

Original Research Article

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A community based study on dengue awareness and preventive practices among urban slum population in Hyderabad, South India

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ABSTRACT

Background: Dengue is identified as public health problem due to its rapid spread throughout the world. In India raising trend of dengue cases in monsoon is being observed. Objectives were to determine the level of awareness regarding dengue fever and practice of preventive measures and its association with socio-demographic factors; and to find out the association between awareness and practice of preventive measures.

Methods: A community based cross sectional study was conducted among 150 residents of urban slum area, Shaikpet. Mean scores of awareness and practices were found and with a cut off >60% categorized as good. Chi-square test was used to find association with socio-demographic factors. Logistic regression was done for risk estimation.

Results: The awareness regarding dengue fever was only 22.7% with a mean score, 8.1 (SD=3.74). Good practices were shown by 55.3% with a mean score of 10.7 (SD=5). Among those who were aware majority belonged to higher educational level ($p=0.048$). A significant difference was observed between income and occupation with practices. A positive correlation was found between awareness and practices in dengue fever ($r=0.511$, $p<0.001$). Females (OR=2.5) and school level education (OR=3.4) were predictors of poor awareness while professionals and low income were predictors of poor practices ($p<0.05$).

Conclusions: Better aware people were found to practice preventive measures. So, grass root level workers can provide health education among households focusing on behaviour change, regarding preventive measures. Appropriate use of information, education and communication through mass media and social network will be beneficial.

Keywords: Awareness, Dengue fever, Practices, Preventive measures

INTRODUCTION

Dengue is a dreadful arboviral disease affecting humans and more than half of the world's population is residing in areas at risk of the disease. It is caused by flavivirus and spread through bite of infectious female *Aedes aegypti* and *albopictus* mosquito. It is an emerging pandemic with estimated 390 million dengue virus infections of which, 96 million manifest clinically with any degree a severity annualy.¹ The severe form of the infections are causing hospitalization and death among children in Asian and Latin American countries, who

account for 80% of Global burden of the disease.² National Vector borne disease control programme data records 1,36,422 cases and 132 deaths in India in the year 2019. Amongst these 12,072 cases and 6 deaths have been reported from Telangana State.³ With the advent of monsoon the number of dengue fever cases is on rise. In Hyderabad there is increase in incidence of cases every year. The factors that are responsible for the high burden of disease could be unplanned urbanization, improper storage and disposal of water associated with lack of awareness about preventive measures among general public.⁴⁻⁷ Under such circumstances focus on preventive

strategies like source reduction and vector management should receive prime importance.⁸ Though multiple awareness campaigns with information on dynamics of disease spread and vector control is conducted by government through mass media, very few studies are being conducted to analyse the progress in real time implementation of control measures. The present study was undertaken to find out the awareness of dengue fever among the urban slum population.

Objectives

To determine the level of awareness regarding dengue fever and practice of preventive measures among people living in an urban slum of Hyderabad; to find out association between awareness and practice with socio-demographic factors; and to estimate the relationship between awareness regarding dengue fever and practice of preventive measures.

METHODS

A community based cross sectional study was conducted. The duration of study was 3 months. Study population included residents of urban slum area of Shaikpet in the age groups between 18-60 years and residing in the area for more than 6 months and willing to participate were included in the study. All people with severe illness and mentally unfit to comprehend the questions were excluded. Informed written consent was taken prior to administering the questionnaire and ethical clearance has been taken before the study from Human Ethics Committee.



Figure 1: Map of the Shaikpet area, Hyderabad.

Sample size

Awareness regarding dengue fever among people in South India varied widely from 30-80%.⁹⁻¹⁴ It was assumed as 50% and with 20% relative precision the same size was calculated as 100. A design effect of 1.5 was applied and final sample size came out to be 150.

Sampling procedure

The urban slum of Shaikpet has 43 colonies. These colonies were considered as clusters and out of 43

clusters, 20 were selected randomly. The first house from each cluster was chosen randomly and then all consecutive houses were interviewed till 7 houses were completed from each cluster. A total of 150 sample was collected.

