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Knowledge regarding the treatment and prevention of dengue fever among the urban people in Bangladesh

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Abstract

Dengue is one of the major vector-borne diseases which is currently a burning public health issue in Bangladesh. Bangladesh is affected by a dengue outbreak almost every year. Though the prevalence of dengue was low compared to other Southeast Asian countries since its inception in 1964 in Bangladesh, recently Bangladesh is experiencing an increase in dengue outbreaks, especially in the urban areas. Over the past few decades, the prevalence of dengue is increasing globally due to urbanization, population growth, climate change, and other surrounding factors. Thus, it is very much essential for urban people to have sound knowledge regarding the treatment and prevention of dengue fever. This study aimed to assess the knowledge regarding the treatment and prevention of dengue fever among the urban people in Bangladesh. A descriptive type of cross-sectional study was conducted among the people from different areas of Dhaka city in Bangladesh. For this purpose, 384 persons were randomly selected who were from different socio-demographic backgrounds. Data were being collected using a pre-tested and semi-structured questionnaire and by conducting face-to-face interviews with the selected respondents. The data analysis was done using appropriate statistical software and the level of knowledge was assessed by using a Likert scale ranging from zero to ten. The findings revealed that overall, 72.38% of respondents' level of knowledge regarding treatment and prevention of dengue fever was good and the rest 27.62% of respondents' level of knowledge was poor. Though the knowledge level was found good among the respondents, it is very much important to practice the behavior as well. Thus, similar types of studies should be conducted in different cities to generalize the findings and identify the opportunities to work on the practice of the people towards the treatment and prevention of dengue fever.

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Introduction

Dengue is a mosquito-borne viral disease that has spread dramatically over regions putting about half of the world population at risk covered by the World Health Organization (WHO). The primary vector responsible for transmitting the disease is Aedes aegypti mosquitoes and the virus responsible is known as the dengue virus (DENV). 390 million dengue infections occur per year and according to WHO, the infection has increased over 8-fold in the last two decades (WHO, 2022). 129 countries have existing dengue infection and among the 3.5 billion people living in the dengue-endemic countries and at risk of dengue fever, 10 countries in South-East Asian regions including Bangladesh cover 1.3 billion people (WHO, 2022; Sharmin et al, 2015). Dengue cases and death cases due to dengue in this region have been increased by 46% and 2% respectively. High population growth rate, insufficient water supply, poor storage practices, underdeveloped sewer, and waste management system, global warming, rainfall and humidity and temperature effect on survival of these viruses, and development of hyper-endemicity in the urban area are responsible for the spread of dengue in this region (WHO, 2022; Rahman et al, 2021). Among the South-East Asian countries, Bangladesh has a lower prevalence of dengue (Abir et al., 2021). The first detection of dengue occurred in 1964 in Dhaka and dengue emerged as a threat to public health in 2000 in Bangladesh (Sharmin et al, 2015). Since then, there was a subsequent increase in the outbreak of dengue in Bangladesh, and the highest annual dengue incident was reported in 2019 with 1,12,000 cases and 129 deaths and there was an 11-fold increase in the incidence of dengue (Hossain et al, 2021; Rahman et al, 2022). With the progression of time, the disease burden of dengue has been increased in Bangladesh and environmental factors, for example, medium rainfall, humidity, temperature, and improper urbanization have been pointed out as the major cause (Noor, 2020). Climate change-induced vulnerability and its direct and indirect impacts are likely to increase the risk of dengue outbreaks (Rahman et al, 2021). Seasonal variation, longer pre-monsoon and monsoon seasons with high mean temperature favor the higher mosquito development and dengue transmission in Bangladesh (Sharmin et al, 2015; Paul et al, 2021; Rahman et al, 2021). Apart from the mentioned reasons, individual household conditions, for example, house structure, construction of the room, the storage system of water at the household level, the behavior of the residents, and sanitary practices also play role in the transmission of dengue in an urban area of Bangladesh (Rahman et al, 2021). Knowledge and attitude affect the awareness level of people and without proper awareness, developing a strategy to fight against public health problems is very difficult. To ensure proper prevention and treatment against dengue fever, community knowledge, and preventive behavior must be assessed as being a mosquito vector-borne disease, the habit of humans is strongly associated with the epidemiology of dengue fever (Bashar et al, 2020). The current study explores the knowledge of people on the treatment and prevention of dengue fever in the urban areas of Bangladesh. This study will help to follow up on the currently available data regarding the knowledge regarding dengue fever and will help the policymakers to update their program policy if needed.

