

Dengue Awareness and Practices among Families Residing in Urban Slums in a City in Eastern India: A Community-Based Cross-Sectional StudyRay SS^{1*}, Pandit D²¹Associate Professor, Shri Jagannath Medical College and Hospital, Puri²Assistant Professor, Shri Jagannath Medical College and Hospital, Puri

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Abstract:

Background: Dengue fever is more prevalent in urban slums due to the mosquito-genic condition prevalent there. Neither there is any vaccine nor any specific treatment for dengue. So the mainstay of dengue control is adequate knowledge and good practices in its control. The study aimed at finding the level of knowledge and practices on dengue control by household in an urban slum area.

Materials & Methods: This community based cross sectional study was done in the city of Puri in the Eastern coast of India. A total of 10 slums were selected and from each slum 45 houses were picked. A pre-designed questionnaire was used for data collection on knowledge and practices for dengue control & prevention. The data was analyzed using EPI Info 7.2 software.

Results: We found that about one-third (35.5%) of the participants had adequate knowledge regarding dengue. All families were practicing some form of mosquito control measures. But only 29% of the household were found to have good practices for dengue prevention and control. Adequate knowledge and good practices were found to be significantly associated with higher education and high socio-economic status.

Conclusion: The current study found that adequate knowledge and good practices were found in only 35.5% and 29% of the participants. There is a need to target health education and awareness program among the slum dwellers to improve activities for dengue prevention and control.

Keywords: Dengue, Knowledge, Practices, Slum, Odisha.

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Introduction

Dengue is major mosquito borne disease of much public health importance with an estimated 400 million cases annually of which 96 million are symptomatic cases.¹ India accounts for 34% of the global burden of dengue [1]. In the year 2021, more than 2 lakh cases were reported in India with 303 fatalities.

India is seeing a steady increase in the number of reported dengue cases since 2001. Now almost all states and union territories are endemic to dengue. The state of Odisha reported 7548 cases of dengue without any fatalities in 2021[2].

DF and dengue haemorrhagic fever are prevalent in urban areas, as *Aedes aegypti* mosquito the vector of dengue, usually breeds in urban and peri-urban areas. Unplanned urbanization resulting in growth of unhygienic environment, mostly in slums, has added to the dengue problem. Urban slums are particularly vulnerable to the spread of dengue due to the mosquito genic conditions prevalent in slum areas. The disease severity varies from mild to very severe disease causing deaths. There is no specific

treatment for dengue. Since there is no specific treatment available for this disease, the only option is to prevent and control it. There are no effective vaccines against dengue [3]. Only way to prevent and control dengue is vector control measures. Any vector control activity is not possible without the active participation of the community. The successes of dengue control depend on enhancing the knowledge, and improve the practices among the people [4].

It is therefore imperative to find out the existing level of knowledge and the prevailing practices among the general population in the rural area. This information will help to reorient IEC strategies to control and prevent dengue. Better understanding of community awareness will help in actively involving them for better control of the disease.

The present study was aimed at assessing the level of knowledge of the slum community on dengue. It also tried to study the practices among slum households to prevent dengue infection. This study will add to the existing information available on

community awareness and practices regarding dengue fever in a rural area [5, 6].

Materials & Methods

The state of Odisha is located in eastern India (latitude 20.2° North and 84.2 ° East) and has an area of 1,55,707 km². This study was conducted in the municipal corporation area of Puri in Eastern India. Puri is the 6th largest city in Odisha with a total population of 200564 [7].

It was an observational study with cross-sectional design. There are 63 slums within the municipal area of Puri. This study was conducted in the month of July and August in 2022, which coincides with the peak dengue season. Families residing in the slums for more than 6 months were included in the study. Houses those were locked on the day of survey were excluded from the study. Two stage cluster sampling technique was employed. In the first stage, 10 clusters (slums) were selected with probability proportionate to size (PPS), from the total of 63 slums.

In the second stage, one street was selected by simple random method in each cluster (slum). The survey commenced from one end of the street and continued till the total number of houses was surveyed. If the number fell short, the next street was taken up. Assuming 50% prevalence of good awareness, an absolute precision of 7%, and an anticipated design effect of 2 and inflating the effective sample size by 10% for non-response, a sample size of 450 was considered adequate for our study at a 95% confidence interval. So from each slum 45 houses were surveyed during the study.

