



Original Research Article

## Appraisal of Dengue Knowledge and Attitudes among Adults Residing In an Urban Slum

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### ABSTRACT

**Introduction:** Dengue fever is a debilitating mosquito-borne viral disease which has grown into a major public health concern, globally.

**Objectives:** To appraise the knowledge and attitudes regarding dengue among adults residing in an urban slum and to find out the socio-demographic factors influencing knowledge.

**Materials and methods:** A cross sectional study was conducted in an urban slum, carried out from December 2012 to June 2013, on permanent residents of the study area, aged 18 years and above, with consent. Information was obtained through a pre-designed, pre-tested proforma.

**Results:** Majority (72.90%) mentioned mosquito bite as the mode of spread and 56.22% stated that fever is a common symptom. Half (50.64%) were aware that dengue mosquitoes breed in artificial water collection. Majority (63.52%) believed that mosquito breeding elimination is essential, with a high percentage (73.39%) mentioning avoidance of water stagnation as a method to eliminate mosquito breeding sites. However, only 33.48% stated that public has the most important role in dengue control. This study also revealed that 72 (30.91%), of the 233 respondents had sufficient knowledge of dengue, with illiteracy ( $\chi^2= 16.95$ ,  $p=0.002$ ) and low socio-economic status ( $\chi^2= 27.06$ ,  $p<0.001$ ) being the significant socio-demographic factors influencing dengue knowledge.

**Conclusion:** A high prevalence of insufficient knowledge related to dengue fever was found in the study population, with the attitude towards dengue prevention being fair. Thus, there is a need to enrich comprehensive knowledge of dengue in the community, through intense awareness campaigns, which may lead to the attainment of appropriate dengue preventive practices.

**Key words:** Adult, Dengue, Knowledge, Attitude, Education.

### INTRODUCTION

Dengue fever is an outbreak prone disease caused by Dengue Virus, belonging to the family Flaviviridae. [1] There are four distinct dengue virus serotypes (DEN-1, DEN-2, DEN-3, DEN-4), [2] which cause disease to humans through bites of the mosquitoes belonging to genus Aedes, predominantly Aedes aegypti and Aedes

albopictus. [3] Dengue infections may be asymptomatic or may cause classical dengue fever or its severe forms, namely dengue haemorrhagic fever and dengue shock syndrome. [4] Factors like unplanned urbanization, development of slums and deficient water management systems resulting in proliferation of mosquito breeding sites have favoured the spread of

this disease, causing considerable damage. [5] Moreover, majority of the world's population live in areas potentially at risk for dengue transmission, [6] with the incidence having risen more than 30 folds, over the last three decades. Annually, about 50-100 million cases of dengue fever resulting in 24,000 deaths are reported in the world. [7] According to the Ministry of Health and Family Welfare, 40,473 cases and 137 deaths due to dengue virus infection were reported in India alone, in the year 2014. [8] The only key strategy to curb this menace are vector control measures like elimination of breeding sites, usage of insecticide sprays and insecticide treated bed nets. These measures are in turn dependent on knowledge and attitudes and can be promoted in communities. [9] The huge burden of dengue notwithstanding, there is a dearth of information with regards to knowledge and attitudes, which is essential to facilitate effective practice of measures to prevent dengue. This justifies the need to conduct the present study.

### **Objectives**

1. To appraise the knowledge and attitudes regarding dengue among adults residing in an urban slum.
2. To compute knowledge scores and elicit the socio-demographic determinants of dengue knowledge.

## **MATERIALS AND METHODS**

A community based cross sectional study was conducted in a slum named Jannat Nagar, which is a part of the urban field practice area attached to a tertiary care hospital in Dharwad, located in the North Western part of the state of Karnataka, India, encompassing an area of 4263 square kilometer (sq.km) with a population of 18,47,023 (2011 census). [10] The study area has a population of 20,000 with 2,600 houses. The study was carried out for a period of seven months from December

2012 to June 2013. Face-to-face interviews were conducted on individuals aged 18 years and above, residing in the study area for more than a year, who had heard of dengue, with no previous history of dengue fever. Those unaware of dengue and those with a history of dengue in the past were excluded from the study.

The sample size was estimated using the formula  $n = 4pq/L^2$  which takes into consideration, 95% confidence limits. [11] The knowledge of dengue among adults, "p", was considered to be 30%. [12] The permissible error, "L", was set as 20%. On application of this formula, the sample size was calculated to be 233.

A process of simple random sampling was applied to select the respondents. A household survey was carried out. After written consent was obtained, face to face interview was carried out using a pre-designed and pre-tested proforma. The respondents were assured that anonymity would be maintained. Information concerned to mode of spread, clinical symptoms, characteristics of the mosquito vector and measures to control and prevent dengue was collected. Based on the responses to critical aspects of dengue like mode of spread, symptoms and preventive measures, knowledge scores were computed. [13] If the respondents answered all questions correctly, they were termed as having sufficient knowledge. If the respondent gave an incorrect response to one or more questions, they were termed to have insufficient knowledge. In addition, the respondents' attitudes related to dengue prevention and control was appraised. Socio-economic status was assessed as per the Modified BG Prasad Classification 2013. [14] Clearance from the Institutional Ethics Committee was obtained.