Materials and methods

A descriptive type of cross-sectional study was carried out in different areas of Dhaka city, Bangladesh during the period from May 2021 to August 2021. The study population was all people from different areas of Dhaka city, Bangladesh. The sample size was calculated using the appropriate statistical formula ($n=z^2pq/d^2$). For the calculation of sample size, the p-value was considered 0.5 (50%), confidence interval and level of significance were 95% and 5% respectively. The persons who were willing to participate and aged more than 18 years were included as participants in the study. The random sampling process was used to select the sample responders where the samples were selected from the study population by keeping a

certain interval. Data were being collected using a pre-tested and semi-structured questionnaire and by conducting face-to-face interviews with the selected respondents. For quality assurance, data were checked on a regular basis. The data analysis was done by using Statistical Package for Social Science (SPSS 20.0, Chicago). The level of knowledge was assessed by using a Likert scale ranging from zero to ten. The respondents who scored between 6 to 10 were rated as having a good level of knowledge and the respondents who scored less than 6 were rated as having a poor level of knowledge regarding treatment & prevention of dengue fever. Before commencing the study, the research protocol was approved by the research ethics review committee of the Faculty of Allied Health Sciences of Daffodil International University. Before collecting the data, informed consent was taken from each participant. The information and records were kept confidential and anonymity was maintained strictly.

Results

The study was conducted among 384 selected respondents among which 57.42% were male and the rest 42.58% were female. The majority (43.29%) of the respondents were aged between 20 to 40 years, nearly one-third (29.54%) of the respondents were graduates. A majority (27.59%) of the respondents were housewives, 23.65% were involved in different types of business and 22.89% were involved in private jobs. Nearly half (46.54%) of the respondent's monthly household income was in between BDT 20000 to BDT 50000. More than half (57.33%) of the respondent's families consist of 4 to 8 members, 37.35% of respondents were non-resident in Dhaka followed by 33.69% of respondents who were residents of Dhaka for 10 years or more. Nearly two-thirds (61.74%) of the respondents do not use a mosquito net, more than eighty percent of the respondents do not clean household drainage systems regularly but more than two-thirds (64.74%) of the respondents visit doctors regularly (Table 01).

Table 01: Socio-demographic characteristics of the respondents (n=384)

Socio-demographic characteristics	Frequency (n)	Percentage (%)
Sex		
Male	220	57.42
Female	164	42.58
Age group		
<20	134	34.87
20-40	166	43.29
>40	84	21.84
Level of education		
Illiterate	4	1.12
Primary	33	8.67
Secondary	59	15.47
HSC	87	22.76
Graduate	113	29.54
Masters and above	86	22.44
Occupation		
Housewife	106	27.59
Government job	70	18.17
Private job	88	22.89
Business	91	23.65
Laborer	5	1.42
Rickshaw/van/bus/truck/any driver	24	6.28
Monthly household income		
<BDT 20000	33	8.52
BDT 20000-50000	179	46.54
BDT 50001-80000	129	33.67
>BDT 80000	43	11.27

Family size		
<4	120	31.15
4 to 8	220	57.33
>8	44	11.52
Year resident in Dhaka		
Non-resident	143	37.35
<10 years	111	28.96
10 years or more	129	33.69
Use mosquito net regularly		
Yes	147	38.26
No	237	61.74
Clean household drainage system regularly		
Yes	74	19.32
No	310	80.68
Visit doctor regularly		
Yes	249	64.74
No	135	35.26

Data source: Field study

All the respondents were asked ten questions related to their knowledge regarding the treatment and prevention of dengue fever. The questions were directed to the knowledge regarding common preventive measures, time of using bed net, frequency of cleaning up water containers, responsible department to prevent dengue, diagnosis and treatment process of dengue fever (Table 02).

