Original Research Article

Knowledge, Attitudes and Practices Regarding Dengue in Dhaka, Bangladesh; A Web-based Cross-sectional Study

Abstract:

Objective:

This study aims to evaluate and design a reliable and valid knowledge, attitudes and practices (KAP) survey on dengue that is suitable for the residents of Dhaka, Bangladesh.

Methods:

This community-based cross-sectional study used a structured questionnaire to collect data from 119 respondents. Data collection method was done by questionnaire. To assess the KAP of the respondents, both descriptive and inferential statistics were compiled.

Result:

Among the respondents, there are 72 (60.5%) female and 47 (39.5%) male respondents. Most of the respondents, 113 or 95% of the respondents, belong to the 18 to 40 years age group and only six respondents (5%) reported to be aged over 40. The demographic data further reveals that among the 119 respondents, 83 (69.7%) respondents belong to single-family and 36 (30.3%) respondents belong to joint families. Regarding attitudes, the majority of respondents (84 or 70.6%) have good positive attitudes toward dengue, while the remaining respondents (29 or 24.4%) have moderate and 6 (5%) have poor positive attitudes toward dengue. According to the statistics, the majority of respondents (102 or 85.7%) have good preventive practices for dengue, while the remaining respondents (16 or 13.4 %) have moderate and 1 (0.8%) have poor preventive practices for dengue. Using the Independent t-test to compare knowledge between the sexes, it is discovered that the mean is relatively similar, and the p-value is .233, which is higher than 0.05, showing no statistically significant difference in knowledge based on the gender of the respondents. The descriptive analysis also found a statistically significant difference in respondents' knowledge (p=.038) and attitudes (p=.009) on dengue but no statistically significant difference in respondents' practices (p=.60) based on the residences of the respondents.

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Keywords: Knowledge, Attitude, practice, dengue, infectious, endemic.

Introduction:

Emerging infectious diseases (such as Ebola, H5N1, and H7N9), as well as endemic infections (such as chikungunya, dengue fever, and measles), poses severe threats to human health and life [1]. Due to globalization and the increased volume of human travel, infectious diseases often cause global pandemics [2]. Dengue is an emerging flavivirus infection transmitted by mosquitoes that is already widespread in more than 100 countries, with roughly 4 billion individuals at risk of catching the disease year and 96 million human cases [3]. It is a major public health concern and the most prevalent human virus transmitted by mosquitoes. The continuing increase in dengue infections is mainly attributable to the extensive spread of mosquito vectors, rapid and unregulated urbanization, increased international travel, and the lack of effective interventions [4].

According to the World Health Organization, dengue is most prevalent in the Americas, Southeast Asia (primarily Thailand, Indonesia, and the Philippines), and the Western Pacific [5]. Seventy-five percent of the world's dengue burden is in Asia, and the number of hyperendemic locations harboring multiple DENV serotypes has increased significantly [6].

Several countries globally, notably Southeast Asia and Latin America, experienced significant dengue epidemics in 2019, with the highest number of dengue cases reported in Bangladesh [7].

Dengue fever was initially recorded in 1965 as 'Dacca fever,' and until 2000, occasional dengue cases were documented in Dhaka and other country regions [8]. However, dengue incidence grew substantially between 2015 and 2017, reaching a sevenfold rise over the previous 14 years [9]. According to the Ministry of Health and Family Welfare, the country had a severe dengue outbreak in 2019, echoing a worrying increase in dengue prevalence (DGHS, 2019). According to the Ministry of Health and Family Welfare report, between January and December 2019, 100,201 dengue-infected patients were hospitalized, and 164 dengue deaths were confirmed by IEDCR [10].

Dengue has become one of the core concerns for Bangladesh, especially for Dhaka residences. There has been a dearth of appropriate initiatives to increase public understanding of dengue [11-12].

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Methods:

This study employed a cross-sectional design to investigate whether there was any correlation between the KAP and dengue among Dhaka inhabitants. Additionally, this study intends to determine the factors linked with dengue KAP. Finally, this study seeks to ascertain the association between KAP and dengue fever among the people of Dhaka, Bangladesh. For the study, the selected population are the residents of different parts of Dhaka city. This community-based cross-sectional study used a structured questionnaire to collect data from 119 respondents. A set of validated and pre-tested questionnaires based on the study's objectives and variables has been developed to facilitate the data collection. The data were obtained between January 2022 to April 2022. The questionnaires were sent to residents of Dhaka, Bangladesh and who volunteered to participate. The survey questionnaire consists of four sections. The socio-demographic characteristics of respondents, including gender, marital status, age, family size, education, occupation, and previous dengue infection history, were explored in Section A. This section contained ten questions. Section B consisted of ten questions to assess the respondents' knowledge about dengue, each with a yes/no/don't know response option. Then, Section C evaluated the respondents' perspectives on dengue. This section has eight questions with responses ranging from "strongly agree" to "strongly disagree." The final questionof the questionnaire Section D of the questionnaire consisted of eight questions

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determine the respondents' dengue prevention strategies. The response options ranged from "never" to "always." The questionnaire was in English and submitted to Google Forms for an online survey. The link to the online survey was shared on various social-media platforms and other forums to facilitate the data collection for the study.

