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|  | <p><b>Annals of Social Sciences and Perspective</b></p> <p>ISSN (Print): 2707-7063, ISSN (Online): 2788-8797<br/>                 Volume 4, Number 2, July-December 2023, Pages 563-579<br/>                 Journal homepage: <a href="http://assap.wum.edu.pk/index.php/ojs">http://assap.wum.edu.pk/index.php/ojs</a></p> |
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## Knowledge, Attitudes and Practices Regarding Dengue Fever among People in District Multan, Pakistan

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| ARTICLE DETAILS   | ABSTRACT   |
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| <p><b>History:</b><br/>                     Received: December 05, 2023<br/>                     Accepted: December 31, 2023</p> <p><b>Keywords:</b><br/>                     Attitudes<br/>                     Practices<br/>                     Dengue Fever<br/>                     People<br/>                     District Multan</p> <p><b>DOI:</b><br/>                     10.52700/assap.v4i2.338</p> | <p>The present study was conducted to evaluate the Knowledge, attitudes and practices regarding dengue fever among people in district Multan, Pakistan. Total number of 400 People (217 males and 183 females) 18 years to above 60 years of age, permanent residents of four towns of Multan were interviewed. Of the 400 respondents, 87% of the respondents already heard about this type of fever, 72% of them considered mosquito bite as cause / mode of spread of this disease. The study reported that among the participants of the study literate people had more and correct information than un-educated people. As regards the prevention of this disease, 83% of study populations were in favor of preventing mosquito bites by the use of anti-mosquito spray. Although most of the individuals in sample population were aware of various aspects of dengue fever but detailed knowledge and awareness were lacking. The study has suggested that there is a need to develop and implement the targeted health education programs that focus on disseminating accurate and accessible information about dengue fever. Mass media platforms such as television, radio, newspapers, and social media must be used to disseminate the health messages related to dengue fever among general public.</p> <p style="font-size: small;">© 2023 The Authors, Published by WUM. This is an Open Access Article under the Creative Common Attribution Non-Commercial 4.0</p> |

### 1. Introduction

Millions of individuals every year, especially in tropical and subtropical areas, face the health risk of dengue. The Aedes mosquito is responsible for transmitting one of four serotypes of the dengue virus that causes the sickness. Symptoms of dengue fever include those of the flu, including high body temperature, headache, muscle and joint pain, and a rash. In extreme instances, dengue fever can produce dengue hemorrhagic fever and dengue shock syndrome, both of which are potentially lethal (World Health Organization, 2021). In Southeast Asia, Americas, Africa, and the Caribbean Islands are the most common places where dengue fever is found. The number of dengue fever cases has been rising progressively over the world for the past decade. The mosquitoes Aedes aegypti (the main vector) and Aedes albopictus are

responsible for spreading dengue fever in humans. Dengue fever, dengue hemorrhagic fever (DHF), and dengue shock syndrome (DSS) are the three most common manifestations of dengue sickness. More people become ill from Dengue than from any other Arbovirus. The World Health Organization (WHO) estimated that between 50 and 100 million new cases of infection occurred each year across the globe, where an estimated 2.5 billion individuals are at risk. Despite the previous reports of dengue-like symptoms, the first documented pandemic of the disease occurred in 1779 (Khan et al., 2022). In 2005–2006, dengue fever epidemics were recorded in Pakistan, Saudi Arabia, Sudan, and Yemen. Pakistan is one of the most important subtropical nations in South Asia. Dengue fever is a rapidly spreading virus that has just emerged in this area. All dengue-affected districts in Punjab, Pakistan have reported either *Aedes aegypti* or *Aedes albopictus*, the latter being discovered in more locations (Khan et al., 2016). It wasn't until the late 1980s that the first instance of dengue fever was documented. In the previous 30 years, Pakistan has had many outbreaks of the dengue virus. Since 2005, a dengue outbreak has been the leading cause of public health concern in Pakistan, putting the lives of millions of people at risk. As of 2016, 71649 cases had been documented, with 797 fatalities. Dengue fever broke out across Pakistan in 2011, causing widespread concern and raising doubts about the disease's vector distribution and its likely origins. Cases of dengue are grossly underreported, and many more are incorrectly labeled. Water containers, puddles, water tanks, plant vessels, tree holes, old tires, and places without sufficient hygiene are breeding grounds for *Aedes* mosquitoes (Ahmad et al., 2023). The true number of dengue cases is likely lower than reported because the majority of infections are either a symptomatic or mild enough to be treated at home. The World Health Organization reports that many cases are incorrectly labeled as being caused by other febrile infections. Dengue fever became a major issue in Pakistan's public health after an outbreak in Lahore that same year. Since then, dengue fever cases and their severity have risen across Pakistan. There were 9,038 confirmed cases and 67 fatalities in the Swat area of Khyber Pakhtunkhwa in 2011. Dengue fever was reported in 2015 in many cities in both Khyber Pakhtunkhwa and Punjab. Dengue fever's incidence has skyrocketed in recent years, making it a serious public health problem in Pakistan. In Pakistan it is mostly attributable to the same factors that contribute to the spread of the dengue disease in other developing countries: rapid, unplanned urbanization; insufficient water supply; improper waste disposal; and people's social behavior. Growing international and domestic trade, more travel, less resources, and/or a lack of preparedness have all been linked to an uptick in dengue transmission, both inside and beyond borders (Aslam M et al.; 2023). Dengue fever is a viral illness that may be avoided with the right knowledge, attitude, and practices (KAPs) in the community. While Dengue Fever is becoming more common in Pakistan, there has been no published research detailing the causes of these outbreaks or discussing the community's responses in terms of knowledge, attitudes, and practices. This is the first study of its kind to examine KAP in Multan's local population, and its results might provide light on how to better manage and prevent the condition.

## **2. Objectives of the study**

1. To ascertain the knowledge, attitudes and practices of people regarding dengue fever in Multan.
2. To learn how people in Multan district are currently dealing with dengue.
3. To assess the efficiency of current dengue control and preventive initiatives in Multan area.
4. To give solutions for enhancing dengue awareness, education, and control in the Multan area.