Table 02: Distribution of respondents according to their knowledge regarding treatment & prevention of dengue fever

Variables	Frequency (n)	Percentage (%)
Common preventative measures of dengue (n=384)		
Use mosquito spray	34	8.78
Use mosquito coil	125	32.45
Use mosquito cream	49	12.67
Keep window and door closed	24	6.19
Use smoke to drive away mosquitos	9	2.46
Keep neat and clean surroundings	45	11.73
Use mosquito net	79	20.69
Cover body with long clothes	7	1.76
Don't know	7	1.84
Others	5	1.43
Time of using bed net (n=384)		
All the time	112	29.17
During day time	33	8.65
During the night	226	58.85
Don't use	10	2.48
Don't know	3	0.85
Frequency of cleaning up water containers (n=384)		
Weekly	99	25.78
Don't keep containers in home	145	37.81
Monthly	54	14.19
½ times in a year	85	22.22
Responsible department to prevent dengue (n=384)		
Health department	49	12.73
City corporation	174	45.28
City residents	119	31.07
All	42	10.92
Dengue fever is treatable (n=384)		
Yes	315	82.09

No	41	10.59
Don't know	28	7.32
Know primary treatment of dengue fever (n=384)		
Yes	260	67.61
No	124	32.39
Time to hospitalize patients (n=384)		
Dengue without warning signs	6	1.65
Dengue without warning signs but with co-morbidities	30	7.79
Dengue with warning signs	83	21.59
Severe dengue	228	59.36
Don't know	37	9.61
The place to treat dengue patients (n=384)		
At hospital	291	75.89
At home	21	5.43
In both places	41	10.69
No treatment needed	15	3.81
Don't know	16	4.18
Know which tests are required to diagnose dengue (n=384)		
Yes	144	37.58
No	240	62.42
Time to perform test after suffering from dengue fever (n=384)		
Immediately	77	20.17
After getting serious condition	30	7.89
After a few days	49	12.83
Never do test	91	23.78
Don't know	136	35.33

Data source: Field study

Based on the correct answer, scoring was done. According to the scoring, 72.38% of respondents' level of knowledge regarding treatment and prevention of dengue fever was considered good and the rest 27.62% of respondents' level of knowledge was poor.

Table 03: Level of knowledge of respondents regarding treatment and prevention of dengue fever (n=384)

Level of knowledge	Frequency (n)	Percentage (%)
Good	278	72.38
Poor	106	27.62

Data source: Software output

Discussion

The association of respondent's level of knowledge regarding treatment and prevention of dengue fever with their socio-demographic characteristics revealed that there is a significant association (p-value is <0.05) among the respondent's level of knowledge regarding treatment and prevention of dengue fever and their level of education, residence status in Dhaka, using a mosquito net and cleaning household drainage system regularly. No significant association was found with other variables (Table 04).

The current study shows that knowledge of preventive measures against dengue fever for example using a mosquito net (20.69%) and keeping windows and doors closed (6.19%). Similar findings were found in a study conducted in Yemen and Pakistan (Saied et al, 2015; Itrat et al, 2008). The use of mosquito net was found to be significant with the knowledge level of respondents. Similar findings were found in another study in Bangladesh and Pakistan (Hossain et al, 2021; Itrat et al, 2008). 29.17% of respondents use bed nets all the time, 8.65%

of respondents use bed nets at day time whereas 58.85% of respondents use bed nets at night time found in the study.