### **Statistical analysis**

The study was analyzed using the Statistical Package for Social Sciences

(SPSS) 17.0. Descriptive statistics like percentages and proportions were applied. Chi-square test and Fischer's Exact tests were applied to determine the association between two attributes and a p-value of <0.05 was considered as the criteria for statistical significance.

## RESULTS

A total of 233 individuals participated in the study, comprising of 121 (51.93%) males and 112 (48.07%) females. More than half (66.09%) of the respondents were aged 20-40 years and majority, (78.97%) were literates. Nearly one third (30.47%) belonged to Class IV socio-economic status of the Modified BG Prasad Classification. (Table 1)

**Table 1: Socio-demographic characteristics of the study participants**

Socio-demographic characteristics	Number (n=233)	Percentage (%)
<b>Sex</b>		
Male	121	51.93
Female	112	53
<b>Age</b>		
≤ 19	9	3.86
20-40	154	66.09
41-59	56	24.03
≥ 60	14	6.02
<b>Religion</b>		
Hindu	98	42.06
Muslim	112	48.07
Others	23	9.87
<b>Education status</b>		
Literates	184	78.97
Illiterates	49	21.03
<b>Socio-economic status*</b>		
Class I	29	12.45
Class II	69	29.61
Class III	57	24.46
Class IV	71	30.47
Class V	7	3.01

\*Modified BG Prasad Classification 2013

Table 2 displays that 72.90% stated mosquito bite as a cause for dengue fever. More than half (56.22%) of the respondents identified fever as the commonest presenting symptom. When knowledge regarding vector characteristics was assessed, a high percentage (79.83%) believed that garbage was a common breeding site for the

mosquito followed by artificial water collection which was answered by half of the respondents (50.64%).

**Table 2: Knowledge of dengue fever among study participants**

Variables	Number (n=100)	Percentage (%)
<b>Mode of spread*</b>		
Mosquito bite	171	72.90
Dirty drinking water	75	32.19
Contaminated food	66	28.33
Low personal hygiene	78	33.48
Don't know	32	13.73
<b>Common symptoms*</b>		
Fever	131	56.22
Bleeding	22	9.44
Rash	36	15.45
Headache	21	9.01
Joint pain	69	29.61
Vomiting	16	6.87
Pain abdomen	16	6.87
Don't know	69	29.61
<b>Common breeding sites of mosquito*</b>		
Artificial water collection	118	50.64
Garbage	186	79.83
Stagnant water	182	78.11
Running water	92	39.48
Others	22	9.44
Don't know	45	19.31

\* Multiple responses

**Table 3: Knowledge of preventive measures among study participants**

Preventive measures	Number (n=233)	Percentage (%)
<b>Prevention against mosquito*</b>		
Mosquito spray	105	45.06
Mosquito mat/coil/liquid vapouriser	185	79.39
Mosquito net	151	64.81
Mosquito repellent/cream	65	27.89
Cleaning house/surroundings	112	48.07
Fans	96	41.20
Others	35	15.02
Don't know	22	9.44
<b>Elimination of mosquito breeding sites*</b>		
Avoid water stagnation	171	73.39
Covering containers	165	70.81
Change water in storage tanks	135	57.94
Insecticides	69	29.61
Others	25	10.73
Don't know	58	24.89

\*Multiple responses

It is apparent from Table 3 that 79.39% of the respondents affirmed that mosquito mats/coils/vapourizers are an important preventive measure that may be directed against mosquito. In addition, 73.39% were cognizant that, in order to

eliminate mosquito breeding sites, one must avoid water stagnation.

When the knowledge scores were computed, 72 (30.91%) were found to have sufficient knowledge about dengue fever. Table 4 illustrates the socio-demographic factors influencing the knowledge scores. Illiteracy was found to be a significant factor associated with insufficient knowledge ( $\chi^2=16.95$ ,  $p=0.002$ ). Those belonging to Class I and Class II socio-economic status were found to have better knowledge scores and this association was found to be statistically significant ( $\chi^2=27.06$ ,  $p<0.001$ ).

When knowledge regarding vector characteristics was enquired, only 56 (28%) stated that the dengue mosquito breeds in artificial accumulations of water. 76 (38%) were cognizant that the dengue mosquito bites either at sunset/dusk or sunrise/ dawn as shown in Table 3.

Table 5 shows that only a minority (33.48%) believed that public has the most important role in controlling dengue. However, 63.52% stated that elimination of mosquito breeding is essential.