### 3. Review of Relevant Literature

According to Zhang et al. (2023), there are four distinct serotypes of the dengue virus that cause dengue fever in humans. Dengue virus infection is common in children, and young children, especially those who have been infected with another dengue serotype, are at the highest risk for developing severe dengue sickness. The major aims of this study were to quantify dengue seroprevalence in a pediatric study population and to investigate the relationships between dengue-related KAP in homes and dengue seropositivity in children. A cross-sectional research conducted in Fortaleza, Brazil, between November 2019 and February 2020 formed the basis for this analysis. A total of 483 children from 392 families gave a sample large enough for serological testing. One-fourth of the children in our research tested positive for dengue antibodies, and we were able to pinpoint certain socioeconomic and demographic factors that were linked to seropositivity. Although KAP was positively linked with seropositivity in our cross-sectional investigation, the data also imply that it was not a protective predictor of dengue seropositivity risk. There are a number of caveats to this study. The key drawback is that it is unable to demonstrate timing in the connections due to the cross-sectional design, in which exposure and consequence are recorded simultaneously. Substantial shifts in KAP have been seen over time and in response to specific stimuli, such as a history of dengue illness. Our findings shed light on the prevalence of dengue seropositivity in children in Fortaleza, Brazil, and on the demographic and socioeconomic factors that are linked with that prevalence. Despite the importance of understanding and improving families' KAP for effective community dengue control and preventive programs, our findings imply that KAP may not identify those more at risk for dengue.

According to Khan et al. (2019), dengue fever is an infectious disease spread by mosquitoes and other insects, typically seen in tropical areas, and thought to be transmitted to susceptible humans. It is characterized by flu-like symptoms, fever, and, in rare cases, hemorrhage (dengue hemorrhagic fever), which can result in a shock-like state (dengue shock syndrome). The goal of this study is to assess the level of patient and visitor education, awareness, and adherence to infection control best practices in two Peshawar, Khyber Pakhtunkhwa, Pakistan tertiary care hospitals. Analyzed data from a random sample of people. Between September and November of 2016, researchers at Khyber Teaching Hospital (KTH) in Peshawar and Lady Reading Hospital (LRH) collected data. The indigenous population was surveyed using a questionnaire. A total of 448 adult patients and visitors from two different Peshawar public sector tertiary care hospitals participated in the study, all of them were recruited using Convenience sampling method. Patients and visitors who came to the OPD were asked to take part in the research. Descriptive statistics were calculated using SPSS version 20. Of the 448 people randomly selected for the study, 435 people (18–40 year old) took part, with 289 (66.4%) men and 146 (33.6%) women. Only 239 people (54.9%) recognized that the disease was spread mostly by the bite of an infected mosquito; 234 persons (53.7%) agreed that dengue was an infectious disease; and only 72 (16.5%) didn't know what dengue was. Also, 189 people (43.45%) said that fresh water was the primary breeding place. There were 72 people (16.5%) who knew nothing about preventative measures, and 137 people (31.4%) knew nothing about eradication tactics. Adult participants' understanding was subpar, with many different ideas about what caused dengue fever and how to stop it from spreading.

According to Khan et al. (2022), Dengue Fever (DF) has become an increasingly serious public health problem after a dramatic increase in cases over the previous decade. This KAP research set out to assess participants' levels of familiarity with, and comfort in discussing dengue disease. This Cross-Sectional Study was conducted in Rawalpindi neighborhoods experiencing a Dengue outbreak. Only one member of each of the 110 households was questioned. The recording system was used for the KAP valuation. Microsoft Excel and SPSS 21 were used to examine the data. Chi-square and Fischer's exact tests, as well as

correlation, were used to analyze the strength of the link. The average age of the participants was 20.2 1.9 years, and their ages ranged from 17 to 26. Of those who were illiterate, 53.6% were men and 46.4% were women. Due to the limited size of our sample, we are unable to draw broad conclusions about the relationship between illness and environmental variables. The aggregate performance across all three metrics is less than ideal. Involving locals and medical experts is necessary to increase understanding among the public in the region under study.

According to Shah et al. (2022), fifty million individuals are infected with dengue fever every year, making it one of the most significant potential viral re-emerging illnesses, especially in subtropics and tropics. The mosquito-borne Dengue virus (DENV) has four serotypes (DENV-1, DENV-2, DENV-3, and DENV-4) that can cause either dengue fever or dengue shock syndrome. Dengue virus infections can have a number of outcomes, from being asymptomatic to being subclinical to presenting with symptoms that are difficult to tell apart from either dengue fever or dengue hemorrhagic fever. The danger posed by dengue can be lessened with vigilant monitoring, accurate reporting, and careful case management. The current KAP study on dengue evaluates the public's knowledge, attitudes, and preventative measures; statistical analysis of this data revealed a discrepancy between the two. The current study found that respondents exhibited unfavorable levels of dengue-related knowledge, attitudes, and behaviors. As levels of education, use of modern communication technologies, knowledge of the disease's warning signals and prevention strategies, and knowledge of the disease's lethality were all shown to decline, so too were the KAP parameters. The results of the present KAP survey showed that the respondents' knowledge, attitudes, and preventative behaviors about dengue fever varied widely. This variation was attributed mostly to participants' low levels of education and socioeconomic position.

According to Nasir et al. (2022), mosquitoes spread a wide variety of illnesses. Dengue, malaria, chikungunya virus, west Nile virus, and Zika virus are just few of the mosquito-borne illnesses that can affect humans. Mosquitoes are responsible for 17% of all disease-related fatalities worldwide. The common people of Pakistan and other Asian nations are at risk from several mosquito-borne illnesses (NGCN, 2015). Microcephaly is just one of numerous brain problems linked to malaria. The participants in this study were secondary school students in the age range of 13-19 during the 2020-2022 school year. This research concentrated on students since they represent the largest potential population for exposure to the illness. A stratified random sampling procedure with many stages was used. Eighty-one percent or more of students agreed that mosquitoes could be a health problem and that they could spread dengue fever, and eighty percent or more agreed that mosquito populations could be reduced through the use of various mosquito repellents, including many local remedies like the use of smoke and mosquito's nets. Over eighty-four and a half percent of the respondents said that they believed the community's efforts to reduce mosquito populations and the diseases they spread would be successful. Students who were unaware of how to prevent dengue fever and its frequent symptoms numbered just 27.41%. Dengue fever awareness initiatives must continue in order to pave the way for more sophisticated and efficient campaigns in the future. Dengue workshops for faculty and staff can also be held by the school administration to further inform the community about this illness. The local community's help is essential for the most effective mosquito and dengue fever prevention measures.