Table 04: Association of the respondent's level of knowledge regarding treatment and prevention of dengue fever with their socio-demographic characteristics

Socio-demographic characteristics	Frequency	Level of knowledge		P value
		Good (278)	Poor (106)	
Sex				
Male	220	158	62	**0.062**
Female	164	120	44	
Age				
<20	134	98	36	**0.054**
20-40	166	123	43	
>40	84	57	27	
Level of education				
Illiterate	4	2	2	**0.047**
Primary	33	16	17	
Secondary	59	39	20	
HSC	87	71	16	
Graduate	113	87	26	
Masters and above	86	63	23	
Occupation				
House wife	106	78	28	**0.059**
Government job	70	52	18	
Private job	88	61	27	
Business	91	66	25	
Laborer	5	3	2	
Rickshaw/van/bus/truck/any driver	24	18	6	
Monthly household income				
<BDT 20000	33	19	14	**0.071**
BDT 20000-50000	179	129	50	
BDT 50001-80000	129	95	34	
>BDT 80000	43	35	8	
Family size				
<4	120	87	33	**0.066**
4 to 8	220	165	55	
>8	44	26	18	
Residence status in Dhaka				
Non-resident	143	109	34	**0.035**
<10 years	111	72	39	
10 years or more	129	97	32	
Using mosquito net				
Yes	147	99	48	**0.039**
No	237	179	58	
Cleaning HH drainage system regularly				
Yes	74	46	28	**0.022**
No	310	232	78	
Visiting doctor regularly				
Yes	249	187	62	**0.052**
No	135	91	44	

Data source: Software output

Similar study findings have been found previously and it is evident that using bed nets has nothing to deal with preventing dengue fever as the mosquito bite in the daytime. However, using bed nets at night may give protection against other mosquito-borne diseases like malaria (Abir et al, 2021; Herbuela et al, 2019). Most of the respondents (72.38%) showed a good level of knowledge and 27.62% of respondents showed a poor level of knowledge. A similar study

finding was found in a study conducted in Chattogram where 72% of respondents showed good knowledge (Rahman et al, 2022). Another study occurring in the Philippines also demonstrated concurrent results with our study findings (Yboa and Labrague, 2013). This indicates that their periodic exposure to dengue has improved their knowledge. Respondent's level of knowledge plays an important role in knowledge about the treatment and prevention of dengue fever and this socio-demographic factor was found to be significant in the current study. Similar findings were found in a cross-sectional study conducted in Bangladesh that those who have good knowledge have good knowledge about the prevention practices of dengue (Rahman et al, 2021; Sharmila and Habib, 2021). The residence of the participants plays an important role in their knowledge about the treatment and prevention of dengue and it was found significant. Similar results were found in a study conducted in Dhaka city of Bangladesh (Bashar et al, 2020). The current study finds that the knowledge level has a significant association with education and residence. These same findings were found in another study conducted in Dhaka city (Hossain et al, 2021; Sharmila and Habib, 2021). The drainage system cleanliness was found to be strongly associated with the knowledge of people. A similar result was found in another study in Dhaka city (Abir et al, 2021). One study in Bangladesh shows that the higher the education level, the higher cleanliness of the drainage system (Sharmila and Habib, 2021).

Conclusion

Like the previous studies in this field, our study has found a good level of knowledge about the treatment and prevention of dengue fever among urban people. Though the overall level of knowledge was found good among most of the respondents, lack of effective practice on the preventive approach may be a major cause of the high prevalence of dengue fever. As dengue outbreak occurs almost every year now, more programs need to be initiated to increase the level of knowledge regarding dengue fever prevention among the people and also make them aware to practice as well.

Limitation of the study

The limitation of this study was the cross-sectional nature of the data that could obscure the causal effect relationships of different factors and it will lack qualitative data. The sample size was calculated as 384. However, more samples could posturize the findings more accurately.

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Conflict of interest

The authors declared no conflict of interest for this study.

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