Data collection

Using a semi structured questionnaire, information regarding the awareness about dengue fever, preventive measures followed against it, demography, socio-economic status, housing standards and surrounding environment was taken. Questionnaire included queries on awareness about the type of disease agent, mode of transmission, characteristics of vector, clinical picture and complications, specific treatment, vaccination and seroprophylaxis.⁹⁻¹¹ Practice of preventive measures against mosquito bite like bed nets, mosquito repellents, insecticide spray, prevent water stagnation, empty or cover unused containers, discard old wheels, wear protective clothes and long sleeves were also assessed.

Statistical analysis

Data was entered in Microsoft excel and analysed using IBM SPSS Statistics for Windows, Version 24.0. (Armonk, NY: IBM Corp).

Scoring was done for individual questions eliciting awareness regarding dengue and practice of preventive measures. A score of 1 was given to those aware and score 0 for those who were not aware. 17 variables were used to assess the awareness. 19 variables were used to assess the practices. Depending upon the scoring, percentage was calculated. Both the parameters (awareness and practice) were dichotomized as good and poor at a cut off of 60%. Those who had scores 60% and above were considered to have good awareness and rest as poor awareness. Similarly for the practice of preventive measures, score above 60% as good practice and below as poor practice. The association between various socio-demographic factors and awareness regarding dengue fever as well as practice of preventive measures were analysed statistically using chi square test. Pearson correlation test was done to find out association between mean scores of awareness and practice. Logistic regression analysis was performed for the predictors of dengue fever awareness and practices.

RESULTS

The mean age of our study participants was 41 years ($SD=12.35$) and majority (56%) were males. Almost 50% of our study sample belonged to upper middle class. The mean family size was 5 members and 53% belonged to joint family.

The awareness regarding dengue fever among our study sample was only 22.7% and 77.3% were not aware. The mean awareness score among the study participants was

8.1 (SD=3.74). Good practices were shown by 55.3% of the study participants with a mean score of 10.7 (SD=5). Variables identifying for awareness are severe dengue (18%), take lot of fluids (98%), rash (42%), excessive fatigue (96%), and headache (96%). Variables identifying for practices are spraying insecticides at home (98%), using mosquito repellent creams (87%), installing window nets (97%), checking for water collection in coolers (65%), and empty unused containers (77%). Majority of urban slum population in our study sample had access to information from television followed by social media and radio/newspaper as observed in Figure 2.

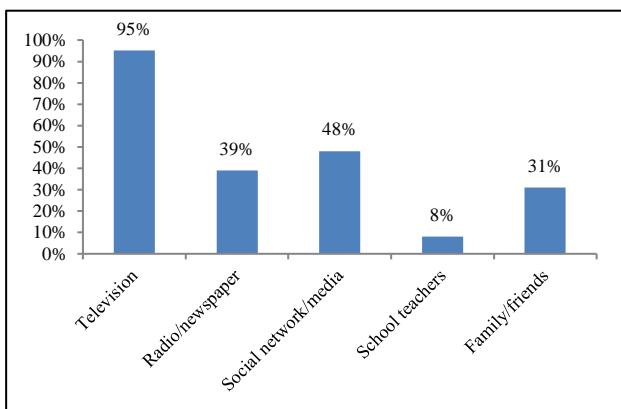


Figure 2: Source of information regarding dengue.

Table 1: Awareness about dengue and socio-demographic factors.

Age (years)	Poor awareness	Good awareness	Chi-square	P value
15-34	40 (80%)	10 (20%)		
35-45	36 (80%)	9 (20%)	1.051	0.591
≥46	40 (72.7%)	15 (27.3%)		
Gender				
Male	61 (71.8%)	24 (28.2%)		
Female	55 (84.6%)	10 (15.4%)	3.470	0.062
Educational status				
Illiterate	24 (72.7%)	9 (27.3%)		
Schooling	43 (89.6%)	5 (10.4%)	6.080	0.048
College	49 (71%)	20 (29%)		
Occupational status				
Unemployed	35 (81.4%)	8 (18.6%)		
Worker	47 (77%)	14 (23%)	0.715	0.700
Profession	34 (73.9%)	12 (26.1%)		
Income group				
Low	50 (83.3%)	10 (16.7%)		
Middle	28 (70%)	12 (30%)	2.51	0.285
High	38 (76%)	12 (24%)		
Socio economic status				
Upper	58 (76.3%)	18 (23.7%)		
Middle	29 (70.7%)	12 (29.3%)	3.158	0.206
Lower	29 (87.9%)	4 (12.1%)		

The awareness among people about dengue was compared with the demographic details of age, gender, education, income and occupation (Table 1). A significant difference was observed between the education and level of awareness. Among those who were aware majority belonged to higher educational level ($p=0.048$). The preventive practices followed by people were also compared to the socio-demographic profile. A significant difference was observed between income and occupation with practices as shown in Table 2. The higher the income level better practices were observed in our study sample ($p=0.003$). Good preventive practices for dengue fever was found to be higher among unemployed category ($p=0.001$).