#### **4. Research Methodology**

The present cross sectional study was conducted in four towns (i) Bosan Town, (ii) Shah Rukn -e- Alam Town, (iii) Mosa Pak Town and (iv) Mumtazabad Town of Multan, Pakistan. The data were obtained from the general public related to knowledge, attitudes, and practices regarding dengue fever. Total number of 400 respondents participated in this study through

simple random sampling technique. For the sample selection process, the researcher utilized a simple random sampling technique to choose specific areas within the district of Multan. The researcher collected additional information, such as illness duration and admission rates, from the families. To ensure the validity and accuracy of the interview schedule, the researcher conducted a pre-testing phase by having twenty-interview schedule filled out. During this pre-testing process, the researcher observed that certain questions were not appropriate and caused difficulties in obtaining responses from the respondents. As a result, the researcher made necessary modifications. Some questions needed to be changed completely after pre-testing, while others required modifications to improve their clarity and effectiveness. Additionally, the researcher identified certain questions that conveyed the same meaning, leading to redundancy, and consequently, these questions were removed from the interview schedule. To enhance the interview schedule content and relevance, the researcher incorporated new questions aligned with specific indicators relevant to the topic of "Knowledge, attitudes, and practices regarding dengue fever among people in district Multan. Ultimately, the process of pre-testing proved beneficial as it enabled the researcher to make appropriate adjustments and modifications to the interview schedule in line with the research objectives. This step helped to ensure that the final interview schedule was better suited to collect relevant and reliable data for the study. After defining the appropriate research technique and illustrating the sample, the researcher has collected data using interview schedule as the primary tool for data collection. To ensure the validity and reliability of the interview schedule, the researcher focused on crafting unbiased and error-free questions, which could potentially affect the responses given by the participants. These errors are commonly referred to as response effects. The researcher took precautions to avoid issues such as poorly worded questions, question order biases, and problems with the interaction between the respondents and the interviewer during the interview process.

## 5. Results

**Table 1: Demographic information of the respondents**

| <b>Age</b>       | <b>Frequency</b> | <b>Percentage</b> |
|------------------|------------------|-------------------|
| Under 18         | 26               | 6.5               |
| 18-23            | 73               | 18.3              |
| 24-28            | 108              | 27.0              |
| 29-33            | 76               | 19.0              |
| 34-38            | 39               | 9.8               |
| 39-43            | 17               | 4.3               |
| 44-48            | 19               | 4.8               |
| 49-53            | 17               | 4.3               |
| 54-58            | 10               | 2.5               |
| >59              | 15               | 3.8               |
| <b>Gender</b>    |                  |                   |
| Male             | 217              | 54.3              |
| Female           | 183              | 45.8              |
| <b>Education</b> |                  |                   |
| Illiterate       | 12               | 3.0               |
| Primary          | 6                | 1.5               |
| Matric           | 74               | 18.5              |
| Intermediate     | 115              | 28.8              |
| Graduate         | 117              | 29.3              |
| Master           | 53               | 13.3              |

|                       |     |      |
|-----------------------|-----|------|
| Any other             | 23  | 5.8  |
| <b>Marital status</b> |     |      |
| Single                | 109 | 27.3 |
| Married               | 234 | 58.5 |
| Divorced              | 39  | 9.8  |
| Widowed               | 18  | 4.5  |
| <b>Occupation</b>     |     |      |
| Student               | 59  | 14.8 |
| Govt. Employee        | 53  | 13.3 |
| Private Employee      | 193 | 48.3 |
| Retired               | 22  | 5.5  |
| Business man          | 44  | 11.0 |
| Any other             | 29  | 7.3  |
| <b>Monthly income</b> |     |      |
| 10,000 or less        | 60  | 15.0 |
| 10,000-15000          | 32  | 8.0  |
| 16,000-20,000         | 36  | 9.0  |
| 21,000-25,000         | 32  | 8.0  |
| 26,000-30,000         | 31  | 7.8  |
| 31,000-35,000         | 68  | 17.0 |
| 36,000-40,000         | 62  | 15.5 |
| 41,000-45,000         | 27  | 6.8  |
| 46,000-50,000         | 15  | 3.8  |
| >50,000               | 37  | 9.3  |

The above table showed that 6.5% of the respondents were from the age group of less than 18 years. About 18.3% of the respondents were from the age group of 18-23 years, 27.0% of the respondents were from the age group of 24-28 years while 19.0% of the respondents were from the age group of 29-33 years likewise 9.8% of the respondents were from the age group of 34-38 years. About 4.3% of the respondents were from the age group of 39-43 years and 4.8% of the respondents were from the age group of 49-53 years, 2.5% of the respondents were from the age group of 54-58 years. While the rest 3.8% of the respondents were from the age group of 59 years. Of the 400 respondents, 54.3% of the respondents were male while 45.8 % of the respondents were female. In the present study 3.0% of the respondents were Illiterate while 1.5% respondents education was primary, 18.5% of the respondents were Matriculation, about 28.8% of the respondents were Intermediate, 29.3% of the respondents were graduate, 13.3% of the respondents were Master. The present study reported that 27.3% of the respondents were single while 58.5% of the respondents were married, 9.8% of the respondents were divorced, and 4.5% of the respondents were widowed. About 14.8% of the respondents were students, 13.3% of the respondents were Govt. employees, 48.3% of the respondents were private employee, 5.5% of the respondents were retired, 11.0% of the respondents were businessman and the rest 7.3 % of the respondents were doing other works. In the present study 15.0% of the respondent's per month income was less than 10,000 PKR while 8.0% of the respondent's monthly income was between 10,000 to 15,000 PKR. 9.0% of the respondent's monthly income was between 16,000 to 20,000 PKR, 8.0% of the respondent's monthly income were between 20,000 to 25,000 PKR, 7.8% of the respondent's monthly income was between 25,000 to 30,000 PKR, 17.0% of the respondent's monthly income were between 31,000 to 35,000 PKR, 15.5% of the respondents monthly income was between 36,000 to 40,000 PKR, 6.8% of the respondents monthly income was between 41,000 to 45,000 PKR, 3.8% of the respondents monthly income was between 46,000 to

50,000 PKR, and the rest of the 9.3% respondents monthly income was 50,000 in PKR.

