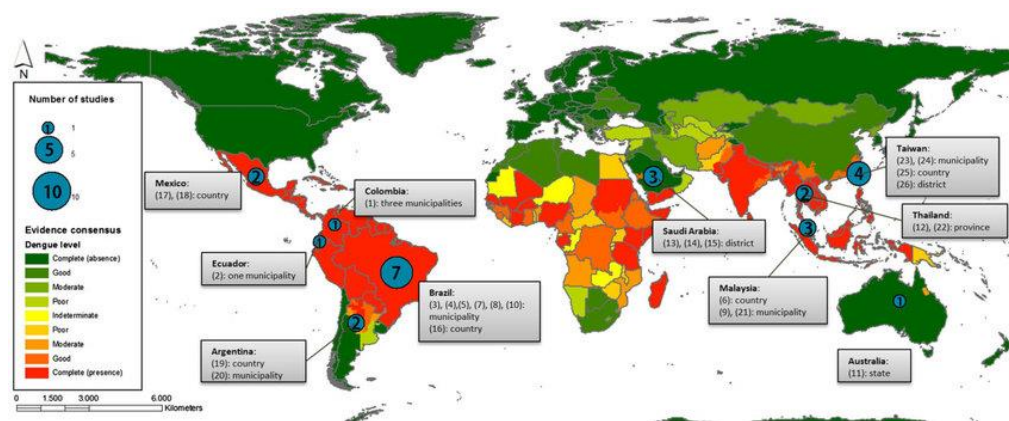


Figure 2: Locations where dengue is frequent **Ref:** (Article: Modeling tools for dengue risk mapping - a systematic review, December 2014)

Chapter 3: Methods

3.1 Data Collection for Statistical Analysis

The number of questions was 22. If I want there could be more questions but I created the questions precisely perfect for better understanding. The questions were divided into 6 sections: (i) Personal information (ii) Experience (iii) Knowledge and awareness (iv) Activity (v) Contribution (vi) Preventive approaches.

3.2 Analysis of Data

The statistical analysis were done by using Microsoft Excel.

3.3 Questionnaire Based Knowledge and Attitude Analysis

A total of 100 questionnaires were collected from students of 2nd to 4th year of MNS Department to understand their knowledge regarding diseases.

Chapter 4: Result

4.1 General Information

At the very beginning of the form, some general information regarding the subject was collected. Results table are demonstrated below.

The maximum age of the students from whom questionnaire response were collected was 26 and the minimum age was 21.

4.2 Gender Count of the study participant:

For statistical analysis 100 questionnaires were collected from the subjects. 20 or 20% were male and 80 or 80% were female. Among the subjects, the age range of the students was from age 21 to age 26.

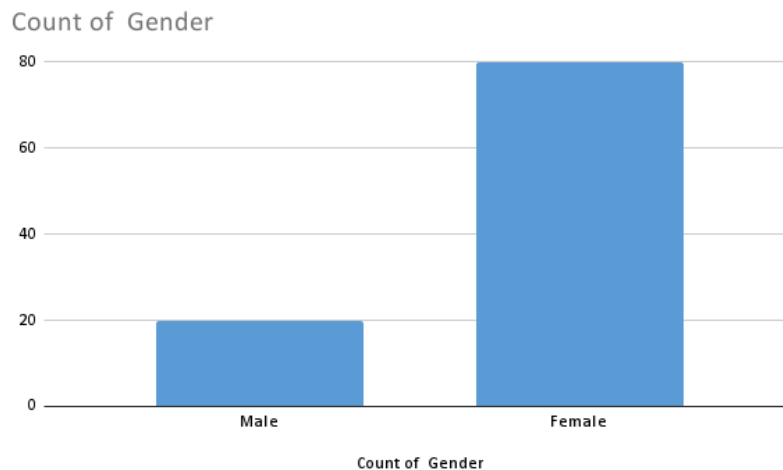


Figure 3: Bar Chart of Gender Count

4.3 Experience of the study participant regarding Dengue:

Among 100 subjects, 60% or 60 informers had experienced Dengue and 40% or 40 informers had not experienced Dengue.