**Table 4: Socio-demographic factors influencing knowledge scores among participants**

Socio-demographic factors	Sufficient knowledge (n=72) No. (%)	Insufficient knowledge (n=161) No. (%)	$\chi^2$	Df	p value	Significance
<b>Age (years)</b>						
≤ 19 (9)	3 (4.17)	4 (2.48)	NA	NA	0.2637*	Not Significant
20-40 (154)	43 (59.72)	111 (68.94)				
41-59 (56)	23 (26.39)	37 (22.98)				
≥ 60 (14)	7 (9.72)	7 (5.60)				
<b>Education</b>			16.95	4	0.002	Significant
Literates (49)	7 (9.72)	42 (26.09)				
Primary-upto 7 <sup>th</sup> (41)	19 (26.39)	37 (22.98)				
High school- upto 10 <sup>th</sup> (50)	18 (25.0)	32 (19.87)				
Pre-university-upto 12 <sup>th</sup> (41)	16 (22.22)	25 (15.53)				
Graduate and above (20)	12 (16.67)	8 (4.97)				
<b>SES</b>			27.06	2	<0.001	Significant
Class I+II (98)	48 (66.67)	50 (31.05)				
Class III (57)	13 (18.06)	44 (27.33)				
Class IV+V (78)	11 (15.27)	67 (41.62)				

(NA-Not Applicable,  $\chi^2$ - Chi-square value, Df- Degrees of Freedom, \*- Since 3 of the expected frequencies were smaller than 5, Chi-square test was not valid. Thus, Fischer's Exact Test was applied)

**Table 5: Attitudes of the study participants towards prevention of dengue (n=233)**

Variable	Agree (%)	Disagree (%)
Public- most important role in dengue control	78 (33.48%)	155 (66.52%)
Local Government responsible for dengue prevention	188 (80.69%)	45 (19.31%)
Mosquito breeding elimination-essential	148 (63.52%)	85 (36.48%)
Necessary to seek immediate treatment	132 (56.65%)	101 (43.35%)
Local Government is responsible for drug prevention	188 (80.69%)	45 (19.31%)

## DISCUSSION

In the present study, a low proportion, 72 (32.91%) were found to have sufficient knowledge about dengue fever. Determinants like illiteracy and low socio-economic status seem to have had a profound impact on the poor knowledge of the respondents on dengue fever. This was similar to a previous study conducted in

Tamil Nadu, which reported that a mere 34.50% had good knowledge of dengue fever. [15]

As there is no efficacious vaccine available against dengue fever, a sound knowledge of the mode of transmission is indispensable to execute preventive measures. In this study, 72.90% believed that mosquito bites cause dengue fever.

This was in concordance with a study conducted in Chandigarh, which reported that 72.62% of the respondents answered that mosquitoes were responsible for dengue transmission. [12]

In order to seek appropriate health care in a timely fashion, a good knowledge of clinical features of dengue is imperative. [7] In the present study, majority of the respondents correctly stated fever as the commonest presenting feature (56.22%). However, other symptoms like rash, bleeding and joint pain were stated by a very low percentage of the respondents. A study conducted in Delhi also reported a similar finding, where 84% of study subjects stated fever as a common symptom, with rash and bleeding being mentioned by 11% and 2% respectively. [1]

Assessment of knowledge about preventive measures revealed that 79.39% and 64.81% of the respondents mentioned mosquito coils and nets respectively, which reaffirms the findings of another study conducted by Al-Dubai. [16] When knowledge regarding elimination of mosquito breeding sites was assessed, it was found that avoidance of water stagnation was a popular measure, as stated by 73.39% of the respondents. On the contrary, a study by Itrat A revealed that only 20.9% of the respondents mentioned prevention of water stagnation. [13]

The present study showed that that majority (63.52%) of the target population maintained that mosquito breeding elimination is essential to combat dengue. However, only 33.48% believed that the public have the most important role in dengue control. This finding is consistent with a study conducted in Malaysia. [16]

The present study shows that although a good number of respondents correctly answered the questions pertaining to mode of spread, common symptoms, breeding sites and preventive measures, they

were found to be lacking in depth of knowledge collectively, as majority of them were found to have insufficient knowledge, when knowledge scores were computed. The attitudes towards dengue prevention were found to be fair, as more than half of them believed that elimination of mosquito breeding and seeking immediate treatment for dengue are necessary. However, the results of this study must be interpreted with caution, as some of the respondents might have given a socially desirable response, particularly to the questions assessing attitude. Secondly, dengue preventive measures practiced by the respondents could not be assessed. However, this study furnishes baseline information on the knowledge and attitudes regarding dengue fever in an urban community.

## CONCLUSION

Based on the analysis of knowledge scores, a low level of sufficient knowledge was found. In spite of that, the respondents displayed fair attitudes towards dengue prevention. It is an established fact that people residing in vulnerable areas like slums are at a high risk of dengue transmission. Thus, there is a massive need to undertake awareness campaigns to enhance the knowledge of the people and thereby, facilitate community engagement. This may be attained through the development of Behaviour Change Communication programmes and the effective use of radios and televisions to broadcast important messages on dengue control. Moreover, there is a necessity to orient female health workers like Accredited Social Health Activists (ASHAs) and Anganawadi Workers about this topic and mobilize them to disseminate information, as they have a very good rapport with the community. Thus, such efforts are essential to raise the knowledge and mold positive attitudes, for enhancement of dengue

preventive practices and to limit the spread of dengue in the community.

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