### 5.1. Descriptive Statistics

**Table 2: Descriptive Statistics of the Respondents Knowledge about Dengue fever**

| Statements   | N   | Mean | Std. Deviation |
|--|-----|------|----------------|
| Do you know about dengue?  | 400 | 4.14 | 1.002          |
| Do you know the symptoms of dengue fever?                            | 400 | 3.96 | 1.073          |
| Do you know dengue is a serious illness?                             | 400 | 3.89 | 1.180          |
| Do you know that aides' mosquitoes transmit dengue?                  | 400 | 3.63 | 1.244          |
| Do you know that dengue can transmit through person-to-person?       | 400 | 3.71 | 1.207          |
| Do you know that dengue is a flu-like illness?                       | 400 | 3.60 | 1.150          |
| Do you know that dengue can be transmitted by blood transfusion?     | 400 | 3.69 | 1.198          |
| Do you know that dengue affects all age groups?                      | 400 | 3.67 | 1.155          |
| Do you know that dengue is transmitted by unhygienic food?           | 400 | 3.50 | 1.247          |
| Do you know that dengue is transmitted by unhygienic water?          | 400 | 3.46 | 1.190          |
| Do you know dengue may cause death?                                  | 400 | 3.62 | 1.144          |
| Do you know that dengue causes fever and headache?                   | 400 | 3.57 | 1.117          |
| Do you know that dengue leads to internal and external bleeding?     | 400 | 3.36 | 1.252          |
| Do you know the identity of aides' mosquitoes?                       | 400 | 3.74 | 1.193          |
| Do you know that dengue can be prevented by using bed netting?       | 400 | 3.64 | 1.113          |
| Do you know that dengue can be prevented by using insecticide spray? | 400 | 3.59 | 1.196          |
| Do you know that mosquitoes breed on stagnant water?                 | 400 | 3.65 | 1.188          |
| Do you know the water in flower pots can breed mosquitoes?           | 400 | 3.54 | 1.150          |
| Do you know the water in water coolers can breed mosquitoes?         | 400 | 3.44 | 1.166          |

**Scale:** *Extremely Knowledgeable* =5, *Very Knowledgeable* =4, *Moderately Knowledgeable* =3, *Slightly Knowledgeable* =2, *Not Knowledgeable* =1

The respondents were asked the questions regarding knowledge about dengue fever, majority of the respondents were ranked "very knowledgeable" that they knew about dengue fever ( $\mu=4.14$ ). The respondents were asked questions if they knew the symptoms of dengue fever, majority of the respondents reported ranked "very knowledgeable" that they knew the symptoms of dengue fever ( $\mu=3.96$ ). The respondents were asked questions if dengue was a serious illness, majority of the respondents were ranked "very knowledgeable" that dengue is a serious illness ( $\mu=3.89$ ). Majority of the respondents reported that aide's mosquitoes transmitted dengue ( $\mu=3.63$ ), grater part of the respondents were ranked "very knowledgeable" that dengue could be transmit through person-to-person ( $\mu=3.71$ ). The respondents were asked the questions if they knew that dengue was a flu like illness, majority of the respondent were ranked "very knowledgeable" that dengue is a flu-like illness ( $\mu=3.60$ ). Majority of the respondents were ranked "very knowledgeable" that dengue could be transmitted by blood transfusion ( $\mu=3.69$ ). Grater part of the respondents were reported "very knowledgeable" that dengue was affected all age groups ( $\mu=3.67$ ). The respondent were "Moderately Knowledgeable" that dengue was transmitted by unhygienic food ( $\mu=3.50$ ). Most of the respondents were ranked "Moderately Knowledgeable" that dengue was transmitted through unhygienic Water ( $\mu=3.46$ ). The respondent ranked "very knowledgeable" that dengue could cause death ( $\mu=3.62$ ). The respondents were asked questions if dengue caused fever and headache, majority of the respondents reported "very knowledgeable" about dengue cause fever and headache ( $\mu=3.57$ ). The respondents were asked questions if dengue led to internal and external bleeding, majority of the respondents were ranked "Moderately Knowledgeable" that dengue lead to internal and external bleeding ( $\mu=3.36$ ). Majority of the respondent were reported "very knowledgeable" about the identity

of aedes' mosquitoes ( $\mu=3.74$ ). Most of the respondents ranked were "very knowledgeable" that dengue could be prevented by using bed netting ( $\mu=3.64$ ). Majority of the respondents were reported "very knowledgeable" that dengue could be prevented by using insecticide spray ( $\mu=3.59$ ). Majority of the respondents were reported "very knowledgeable" the mosquitoes were breed on stagnant water ( $\mu=3.65$ ). Most of the respondents were ranked "very knowledgeable" that water in flowerpots could breed mosquitoes ( $\mu=3.54$ ). The respondents were asked questions if they knew the water cooler could breed mosquitoes, majority of the respondents were ranked "Moderately Knowledgeable" that water in water coolers could breed mosquitoes ( $\mu=3.44$ ).

**Table 3: Cross tabulation**

| Cross tabulation |                   |                        |                          |                    |                         |       |
|------------------|-------------------|------------------------|--------------------------|--------------------|-------------------------|-------|
| Gender           | Count             |                        |                          |                    |                         | Total |
|                  | Knowledge         |                        |                          |                    |                         |       |
|                  | Not Knowledgeable | Slightly Knowledgeable | Moderately Knowledgeable | Very Knowledgeable | Extremely Knowledgeable |       |
| Male             | 2                 | 18                     | 52                       | 87                 | 58                      | 217   |
| Female           | 3                 | 7                      | 84                       | 55                 | 34                      | 183   |
| <b>Total</b>     | 5                 | 25                     | 136                      | 142                | 92                      | 400   |

**5.2. Interpretation:**

**1. Gender and Knowledge Levels:** The table showed the distribution of the participants based on their gender and knowledge levels. The rows represented different genders (Male and Female), and the columns represented different knowledge levels.

**2. Count:** The values in the cells represented the number of participants falling into each combination of gender and knowledge level.

**3. Gender Distribution:** Out of the 400 participants in the study, 217 were male, and 183 were female.

**4. Knowledge Distribution:** The participants' knowledge levels were categorized as follows:

- Not Knowledgeable: 5 participants
- Slightly Knowledgeable: 25 participants
- Moderately Knowledgeable: 136 participants
- Very Knowledgeable: 142 participants
- Extremely Knowledgeable: 92 participants

**5. Gender and Knowledge Association:** To assess whether there is an association between gender and knowledge levels, a statistical test like the Chi-square test performed. This test determines the significant relationship between the two categorical variables (Gender and Knowledge).