A structured interviewer-administered questionnaire was used for data collection. The questionnaire was based on a previous similar study done in Tamilnadu [5]. Due permission was taken from the investigators to use their questionnaire. The questionnaire contain three sections: socio-demographic variables, information on knowledge and information on practices followed. The data was collected from the head of the household after informed verbal consent. The questionnaire was translated to oriya(local language) and back translated. The questionnaire was pre-tested among households in a non-study slum and necessary corrections were incorporated to prepare the final questionnaire. Ethical clearance for the study was taken from the institutional ethics committee.

Statistical Analysis

The collected data were entered in Microsoft Excel and analysed using the EPI Info 7.2 (Centers for Diseases Control and Prevention, Atlanta, GA, USA). Adequacy of knowledge and practices towards dengue was summarized as proportion with 95% confidence interval. Bivariate analysis

(Chi-square test/Fisher exact test) was used to find the association of socio-demographic factors with knowledge adequacy and practices towards dengue prevention and control. Practices were expressed in proportions.

Results

A total of 450 households were interviewed and the socio demographic details are depicted in Table 1. Of all the participants, 12(2.6%) had no formal education. Among others, 298(66.2%) had studied up to 10th standard and the rest 140(31.1%) were educated beyond 10th standard. Most of the participants, 426(94.6%) were employed and only 24(5.4%) were unemployed. Most of the households (133, 29.5%) belonged to Class IV (lower middle) as per modified BG Prasad classification. Another 116(25.8%) and 104(23.1) were from Class III and Class II socio economic status as per modified BG Prasad Classification.

The awareness on dengue infection was assessed using five questions related to: transmission of dengue, breeding place of mosquito, how breeding of mosquito can be prevented, personal protection from mosquito bites and the symptoms of dengue. Only when a participant answered all the five questions correctly, he/she is said to have adequate knowledge on dengue. We have found that 406(90.2%) of participants knew the modes of transmission of dengue, 268(59.5%) knew about the common breeding places of dengue transmitting mosquito and 379(84.2) could tell the symptoms of dengue fever. Half of the participants, 224(49.7%) could enumerate the measures to be taken to prevent mosquito breeding. However, less than half, 183(40.6%) could tell the effective ways of preventing mosquito bites. Around one-third 160 (35.5%) of the participants had adequate knowledge regarding dengue infection. [Table 2]

All households reported use of some form of personal measures against dengue. Prevention of water stagnation was being practiced by 84% of the households whereas only 31% emptied water containers weekly. Use of mosquito net was reported by only 61%. Of all the households, 42% reported use of either mosquito coils/creams/vaporizers. Reportedly, spraying insecticides (5%) and putting mesh screen on the window (9%) was seldom practiced. [Table 3] Those households following either 4 or more of the practices listed in the questionnaire were identified to have good practices regarding dengue prevention.

Table 4 depicts the association of adequate knowledge with sociodemographic characteristics. Education above 10th standard (Chi Square-7.145; P=0.028) and higher socio economic class (Chi square – 26.36; P < 0.000) were found to have adequate knowledge regarding dengue. This was

also found to be statistically significant. Although those who are employed showed higher percentage of adequate knowledge than unemployed, it was not found to be statistically significant (Chi Square – 0.456; P=0.501). Table 5 shows the association between sociodemographic factors and good

practices. Good practices for dengue prevention is found to be significantly associated with higher education (Chi Square – 7.591; P=0.022) and higher socio economic class (Chi Square- 17.901; P= 0.001).

Table 1: Socio-demographic characteristics of the study participants

Socio demographic Characteristics	Category	Frequency (%)
Education	No formal education	12 (2.6)
	Up to 10 th	298 (66.2)
	Above 10 th	140 (31.1)
Occupation	Unemployed	24 (5.4)
	Employed	426 (94.6)
Socioeconomic status	Class 1	90 (20.0)
	Class 2	104 (23.1)
	Class 3	116 (25.8)
	Class 4	133 (29.5)
	Class 5	7 (1.6)

Table 2: Knowledge regarding dengue infection and its prevention

	Question on Dengue Infection	Correct Response (%)
1	Dengue is transmitted by?	406 (90.2)
2	Name any two common breeding places for dengue transmitting mosquito?	268(59.5)
3	What are the symptoms of dengue?	379 (84.2)
4	How can mosquito breeding be prevented?	224 (49.7)
5	What are the effective ways of preventing mosquito bites?	183 (40.6)