Table 2: Practices to prevent dengue and socio-demographic factors.

Age (years)	Poor practices	Good practices	Chi-square	P value
15-34	31 (62%)	19 (38%)		
35-45	25 (55.6%)	20 (44.4%)	1.767	0.413
≥46	27 (49.1%)	28 (50.9%)		
Gender				
Male	50 (58.8%)	35 (41.2%)		
Female	33 (50.8%)	32 (49.2%)	0.967	0.325
Educational status				
Illiterate	13 (39.4%)	20 (60.6%)		
Schooling	30 (62.5%)	18 (37.5%)	4.584	0.101
College	40 (58%)	29 (42%)		
Occupational status				
Unemployed	17 (39.5%)	26 (60.5%)		
Worker	45 (73.8%)	16 (26.2%)	14.476	0.001
Profession	21 (45.7%)	25 (54.3%)		
Income group				
Low	40 (66.7%)	20 (33.3%)		
Middle	25 (62.5%)	15 (37.5%)	11.511	0.003
High	18 (36%)	32 (64%)		
Socio economic status				
Upper	40 (52.6%)	36 (47.4%)		
Middle	23 (56.1%)	18 (43.9%)	2.404	0.121
Lower	20 (60.6%)	13 (39.4%)		

There was a positive linear correlation between awareness and practices in dengue fever and it is statistically significant ($r=0.511$, $p<0.001$). This suggests that better the level of awareness the preventive practices are found to be higher.

Logistic regression was done to find predictors of poor awareness regarding dengue fever and practice of preventive measures. Age, gender, income, education, occupation and family size was entered into the model using stepwise method. Table 3 depicts that gender and education were significant predictors of poor awareness while occupation and income came as significant predictors of poor preventive practices ($p<0.05$). Female gender was found to be having 2.5 (1.03-6.01) times higher risk than males ($p=0.043$) and those with

education till matriculation school was 3.4 (1.9-10.2) times at more risk compared to college education for poor awareness ($p=0.023$). Professionals were found to have 2.3 (1.0-7.55) times higher risk for having poor practice

compared to unemployed ($p=0.05$). Compared to high income group, low and middle income groups had 4.62 (1.83-11.65 and 3.24 (1.30-8.13) times higher risk for poor practice with p value 0.001 and 0.012 respectively.

Table 3: Step-wise logistic regression model for predictors of poor awareness and practice of dengue.

Dependent variable	Variable	Category	Odds' ratio (OR) 95% CI	P value
Awareness	Gender	Male (ref)	1	
		Female	2.5(1.03-6.01)	0.043
<td data-kind="parent" data-rs="2">Education</td> <td>College (ref)</td> <td>1</td> <td></td>	Education	College (ref)	1	
	Illiterate	0.8(0.30-2.18)	0.681	
Practice	School	3.4(1.9-10.2)	0.023	
	Occupation	Unemployed (ref)	1	
		Worker	0.41(0.16-1.81)	0.08
		Professional	2.3(1.0-7.55)	0.05
Income	High (ref)	1		
	Low	4.62(1.83-11.65)	0.001	
	Middle	3.24(1.30-8.13)	0.012	

DISCUSSION

The level of awareness regarding dengue fever among our study participants was found to be low. Lot of parameters including symptoms, complication, management and public health importance of dengue was considered for assessing awareness. Good awareness regarding dengue fever was present among 22.7% of study sample. Similar findings were found in Puducherry where in-depth knowledge regarding dengue epidemiology was lacking in the community. Author noted that even though 86% participants had heard of dengue, there was no adequate knowledge on vector breeding habits and symptomatology (59%).¹⁵ In our study as well, 95% participants knew dengue to be an infectious disease and spread by mosquito but the awareness regarding time of mosquito bite and breeding habits were lacking. Contrary to Jeelani et al findings, in our study almost 95% were aware about the common symptoms like fever and head ache. A cross sectional study conducted in a tertiary care hospitals in Karachi, also reported low level of awareness (38.5%) among their visiting patients.¹⁴ Another study conducted by Dhimal et al from Nepal also reported low level of knowledge regarding dengue fever with only 12% of the study sample being aware of various aspect of disease.¹³