The exclusion and inclusion criteria for the study were;

Exclusion Criteria

- People who are below 18 years old
- Other Respondents who are unfit to participate.

Inclusion Criteria

- The citizens of Dhaka

Respondents who are willing to participate in the study

- Respondents are capable of communicating.

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DATA ANALYSIS AND SCORING

The collected data will be arranged using a scoring system and analyzed using SPSS 23.0. All data were inspected at the outset of the analysis to prevent incorrect data entry. The level of statistical significance was set to 0.05. Both descriptive and inferential statistics were conducted for data analysis. For inferential statistics, the independent t-test, and correlation were employed to establish the relationship between the independent and dependent variables.

To analyze the data, a scoring system was used after the data from the questionnaire were coded and entered into the SPSS software. For socio-demographic data, the frequencies and percentages were used. For the questions about the knowledge of dengue, the score was two for the correct answer, one for the "don't know" answer, and zero for the wrong answer. For attitude, scoring was conducted for the positive statement as one for "Strongly Disagree," two

for "Disagree," three for "Neutral," four for "agree," and five for "Strongly Agree." For practice, scoring was conducted for the positive statement as one for "never," two for "seldom," three for "often," and for "always." Using the grading criteria provided in table .1, data were first rated using Microsoft excel. After that, the respondents' scores of knowledges, attitudes, and practices on dengue are examined by dividing them into three levels, good, moderate, and bad.

For knowledge, score greater than 15 were rated as "Good," scores from 12 to 15 were categorized as "Moderate," and score below 12 were categorized as "Poor." For attitude, scores higher than 32 were categorized as "Good," scores from 25 to 32 were categorized as "Moderate," and scores below 25 were categorized as "Poor." For practice, scores higher than 17 were rated as "Good," scores from 10 to 17 were labeled as "Moderate," and scores below ten were categorized as "Poor [13]."

TABLE 1: SCORING ANALYSIS OF KAP REGARDING DENGUE

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SECTION	SCORE	
Knowledge	Positive Statement 0 = NO 1 = DON'T KNOW 2 = YES	Negative Statement 0 = YES 1 = DON'T KNOW 2 = NO
Attitude	Positive Statement 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	Negative Statement 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree
Practice	Positive Statement 1 = Never 2 = Seldom 3 = Often 4 = Always	

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Result:

Table 2 Socio-demographic characteristics of their respondents (n=119)

Demographics	n (n = 119)	Percentage (%)
Gender		
Female	72	60.50
Male	47	39.50
Age (years)		
18 to 40	113	94.96
40 and above	6	5.04
Marital status		
Divorced	5	4.20
Married	53	44.54
Unmarried	61	51.26
Religion		
Buddhist	4	3.36
Hindu	7	5.88
Muslim	108	90.76
Family size		
Joint family	36	30.25
Single-family	83	69.75
Education		
Below Higher secondary	6	5.04
Higher secondary and above	113	94.96

	13	
Occupation		
Household	1	.84
Business	46	38.66
Student	0	0
Service Holders	44	36.97
Others	28	23.53
Monthly Family Income (BDT)		
Less than 5000	8.00	6.72
5000 to 15000	14.00	11.76
15000 to 25000	23.00	19.33
25000 and above	74.00	62.18
Residence		
Kuccha house	24	20.17
Pucca house	95	79.83
Dengue infection		
Infected	19	**15.97**
Not Infected	100	**84.03**

*****BDT: Bangladeshi Taka

Table 2 above demonstrates socio-demographic characteristics of respondents.

Among the respondents, there are 72 (60.5%) female and 47 (39.5%) male respondents. Most of the respondents, 113 or 95% of the respondents, belong to the

18to 40 years age group and only six respondents (5%) reported to be aged over 40. The demographic data further reveals that among the 119 respondents, 83 (69.7%) respondents belong to single-family and 36 (30.3%) respondents belong to joint families. Most of the respondents, 113 (95%) have education up to higher secondary or above, and only 6 (5%) respondents have education below higher secondary. Regarding the occupation of the respondents, it is found that most of the respondents are businessman 46 (38.66%) and service holders 44 (36.97%). Among the respondents, 100 (88%) have not yet been infected by dengue and 19 (16%) have a previous history of dengue infection.