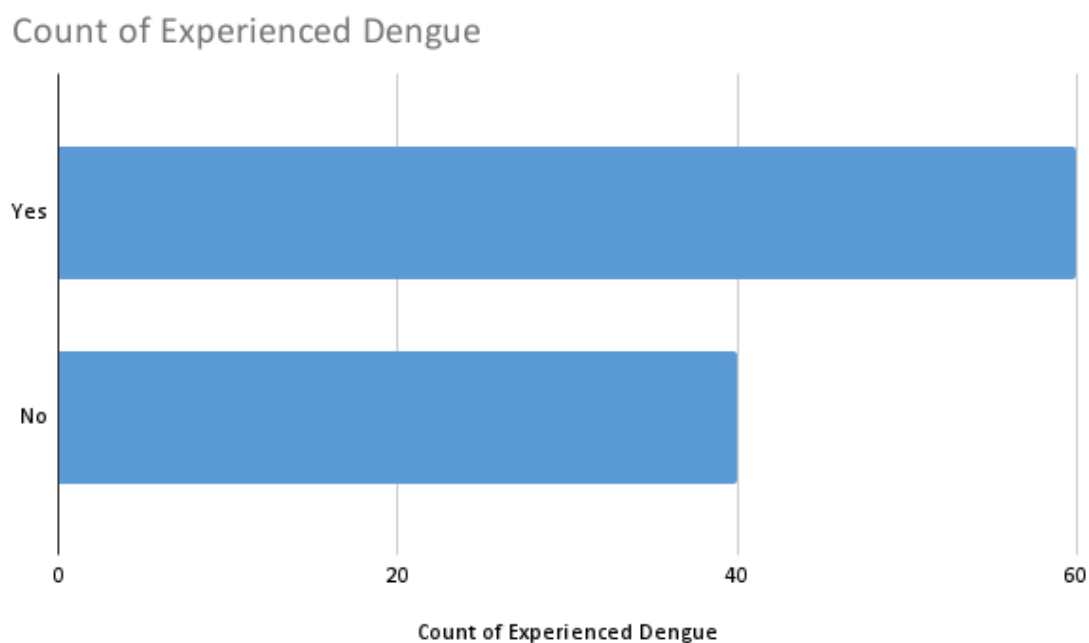


Figure 4: Bar Chart of Experience with Dengue

4.4 Awareness Count of the study participant:

93 informers were aware about Dengue where only 7 informers were unaware about Dengue.