**Table 4: Chi-Square Tests**

| Chi-Square Tests                    |                     |                        |                       |
|-------------------------------------|---------------------|------------------------|-----------------------|
|                                     | Value               | Df (Degree of freedom) | Asymp. Sig. (2-sided) |
| <b>Pearson Chi-Square</b>           | 23.320 <sup>a</sup> | 4                      | .000                  |
| <b>Likelihood Ratio</b>             | 23.525              | 4                      | .000                  |
| <b>Linear-by-Linear Association</b> | 6.265               | 1                      | .012                  |
| <b>N of Valid Cases</b>             | 400                 |                        |                       |

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 2.29.

Based on the provided Chi-square test results, the researcher interpreted the findings as follows:

In the above table, the researcher applied the chi-square test to check the association between two variables. One was "gender" and other variable was "Respondent's Knowledge on dengue fever". Here we valued in the row "Respondent's Knowledge on dengue fever" and column "gender". This table showed the cross tabulation. The total sample size of both



variables was 400. The Pearson chi-square test value was 23.320 and DF=4 and p-value was 0.000 and selected level of significance was 0.05 (5%). Since p-value 0.000 was lesser than level of significance 0.05. So we rejected null hypothesis and accepted alternative hypothesis and results were statistically highly significant and showed that there was an association between both variables.

**Table 5: Descriptive Statistics of respondents Attitude about Dengue fever**

| Statements  | N   | Mean | Std. Deviation |
|---|-----|------|----------------|
| Do you agree that everyone has the responsibility to ensure no Aides eggs?  | 400 | 3.95 | .942           |
| Do you participate in a dengue fever control public activity?   | 400 | 3.78 | 1.016          |
| Do you bring family member to see a doctor immediately if he/she has dengue fever symptoms?   | 400 | 3.88 | .994           |
| Do you agree dengue is a serious illness?   | 400 | 3.62 | 1.138          |
| Do you agree dengue fever can be treated at home?   | 400 | 3.44 | 1.259          |
| Do you agree dengue fever can be prevented?   | 400 | 3.66 | 1.089          |
| Do you agree that controlling the breeding places of mosquitoes is a good strategy to prevent dengue?                                       | 400 | 3.66 | 1.026          |
| Do you agree that stagnant water around the houses in discarded tyres broken pots and bottles are the breeding places of dengue mosquitoes? | 400 | 3.54 | 1.094          |
| Do you agree it is only the government is responsibility to control mosquitoes?   | 400 | 3.72 | 1.180          |
| Do you agree everybody should actively participate in controlling mosquitoes?   | 400 | 3.78 | 1.108          |

**Scale:** Strongly agree =5; Agree =4; Neutral =3; strongly disagree =2; Disagree =1

The respondents were asked the questions regarding their attitude towards dengue fever. Majority of the respondents ranked, “Agree” that everyone had the responsibility to ensure no aides eggs ( $\mu=3.95$ ). The respondents were asked questions if they participated in dengue fever control public activity, majority of the respondents reported “Agree” that they participated in a dengue fever control public activity ( $\mu=3.78$ ). Grater part of the respondents reported, “Agree” that they brought family member to see a doctor immediately if he/she had dengue fever symptoms ( $\mu=3.88$ ). Most of the respondents ranked “Agree” that dengue was a serious illness ( $\mu=3.62$ ). The respondents were asked questions if dengue fever could be treated at home; majority of the respondents ranked “Neutral” that dengue fever could be treated at home ( $\mu=3.44$ ). The respondents were asked the questions if dengue fever could be prevented; majority of the respondent ranked “Agree” that dengue fever could be prevented ( $\mu=3.66$ ). The respondents ranked “Agree” that controlling the breeding places of mosquitoes was a good strategy to prevent dengue ( $\mu=3.66$ ). Majority of the respondents ranked “Agree” that stagnant water around the houses in discarded tyres, broken pots and bottles was a breeding place of dengue mosquitoes ( $\mu=3.54$ ). The respondents ranked “Agree” that it was the only responsibility of the government to control mosquitoes ( $\mu=3.72$ ). Majority of the respondents reported “Agree” that everybody should actively participate in controlling of mosquitoes ( $\mu=3.78$ ).

**Table 6: Cross tabulation**

| Cross tabulation |  |                   |         |       |                |       |
|------------------|--|-------------------|---------|-------|----------------|-------|
| Count            |  |                   |         |       |                |       |
| Gender           | Respondent’s Attitude about Dengue fever |                   |         |       |                | Total |
|                  | Disagree                                 | Strongly disagree | Natural | Agree | Strongly agree |       |
| Male             | 5  | 11                | 77      | 71    | 53             | 217   |
| Female           | 5  | 6                 | 69      | 66    | 37             | 183   |

|              |    |    |     |     |    |     |
|--------------|----|----|-----|-----|----|-----|
| <b>Total</b> | 10 | 17 | 146 | 137 | 90 | 400 |
|--------------|----|----|-----|-----|----|-----|

The table presented the data of 400 respondents categorized by their gender (Male and Female) and their attitudes towards Dengue fever (Disagree, Strongly Disagree, Natural, Agree, Strongly Agree).

### 5.3. Interpretation:

#### 1. Attitude Distribution:

- Among the male respondents, the most common attitude was "Natural" (77), followed by "Agree" (71).
- Among the female respondents, the most common attitude was also "Natural" (69), followed by "Agree" (66).
- Overall, the "Natural" attitude seemed to be the most prevalent among the both genders.

#### 2. Gender Comparison:

- There were more male respondents (217) than female respondents (183) in the sample.
- The both male and female respondents generally tended to have similar distributions of attitudes.

#### 3. Strong Disagreement:

- Strongly Disagree attitudes were relatively less common in the both male (11) and female (6) respondents.

#### 4. Strong Agreement:

- Strongly Agree attitudes were less common as compared to other attitude categories, both for the male (53) and female (37) respondents.

#### 5. Overall Distribution:

- The majority of respondents, regardless of gender, seemed to hold attitudes classified as "Natural" or "Agree" toward Dengue fever.