Table 3: Knowledge, attitude and practice regarding to dengue

Demographics	n (n = 119)	Percentage (%)
Knowladge_score		
Good	79	66.39
Moderate	29	24.37
Poor	11	9.24
Attitude_Score		
Good	84	70.59
Moderate	29	24.37
Poor	6	5.04
Practice_score		
Good	102	85.71
Moderate	16	13.45
Poor	1	.84

Table 3 above shows knowledge, attitude and practice regarding to dengue. The majority of respondents (70 or 66.4%) have a good understanding of dengue, while the remaining respondents (29 or 24.4%) have moderate knowledge and 11 (9.2%) have low knowledge of dengue. Regarding attitudes, the majority of respondents (84 or 70.6%) have good positive attitudes toward dengue, while the remaining respondents (29 or 24.4%) have moderate and 6 (5%) have poor positive

attitudes toward dengue. According to the statistics, the majority of respondents (102 or 85.7%) have good preventive practices for dengue, while theremaining respondents (16 or 13.4 %) have moderate and 1 (0.8%) have poor preventive practices for dengue.

Table 4: Independent Samples T-Test:

	Knowledge				Attitude				Practice			
Characteristics	Mean	Std. Deviation	F	Sig.	Mean	Std. Deviation	F	Sig.	Mean	Std. Deviation	F	Sig.
Gender												
Male	1.64	0.25	1.44	0.23	4.35	0.80	0.27	0.61	2.97	0.57	6.46	0.01
Female	1.66	0.29			4.19	0.69			3.17	0.38		
Age												
18 to 40 Years	1.66	0.26	1.43	0.23	4.26	0.75	0.53	0.47	3.09	0.49	5.56	0.02
40 years and above	1.37	0.34			4.13	0.39			3.17	0.06		
Family size												
Joint family	1.66	0.27	0.00	0.97	4.20	0.80	1.71	0.19	3.11	0.50	0.27	0.61
Single-family	1.64	0.27			4.38	0.54			3.05	0.42		
Educatio												

n												
Below Higher secondary	1.30	0.35	0.09	0.76	2.88	1.04	2.51	0.12	2.50	0.83	4.32	0.04
Higher secondary and above	1.67	0.26			4.33	0.64			3.12	0.43		
Residence												
Kucha house	1.65	0.33	4.42	0.04	3.69	0.99	7.14	0.01	2.88	0.61	3.61	0.06
Pucca house	1.65	0.26			4.40	0.58			3.14	0.42		
Dengue infection												
Infected	1.61	0.29	0.42	0.52	4.09	0.84	0.04	0.85	2.91	0.63	3.54	0.06
Not Infected	1.66	0.27			4.29	0.71			3.12	0.43		

Table 4 resembles independent samples T- test. Using the Independent t-test to compare knowledge between the sexes, it is discovered that the mean is relatively similar, and the p-value is .233, which is higher than 0.05, showing no statistically significant difference in knowledge based on the gender of the respondents.

Similarly, for attitude, the p-value is .605, which also suggests no statistically significant difference between male and female attitudes regarding dengue.However, from the independent t-test, it is observed that the mean is different for

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practice, and the p-value is .012, which is less than.05. Hence, we can assume a statistically significant variation in dengue preventative behaviors based on the gender of the respondents.

The descriptive analysis also found a statistically significant difference in respondents' knowledge (p=.038) and attitudes (p=.009) on dengue but no statistically significant difference in respondents' practices (p=.60) based on the residences of the respondents. Regarding family size, there are no statistically significant differences in knowledge (p=.972), attitude (p=.193), and practices (p=.606) regarding dengue. Similarly, there is no statistically significant difference in knowledge (p=.516), attitude (p=.851), and practices (p=.063) regarding dengue based on the past dengue infection of the study respondents.

Table 5: Correlation matrix analysis:

Knowledge				Attitude	Practice
Spearman's rho	Knowledge	Correlation Coefficient	1.00	.31**	.19*
		Sig. (2-tailed)	.	.00	.03
		N	119	119	119
	Attitude	Correlation Coefficient	.32**	1.00	.067
		Sig. (2-tailed)	.00	.	.47
		N	119	119	119
	Practice	Correlation Coefficient	.19*	.06	1.00
		Sig. (2-tailed)	.03	.47	.
		N	119	119	119

**. Correlation is significant at the 0.01 level (2-tailed).

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*. Correlation is significant at the 0.05 level (2-tailed).