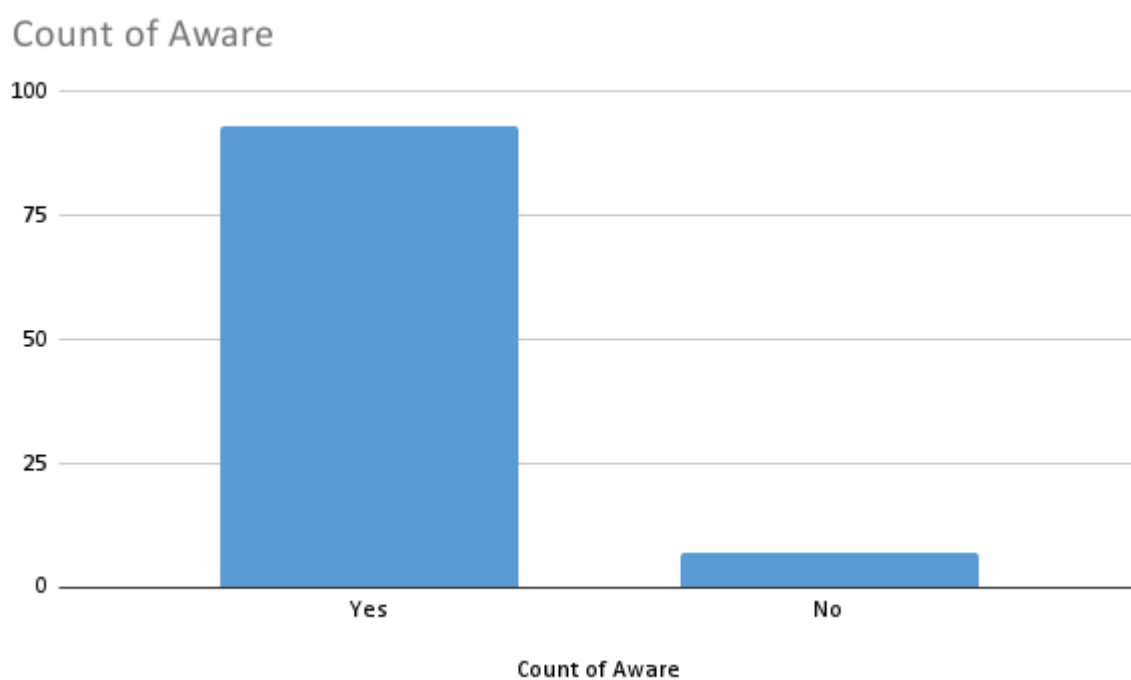


Figure 5: Bar Chart of Awareness Count

4.5 Activity Count of the study participant:

69% of subjects were active in the case of Dengue and used to watch or attend awareness programs held by government or local authority. Other 31% subjects may have knowledge about Dengue but were inactive in watching or attending those programs.

Count of Active

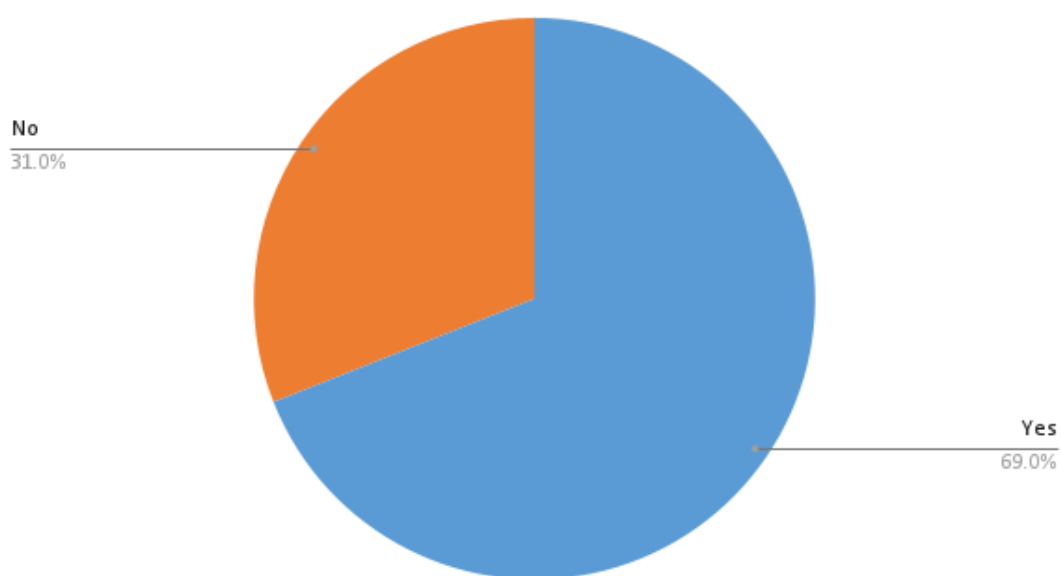


Figure 6: Pie Chart of Activity Count

4.6 Contribution Count of the study participant:

In the almost similar fact, forty seven% that means little less than half of the study population were contributing towards dengue by helping local authority to kill aedes mosquito and by arranging programs by themselves to remove and clean dirt and polluted things in their residence and surroundings. On the other hand, 53% that means little more than half of the study population are not interested to contribute towards removing and cleaning dirt and polluted things.