A community cross sectional study conducted in urban slums of Chitoor, Andra Pradesh noted that 68% of the respondents in this study had known about Dengue fever.¹⁶ Similarly studies from Guntur and Delhi has also reported high level of awareness.^{17,18} These differences might be due to the difference in the parameters included for assessing awareness or sociodemographic as well as cultural differences between the population. The most common source of information regarding dengue among our population was television (95%).

Similarly, published literature from Puducherry and Guntur also found television to be the major source of information.^{15,17}

Compared to the awareness, the preventive practices observed were better with good practices being present among 55.3%. Parameters included in assessing practice of preventive measures included inspecting breeding places and source reduction, use of mosquito repellents, protective clothing and health seeking behaviour. A cross-sectional study in a dengue hot spot area of Malaysia showed prevalence of preventive practices to be 50.2% which is similar to our study.¹¹ With the experience of other vector borne disease outbreaks in different parts of the country, various vector control measures are adopted by households. This could be the reason why though awareness is lower, practices are comparatively better. We also found that 77% of people discard old wheels and cans, 41% use insecticide sprays, 21% inspect and remove stagnant water from air conditioners, 87% use mosquito repellent vapour, 20% wear protective clothes and long sleeves and 19% regularly practice all these measures. The practice of combination of all these preventive measures is low and the community has to be motivated to do so for their own benefit. The preventive practices reported in other studies were also comparable. Nagoor et al reported that 36% study participants check for the breeding sites regularly. It was also noted that 79% were using mosquito repellents in various forms.¹⁶ A community based study in Guntur found very low preventive practices like checking coolers, tyres and flower pots to be quite poor in their study population.¹⁷ Jeelani et al noted that 40% of their study sample store water in small plastic/steel containers which are potential breeding places for aedes mosquito.¹⁵

The present study found out that education and gender were determinants of poor awareness. Similar to our study a cross sectional survey conducted in Puducherry in 2013, found a significant association between degree of awareness and level of education among respondents.¹⁵ Females were found to be at higher risk for low awareness in present study. The cultural and social factors in the slum area makes women overburdened with household chores. In our study sample 63% of females had education only till school level. These might be reasons for their low level of awareness. We also noted that professionals by occupation, low/middle income group were at higher risk for poor practices. The less busy lifestyle with enough time to spend in household cleaning activities can be a reason for unemployed having better practices compared to professionals. Our study also revealed a positive correlation between level of awareness and preventive practice. In a Nepal study, author reported a translation of knowledge and attitude into practice being clearly observed.¹³ But similar studies conducted in Malaysia, Philippines and Jamaica discrepancy between awareness and practice was observed.^{9,11,12} People in our study sample who were aware about breeding sites of mosquito had in practice, tried to avoid water stagnation and check for artificial collection of water, which might be a reason for this positive association.

The limitations of our study was that it was a cross sectional study giving picture at a particular point of time. Studies which provide education about the dengue with follow up on awareness at regular time intervals before the onset of rains can be beneficial to the community.

CONCLUSION

Specific dengue fever awareness was observed to be poor in the urban slum, in comparison practices followed for prevention of dengue fever was much better. Better aware people were found to practice preventive measures. So the healthcare personnel who inspect houses to check inappropriate water collections during monsoon have a key role in teaching about the vector control measures, identifying features in dengue fever at household level. Motivating the family members especially the housewives in practice of simple preventive measures of vector control like discarding old bottles, coconut shell, emptying artificial water collections regularly etc. is required. Simple observation of dry day once a week as comfortable to the households can be helpful.

Though the measures appear simple, human habits and behavior in accepting the change is a challenge. Appropriate use of information education and communication by involving mass media and social network can be beneficial. Inclusion of environmental sanitation to the primary school curriculum can go a long way in creating awareness and decreasing the dengue burden in the community.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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