Remember, this interpretation was based solely on the data provided in the table, and any broader conclusions or insights would require additional context and analysis.

**Table 7: Chi-Square Tests**

| <b>Chi-Square Tests</b>             |                    |                               |                              |
|-------------------------------------|--------------------|-------------------------------|------------------------------|
|                                     | <b>Value</b>       | <b>Df (Degree of freedom)</b> | <b>Asymp. Sig. (2-sided)</b> |
| <b>Pearson Chi-Square</b>           | 2.061 <sup>a</sup> | 4                             | .725                         |
| <b>Likelihood Ratio</b>             | 2.080              | 4                             | .721                         |
| <b>Linear-by-Linear Association</b> | .189               | 1                             | .664                         |
| <b>N of Valid Cases</b>             | 400                |                               |                              |

a. 1 cells (10.0%) have expected count less than 5. The minimum expected count is 4.58.

In the above table, the researcher applied the chi-square test to check the association between two variables. One is "gender" and other variable is "Respondent's Attitude on dengue fever". Here we looked at the row "Respondent's attitude on dengue fever" and column "gender". This table showed the cross tabulation. The total sample size of both variables was 400. Here was decided null and alternative hypothesis, there was no association and there was association respectively. The Pearson chi-square test value was 2.061 and DF=4 and p-value was 0.725 and selected level of significance was 0.05 (5%). Since p-value 0.725 is greater than level of significance 0.05. So we accepted null hypothesis and rejected alternative hypothesis and results were statistically not significant and showed that there was no association between both variables.

**Table 8: Descriptive Statistics of respondents Practices about Dengue fever**

| <b>Statements</b> | <b>N</b> | <b>Mean</b> | <b>Std. Deviation</b> |
|-------------------|----------|-------------|-----------------------|
|-------------------|----------|-------------|-----------------------|

|   |     |      |       |
|---|-----|------|-------|
| Do you use insecticide spray around your home?  | 400 | 4.12 | 1.012 |
| Do you use bed netting while sleeping?  | 400 | 3.84 | 1.083 |
| Do you use mosquito coil?   | 400 | 3.90 | 1.148 |
| Do you cover all water filled container in home?  | 400 | 3.88 | 1.093 |
| Do you prefer full clothing at evening?   | 400 | 3.71 | 1.214 |
| Do you ever use mosquito repellent or creams?   | 400 | 3.60 | 1.126 |
| Do you ensure proper disposable for garbage?  | 400 | 3.61 | .993  |
| Do you use smoke to fly away mosquitoes?  | 400 | 3.56 | 1.063 |
| Do you ever contact professional pest control for dengue prevention?  | 400 | 3.62 | 1.063 |
| Do you try to eliminate stagnant water in your home and surroundings?   | 400 | 3.59 | 1.063 |
| Do you use window screens to prevent dengue?  | 400 | 3.45 | 1.075 |
| Do you ever use mosquito eating fish for reducing mosquitoes?   | 400 | 3.41 | 1.131 |
| Do you think it is safe to treat a dengue patient with the self-medication?   | 400 | 3.41 | 1.062 |
| Do you contribute to the control of mosquito breeding areas in your neighborhood?   | 400 | 3.40 | 1.076 |
| Do you clean Aedes mosquito breeding sites, like water containers, storage tank, and plant pots one to three times in a week? | 400 | 3.34 | 1.130 |

*Scale: Always =5, Often =4, Sometimes =3, Seldom =2, Never =1*

The respondents were asked question if they used insecticide spray around their homes, majority of the respondents reported “Often” that they used insecticide spray around their homes ( $\mu=4.12$ ). The respondents were asked questions if they used bed netting while sleeping; grater part of the respondents reported “Often” they used bed netting while sleeping ( $\mu=3.84$ ). The respondents were asked questions if they used mosquito coil, majority of the respondent reported “Often” that they used mosquito coil ( $\mu=3.90$ ). Mostly the respondents reported “Often” that they covered all water filled container in home ( $\mu=3.88$ ). Majority of the respondents reported “Often” that they practiced to wear full clothing at evening ( $\mu=3.71$ ). The respondents reported “Often” that they used mosquito repellent or creams ( $\mu=3.60$ ). Majority of the respondents reported “Often” that they ensure proper disposable for garbage ( $\mu=3.61$ ). Most of the respondent reported “Often” that they used smoke to fly away mosquitoes ( $\mu=3.56$ ). Majority of the respondents reported “Often” that they contacted professional pest control for dengue prevention ( $\mu=3.62$ ). Majority of the respondents reported “Often” that they tried to eliminate stagnant water from their homes and surroundings ( $\mu=3.59$ ). Majority of the respondents reported “Often” that they used window screens to prevent dengue ( $\mu=3.45$ ). Grater part of the respondents reported “Often” that they used mosquito-eating fish for reducing mosquitoes ( $\mu=3.41$ ). Majority of the respondents reported “Often” that they thought it was safe to treat a dengue patient with the self-medication ( $\mu=3.41$ ). Majority of the respondents reported “Often” that they contribute to the control of mosquito breeding areas in their neighborhood ( $\mu=3.40$ ). Respondents reported “Often” that they cleaned Aedes mosquito breeding sites, like water containers, storage tank, and plant pots one to three times in a week ( $\mu=3.34$ ).

**Table 9: Cross tabulation**

| Cross tabulation |   |        |           |       |        |       |
|------------------|---|--------|-----------|-------|--------|-------|
| Count            |   |        |           |       |        |       |
| Gender           | Respondent’s Practices about Dengue fever |        |           |       |        | Total |
|                  | Never                                     | Seldom | Sometimes | Often | Always |       |
| Male             | 4   | 8      | 90        | 73    | 42     | 217   |
| Female           | 2   | 5      | 82        | 70    | 24     | 183   |
| <b>Total</b>     | 6   | 13     | 172       | 143   | 66     | 400   |

This cross-tabulation table presented data on 400 respondents categorized by their gender

(Male and Female) and their reported practices related to Dengue fever prevention (Never, Seldom, Sometimes, Often, And Always). Let's interpret the table:

#### 5.4. Interpretation:

##### 1. Practice Distribution:

- Among the male respondents, the most common practice level was "Sometimes" (90), followed by "Often" (73).
- Among the female respondents, the most common practice level was also "Sometimes" (82), followed by "Often" (70).
- Overall, the "Sometimes" practice level was the most prevalent between the both genders.