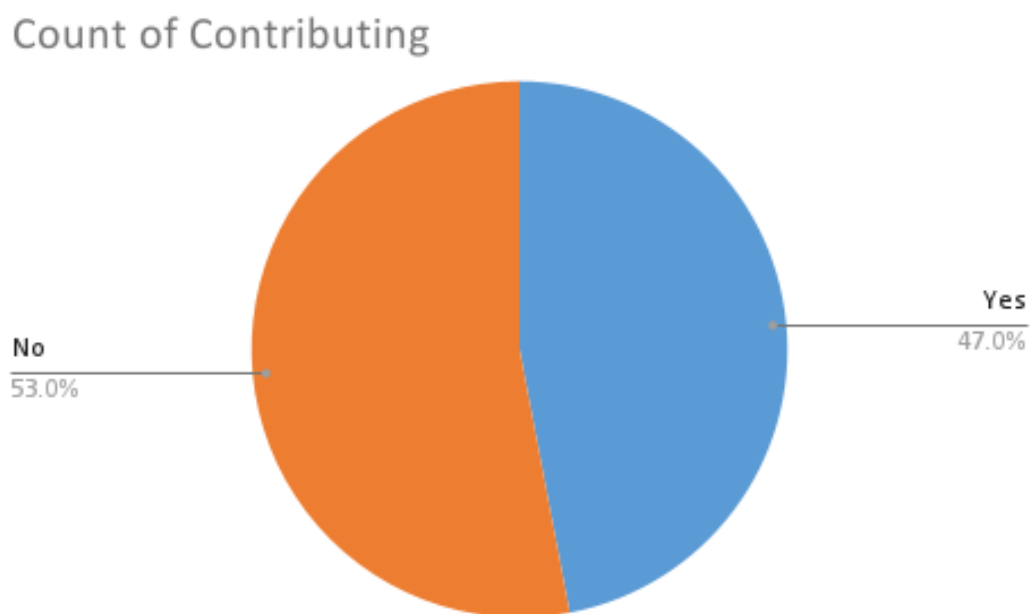


Figure 7: Pie Chart of Contribution Count

4.7 Prevention Count of the study participant:

Lastly 94% study recipient are engaged with the preventive approaches of Dengue. Though they mostly prevent Dengue individually and also create consciousness about dengue among the family members, friends and relatives. Unfortunately, 6% study recipient do not prevent the reproduction of Dengue.