Table 3: Practice related to dengue prevention

	Practice to prevent Dengue	Correct Response in (%) (Multiple responses)
1	Prevent water stagnation	84
2	Use of mosquito net	61
3	Spraying insecticide	5
4	Screen window	9
5	Empty container weekly	31
6	Use of mosquito repellent creams /coils / vaporizers	42

Table 4: Association of socio-demographic characteristics with knowledge on dengue infection

Socio demographic characteristics	n	Adequate knowledge (n=160, n(%))	Chi Square	P value
Education				
No formal education	12	2 (16.6)	7.145	0.028*
Up to 10 th	298	96 (32.2)		
Above 10 th	140	62 (44.2)		
Occupation				
Unemployed	24	7 (29.1)	0.456	0.501
Employed	426	153 (35.9)		
Socioeconomic status				
Class 1	90	14 (15.5)	26.36	< 0.000*
Class 2	104	36 (34.6)		
Class 3	116	42 (36.2)		
Class 4	133	64 (48.1)		
Class 5	7	4 (57.1)		

Table 5: Association of socio-demographic characteristics with good practices for dengue prevention

Socio demographic characteristics	n	Good practices (n=132, n (%))	Chi Square	P value
Education				
No formal education	12	2 (16.6)	7.591	0.022*
Up to 10 th	298	77 (25.8)		
Above 10 th	140	53 (37.8)		
Occupation				

Unemployed	24	08 (33.3)	0.195	0.658
Employed	426	124 (29.1)		
Socioeconomic status				
Class 1	90	13 (14.4)	17.901	0.001*
Class 2	104	28 (26.9)		
Class 3	116	36 (31.0)		
Class 4	133	51 (38.3)		
Class 5	7	04 (57.1)		

Discussion

This community-based cross-sectional study was done in the slum areas of an urban area in Eastern India to assess the awareness and practices towards dengue infection. Awareness regarding dengue infection and prevention is inadequate. Just over one-third (35.5%) of the participants had adequate knowledge about dengue infection. In our study 90% of the participants were aware of the transmission of dengue. This finding is similar to a study done in an urban slum of Kolkata [8]. But another study in the same setting of Kolkata found that 90% were aware about the transmission of dengue [9]. Our results were discordant with a study done in slums in Chandigarh city, which reveal only 70% of slum respondents were aware about the transmission of dengue [10]. About 60% of participants in our study knew correctly the common breeding places of dengue spreading mosquito. This result was similar to a study done in the slums of Kolkata city which found that 66% could correctly name the common breeding sites of *Aedes* mosquito [9]. But another study done in Chandigarh showed only 30% could correctly tell the common breeding sites of the *Aedes* mosquito [10].

In our study we found that 84% respondents mentioned the common symptoms of dengue correctly which is similar to the study done in Kolkata which reported that 90% participants correctly know the symptoms of dengue [9]. In contrast to our findings, a study done in Chandigarh city, reported that only 9% know about the common symptoms of dengue [10].

Only 49% in our study could tell the effective ways of preventing mosquito breeding and 40% mentioned the correct methods of preventing mosquito bites. Kolkata study reported this as 94% and 80% respectively [9].

Adequate knowledge on dengue was found to be significantly associated with higher education and higher socio economic status. Poddar et al in Kolkata also reported that unsatisfactory knowledge was significantly associated with lower education and socio economic status [9]. This shows that there is a need to focus health education and awareness campaign more towards the lower educated and low socio economic groups. In our study, 84% participants prevent stagnation of water

and 61% use mosquito nets to prevent mosquito bites. In a similar study in Chandigarh, Malhotra G et al mentioned that only 1.2% use mosquito nets during sleeping [10]. Uses of mosquito repellent creams/coils/vaporizers were reported by 42% of the respondents in our study. In the Chandigarh study, 58% of the slum people use these methods [10].

Good practices were found among 29% of the respondents in our study. Good practices were significantly associated with higher education and higher socio economic status. Poddar et al in Kolkata also reported that unsatisfactory practices were significantly associated with lower education and low socio economic status [9].

Conclusion

In summary, adequate knowledge regarding dengue infection was found among 35% of the respondents. Only 29% of the participants practice correct methods of preventing dengue infection.

Both adequate knowledge and good practices were significantly associated with higher education and high socio economic status.

More educational campaigns, especially directed at the lower educationally, socially and economically backward class, are suggested to improve the knowledge and practices in dengue prevention and control. This can be carried out by the health workers and the municipal workers among the slum population.

An important limitation is the cross-sectional nature of the study which does not establish the temporal association between the cause and the effect. Recall bias is also an important drawback of this study.

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