##### 2. Gender Comparison:

- There were more male respondents (217) than female respondents (183) in the sample.
- Both male and female respondents generally tended to have similar distributions of practice levels.

##### 3. Frequency of Practices:

- "Never" and "Seldom" practice levels were reported less frequently, both for the male and female respondents.
- "Always" practice level was reported the least frequently between the both genders.

##### 4. Overall Practice Trends:

- The majority of the respondents, regardless of gender, report practicing Dengue fever prevention measures at the "Sometimes" or "Often" levels.

##### 5. Prevention Behaviour:

- The table suggested that the respondents, in general, tended to engage in Dengue fever prevention practices, with a significant portion reporting practicing "Sometimes" or "Often."

As with any data interpretation, it's important to consider the context and potential factors that might influence the reported practices, such as awareness campaigns, geographic location, and personal beliefs. This interpretation was based solely on the data provided in the table and should be considered as a starting point for further analysis and understanding.

**Table 10: Chi-Square Tests**

| Chi-Square Tests                    |                    |                        |                       |
|-------------------------------------|--------------------|------------------------|-----------------------|
|                                     | Value              | Df (Degree of freedom) | Asymp. Sig. (2-sided) |
| <b>Pearson Chi-Square</b>           | 3.841 <sup>a</sup> | 4                      | .428                  |
| <b>Likelihood Ratio</b>             | 3.892              | 4                      | .421                  |
| <b>Linear-by-Linear Association</b> | .404               | 1                      | .525                  |
| <b>N of Valid Cases</b>             | 400                |                        |                       |

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 2.75.

In the above table, we applied the chi-square test to check the association between two qualitative variables. One was that "gender" and other variable was "Respondent's Practices on dengue fever". Here we looked at the row "Respondent's Practices on dengue fever" and column "gender". This table showed the cross tabulation. The total sample size of both variables was 400. Here was decided null and alternative hypothesis, there was no association and there is association respectively. The Pearson chi-square test value was 3.841 and DF=4 and p-value was 0.428 and selected level of significance was 0.05 (5%). Since p-value 0.428 was greater than level of significance 0.05. So we accept null hypothesis and reject alternative hypothesis and results were statistically not significant and showed that

there was no association between both variables.

## **6. Discussion**

In the present study it indicate that while the general public possessed a high level of awareness regarding dengue, a significant proportion of the participants were unable to recognize the indicators and manifestations of dengue hemorrhagic fever, including severe abdominal pain, hemorrhage, platelet depletion, and anuria. A significant proportion of the participants (41%) possessed knowledge that dengue was transmitted through mosquito bites and that its primary symptoms were fever and headache. Further development could have been incorporated into the dengue prevention promotion strategy. Our findings revealed a tenuous correlation between community members' awareness of dengue and their adherence to preventive measures. Assuming that it is difficult to change a person's behavior due to multiple social and cultural factors, such as water storage practices, sleeping outdoors during load shedding, affordability and lack of resources to adopt preventive measures like covering windows with nets, large containers with lids, etc., greater knowledge does not necessarily translate into better practice. While there was no direct correlation between improved practice and symptom awareness in our research, it is crucial to have sufficient knowledge of dengue symptoms in order to identify the severity of the disease early. This enables for effective case management and potentially life-saving measures (Siddiqui et al., 2013).

Amidst the investigation, it was discovered that individuals lacking knowledge of the term "dengue" possessed no formal education. While the prevailing belief was that the disease was transmitted through mosquito bites, numerous erroneous accounts of its transmission were also circulated. Although many were dismayed that the disease spread through direct contact, others were uncertain about this contagious method of transmission. Although shock, hemorrhage, and fever are three well-known symptoms of dengue, fever is the most frequent presenting symptom. The study unveiled that individuals possessed an adequate amount of knowledge regarding this ailment. Prominent preventive measures outlined by the individuals included coils and anti-mosquito spray. Additionally, the frequent utilization of gauze for cleaning doors and windows and cleaning residences was noted. Additionally, a higher socioeconomic status was found to correlate positively with a more developed concept (Shah & Billah, 2017). A higher level of education was also associated with a greater likelihood of being aware of and taking preventative measures against dengue vectors, according to research from another nation (Dhimal et al., 2014). The study conducted in Nepal suggested that greater attention should be paid to individuals with lower socioeconomic status, as those with higher economic status exhibited a reduced susceptibility to dengue infection as a result of their preferred living environment and living conditions (Mondini & Neto, 2007). The majority of the studies concluded that in order to contain the viral infections spread, effective dengue prevention and control programmers were required.

In the current study, nearly all participants possessed prior knowledge of dengue. The mass media served as the primary information source. The research demonstrated the significance of mass media in informing the public about critical health issues. The significance of medical personnel as information sources was considerable. This is in contrast to the 1986 KAP study that was previously conducted in the Federal Territory. A noteworthy correlation was observed between individuals who were provided with information by medical staff and those whose residences had undergone inspections by health personnel to detect larval reproduction. This demonstrated that house-to-house inspection served a dual purpose: not only did it facilitate *Aedes* surveillance, but it also promoted the interactive transmission of information. As specified in the sixth Malaysia plan's Vectorborne Disease Control Program, one of the primary objectives of house-to-house inspection was to educate the public on how to prevent *Aedes* propagation. According to the findings of the present investigation, every respondent was familiar with dengue. Comparable to the findings of a prior investigation, this