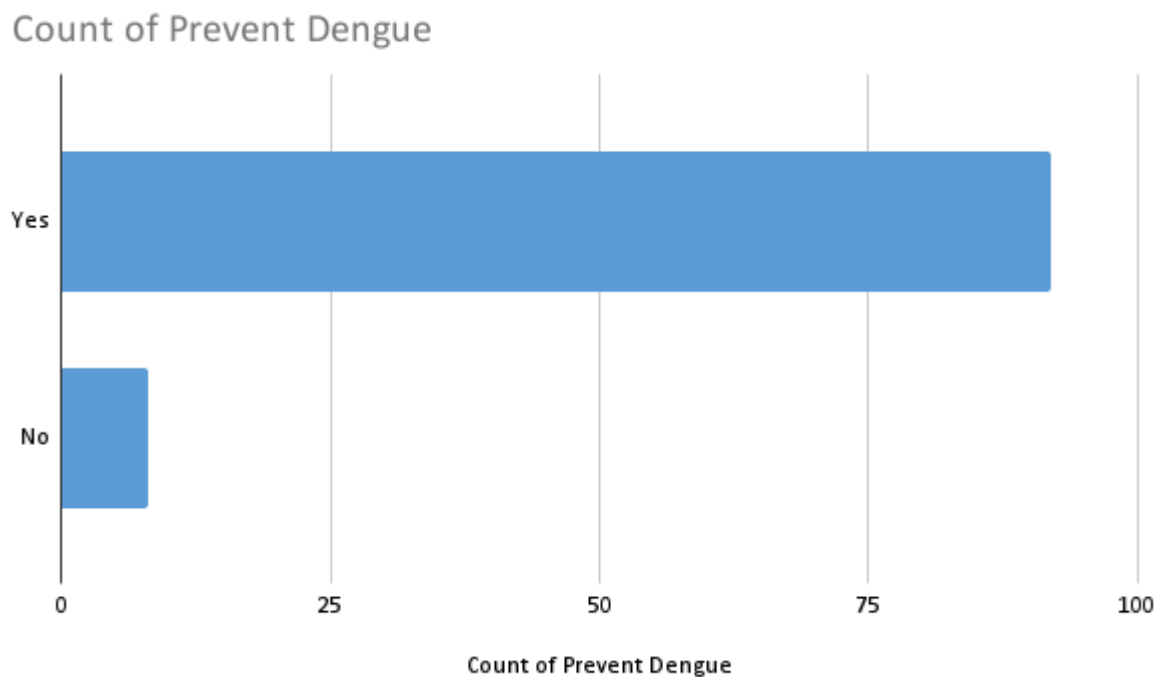


Figure 8: Bar Chart of Prevention Count

Chapter 5: Discussion

Dengue was first reported in Bangladesh in 1964, but that time it was not public health concern. After 2000, dengue started to spread and become a disease. Among the Southeast Asian states, Bangladesh has a lower dengue prevalence, but recent years the scenario have been changed. In 2017, the number of infection case was 2769 and it jumped to 10148 cases in 2018. In 2019, the Directorate General of Health Services (DGHS) [5] recorded 87953 cases with 81 deaths, a 9-fold increase in the incidence rate of dengue from the previous year. After analyzing previous studies, it can be said that the number of dengue cases and deaths are highest in the warmer months from July to November, and that men were twice as likely to become infected as women.

Many cases of dengue were mis-classified because of the wide spectrum of disease signs and symptoms and lack of effective case definitions. Therefore, it was highly probable that dengue cases may be substantially under-reported in Bangladesh given the weak surveillance of a struggling healthcare system. Bangladesh was exposed to a continual risk of dengue virus. Dhaka, the capital and most populated city in Bangladesh, has a population (approximately 18 million) had the highest number of dengue cases between 2012 and 2019[5].

The ongoing rise in the number of dengue cases is due to unplanned urbanization, extensive spread of mosquito vectors, increased international travel, and the absence of effective interventions, inadequate water supply, and water storage practice is also regarded as a major contributor to dengue epidemics. On the other hand, illiteracy, poverty and social inequalities have been associated with poor dengue management [6].

A scientific journal PLOS One publishes that most (91.3%) believed that it was transmitted through mosquito bites. A small number (2.1%) opined that this disease is transmitted through dirty drinking water. [7]

Before conclusion I would like to say that the knowledge of My informers regarding diseases was adequate, still a significant gap was clearly visible when the questions were about activity and contribution. Their practice of removing and cleaning dirt and pollution was not so good.

Chapter 6: Conclusion

This study found that study recipients had knowledge of dengue, with regards to its clinical symptoms and prevention strategies, and there was a relatively positive attitude towards the severity of the disease and the need for hospitalization. There is need to institute practical and comprehensive public health measures that incorporates behavioral impact assessment at the grassroots level and channeled towards the translation of awareness into preventive practices, since mere awareness is not sufficient on its own. Closing the gap in quality access to accurate health information is key and should be directed equally across all strata of society, especially in developing countries like Bangladesh. Access to information will inform real and tangible intervention strategies for the prevention of dengue. Practical, family-oriented and community-based health education campaigns should be tailored to discourage negative community habits like indiscriminate refuse disposal and lack of drain maintenances and inspire healthy family practices that mitigate the risk of dengue spread.

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