Table 5 shows correlation matrix analysis of the respondents. From the analysis,

we see that there's zero multicollinearity in the correlation matrix, which suggests that the model is best fitted for the study and won't have any multicollinearity effect on the analysis of the study's variables. Furthermore, thecorrelation matrix shows a significant correlation (2-tailed value 0.00 < .05, with a positive Coefficient of .316) between the respondents' knowledge and attitude

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regarding dengue. Similarly, a significant correlation (2-tailed value .034 < .05, with a positive Coefficient of .194) between the respondents' knowledge and practice regarding dengue.

Discussion:

The present study is a community-based cross-sectional assessment of respondents' knowledge, attitudes, and practices toward dengue. The study's findings revealed that most regular Bangladeshi individuals are familiar with dengue. According to the study, most respondents provided accurate responses on their knowledge, attitudes, and practices around dengue. The result indicates that 66.4% of respondents had good and 24.4% had moderate dengue knowledge, and only 9.2% of respondents exhibited poorknowledge of dengue. Regarding attitudes, 70.6% of respondents had good, 24.4% had moderate, and only 5% of respondents showed poor positive attitudes toward dengue. Similarly, for practice, it is found that the majority of respondents, 85.7% showed good, 13.4% showed moderate and .8% showed poor preventive practices of dengue. Based on the findings, we can conclude that majority of the residents of Dhaka, Bangladesh, have good knowledge, attitude, and practice in preventing dengue.

Regarding the socio-demographic factor associated with the KAP of Dengue, it was discovered that there are no differences in knowledge and attitude regarding dengue based on gender, age, family size, education, marital status, occupation, religion, or previous dengue infection history. However, a statistically significant relationship was established between respondents' residence and attitudes toward dengue. It is discovered that residents of kuccha house are more knowledgeable about dengue than those in pucca house. This may be conceivable when more awareness programs are concentrated on disadvantaged regions, as it is commonly believed that residents of kuccha houses are more responsible for Aedes mosquito growth. In addition, a

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statistically significant relationship was established between respondents' monthly income and their opinions toward dengue. This finding is similar to previous study [14].

Concerning dengue preventative practice, there are statistically significant disparities in gender, age, and level of education among respondents. However, the findings indicate that females had more unusual dengue preventive activities than males. In previous study, it is found that females were 130 percent more likely than males to have effective dengue preventative measures [15].

In other study, from a Malaysian perspective and among a semi-urban community in a semi-urban town, that older people had better practices for preventing dengue illness than younger people [16].

Regarding education, it is found that respondents with higher secondary and above educational levels have high dengue preventative practice than those with Below Higher secondary education. This finding is similar to previous study [17].

In relation to the relationship between knowledge, attitude, and practice toward dengue, the study's findings indicate a substantial association between respondents' knowledge and attitude regarding dengue. It can be explained as good knowledge regarding dengue prevention has a high level of attitude towards dengue prevention. Previous studies also report a substantial correlation between knowledge and attitudes toward dengue control [16,18].

In addition, the study reveals a significant correlation between respondents' knowledge of dengue and the practice of preventative measures. This can be explained as good knowledge regarding dengue prevention has a high level of preventive practices towards dengue among the respondents. Several prior studies also have revealed a significant association between dengue knowledge and prevention practice [19,20].

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Limitations:

The study has several limitations; the first and most vital limitation is its small sample

size and the adopted sampling techniques. Due to the time constraints, the study used convenience sampling techniques. Hence the data may represent the perspective of a specific group rather than the entire community. In addition, even though the survey was anonymous, given that it was a self-reported survey and that respondents may havesought to provide socially acceptable responses, the responses to the questionnaire maynot reflect actual attitudes and behaviors. Consequently, the study's findings may notbe generalized to all the citizens of Bangladesh. Therefore, it is suggested that similar research should be conducted in the future using a bigger sample size and employing the random sampling technique. In addition, as respondents may have provided responses that they viewed as favorable to the interviewers, it is recommended to conduct similar studies using trained interviewers who could recognize such bias will minimize this bias. Finally, as the study solely relied on quantitative data, it may not be sufficient to understand the KAP of the respondents adequately. Hence, it is

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recommended to conduct similar studies with quantitative and qualitative data better tocomprehend the KAP of Bangladeshi citizens regarding dengue.

Conclusion:

In dengue prevention activities, ladies are more diligent than their male counterparts. Similarly, individuals aged forty and older have taken more preventive actions than those aged eighteen to forty. In addition, the study revealed that respondents with secondary education or higher have better dengue prevention measures than those with an education level below the secondary school. This study is expected to open the gateway for further research and help design and implement adequate intervention measures.

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