one demonstrated that every respondent in the Perak Tengah district possessed knowledge of dengue. Additionally, television and radio were identified as the most prevalent sources of dengue-related information, according to this study (Zamri et al. 2020). Consistent with previous research (Ajibola et al., 2018), which found that television was the most prevalent source of dengue-related information, the current findings supported this notion. In addition, the majority of respondents provide accurate responses to the dengue knowledge questions, with the exception of the response stating that dengue mosquitoes bite exclusively in the morning. In line with the findings of a prior investigation, this study revealed that a majority of the participants concurred with the notion that dengue-transmitting mosquitoes exclusively strike in the early hours of the morning (Tram et al., 2002). A total of 181 participants (or 45.3%) in the current study expressed a high level of knowledge ('extremely knowledgeable') regarding dengue. A study conducted by Sarumoh et al. (2018) generated comparable findings, categorizing the respondents into two groups: knowledgeable and non-knowledgeable. Scores exceeding 10 were classified as knowledgeable, while scores falling below 11 were also considered knowledgeable. A total of 164 participants (41.0%) in the current study regarded themselves as "extremely knowledgeable" regarding the symptoms of dengue fever. A comparable finding was reported in a study conducted by Taksande and Lakhkar (2012), which also found that respondents possessed a considerable level of knowledge regarding the symptoms, with fever being accurately identified as the most prevalent (60.48 percent). 171 respondents (42.8%) in this study rated their knowledge that dengue was a severe illness as "extremely knowledgeable." An analogous outcome was observed in the research undertaken by Hairi et al. (2013), which revealed that nearly all participants acknowledged dengue as a severe ailment and unanimously agreed that prompt medical attention was required. A total of 125 participants (31.3%) in our study were deemed "extremely knowledgeable" regarding the transmission of dengue by *Aedes* mosquitoes; a comparable finding was reported in a study conducted by Hairi et al. (2013), which found that the majority of respondents (95.5%) had encountered the *Aedes* mosquito when questioned. When queried about the temporal pattern of mosquito bites, approximately 107 individuals (53.5%) responded "at dusk," 84 respondents (42.0%) stated "at dawn," and a mere 59 individuals (29.5%) responded "both at dawn and dusk." The remaining responses encompassed all hours of the day, night, and at any moment. Around 128 participants (32 percent) in our study were deemed "extremely knowledgeable" regarding the possibility that dengue could be transmitted person-to-person. An investigation conducted by Javed et al. (2018) yielded comparable findings, wherein 38.5% of participants rated themselves as "extremely knowledgeable" regarding the fact that dengue can be transmitted person-to-person. Similar results were found in a study conducted by Rehman et al. (2022), which found that 139 (34.8%) respondents rated "strongly agree" that everyone was responsible for ensuring that there were no *Aedes* eggs present. The respondents also reported that a significant number of them did not adhere to other preventive practices, including communicating with the authority for fogging (>70%), monitoring for the presence of *Aedes* mosquito eggs and larvae (>45%), and following updated information from a reliable source. Approximately 123 participants (30.8%) in the current study indicated that they were 'neutral' regarding their involvement in a public activity aimed at controlling dengue fever. A study by Zahir et al. (2016) reached similar conclusions, stating that community-based programmes are crucial for eliminating dengue mosquito breeding grounds. This is a cost-effective and sustainable method of ensuring control in dengue-affected countries and resource-poor nations. A similar finding was observed in the study conducted by Shahid et al. (2017), where 39.8% of respondents rated 'strongly agree' with the notion that they would immediately bring a family member to the doctor if they developed dengue fever symptoms. Of the 135 respondents in our study who expressed strong agreement with this notion, it was those who

brought their family members to the doctor if they developed dengue fever symptoms. Similar results were found in the study conducted by Hasan et al. (2016), which found that 32% of respondents rated 'Agree' that dengue was a severe illness, with 116 (29%) of the respondents in our study agreeing that dengue was a serious illness. A comparable finding was observed in the study conducted by Shoukat et al. (2020), where 29.5% of respondents rated their contribution to controlling mosquito breeding areas in their neighborhood as "often." In our research, 137 (34.3%) of the respondents indicated that they contributed "often" to this end.

### **7. Limitations of the study**

The present study was conducted in Multan to evaluating the knowledge, attitudes, and practices of the people regarding dengue fever. This study had not encompassed other dimensions of the disease, such as its diagnosis, treatment, and clinical management. The study's timeline was set to span three months, from June to August 2023. During this period, a dedicated team of trained research assistants undertook the task of data collection. These assistants carried out the responsibly for administering the questionnaire to the study participants.

### **8. Conclusion**

In conclusion, this cross-sectional study on "Knowledge, attitudes & practices regarding dengue fever among people in district, Multan" has provided valuable insights into the understanding and behaviors of the population concerning dengue fever. The findings have shed light on crucial aspects related to knowledge gaps, prevailing attitudes, and prevailing practices regarding dengue prevention and control in the region. As we summarize the key implications of this study, it is evident that addressing the issue of dengue fever requires a multi-faceted approach involving education, community engagement, and collaboration among various stakeholders. The study revealed significant knowledge gaps among the participants regarding dengue fever, its transmission, symptoms, and preventive measures. These deficits highlighted the pressing need for targeted health education initiatives to increase awareness and understanding of the disease. The attitudes and perceptions of the population towards dengue fever played a crucial role in determining their engagement in preventive practices. The study identified both positive and negative attitudes, indicating the importance of reinforcing positive attitudes while addressing misconceptions and concerns. While some participants demonstrated good preventive practices, others showed inadequate adherence to essential measures.

### **9. Recommendation**

Based on the findings and analysis of the cross-sectional study conducted on "Knowledge, attitudes & practices regarding dengue fever among people in district, Multan," the recommendations are presented to understand dengue fever and to develop effective strategies for its prevention and control. It is a dire need to develop and implement targeted health education programs that focus on disseminating accurate and accessible information about dengue fever. These programs should address the knowledge gaps identified in the study and be tailored to the specific needs of different demographic groups within the district. Dengue-related topics must be included in the school curriculum because children can become key agents of change in promoting preventive practices among their families and communities. Utilize mass media platforms such as television, radio, newspapers, and social media to amplify health messages related to dengue fever. It is important to develop the informative content that reaches a wide audience and reinforces preventive practices. Training programs are very important to the healthcare providers, including doctors, nurses, and community health workers, to enhance their knowledge of dengue fever management and diagnosis. Well-informed healthcare professionals can ensure early detection and appropriate management of dengue cases. Foster community engagement and participation in dengue

prevention activities. Involve local residents in planning and implementing preventive measures, creating a sense of ownership and responsibility in the fight against dengue. By implementing these recommendations, we can foster a significant improvement in the knowledge, attitudes, and practices regarding dengue fever among the people in District Multan. Moreover, these efforts can contribute to the reduction of dengue cases, enhance public health outcomes, and ultimately improve the overall well-being of the community. Overall, this study served as a foundational step in the ongoing efforts to combat dengue fever in District Multan. The insights gained from this research contributed to the existing body of knowledge and offered valuable guidance to policymakers, healthcare providers, and other stakeholders as they strived to create a healthier and more resilient community, better equipped to prevent and manage dengue fever outbreaks.

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