



A cross sectional study of perception and preventive practices, regarding Dengue disease among population of Bangalore district, South India

Shobha, Saraswathi S*, Amita Mukhopadhyay, Amit Kumar Rao, Ranganath T S

Department of Community Medicine, Bangalore Medical College and Research Institute, Bangalore, Karnataka, India-560 002.

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*Corresponding author:

Email : ssdrsaras@gmail.com

Tel.: +91-9880046228

ABSTRACT

A cross sectional community based study was conducted in rural and urban areas of Bangalore district in India with an objective to study the knowledge, attitude and preventive practices with respect to dengue fever. A total of 1051 adults were interviewed and they were aware of dengue. The health workers were main source of information in rural areas. 85% of rural and 59% of urban population was aware that the mosquito transmits dengue. Majority of our study population knew that high fever, myalgia and head ache are common presenting symptoms, but only 12% of rural and 2% of urban participants were aware of bleeding symptoms of dengue. In our study 44% of rural and only 9.6% of urban participants were aware that the dengue mosquito bites at day time. 40% of our rural and only 5% of urban population said that the mosquito breeds in clean water container. The common self-protective measures used are mosquito coils (75% rural and 68% of urban) followed by mosquito nets (62%) in rural and fans (63%) in urban area. The lack of awareness regarding breeding and biting habit of the vector mosquito has resulted in non-use of protective measures during day time. This requires creating awareness about Aedes mosquito.

INTRODUCTION

Vector borne diseases are one of the major public health problems in India today. There is significant disease burden in the form of morbidity and mortality from Malaria, Kala azar, Lymphatic Filariasis, Japanese encephalitis, Chikungunya and Dengue [1].

Dengue is the most common arthropod borne viral infection and in India it is occurring in epidemic form almost on an annual basis [1]. It is also rapidly spreading to newer areas with outbreaks occurring more frequently and explosively [2]. This is largely attributed to rapid urbanization with improper water management [1]. Aedes mosquito is the vector for Dengue. It is a day biting mosquito and peri-domestic in habitat. In India, during the year 2012, there have been 37070 cases with 227 deaths and Karnataka contributing 3640 cases with 21 deaths. Karnataka is also among the 3 states in India to have Dengue outbreaks in the same year [3]. In the absence of a vaccine or specific antiviral drugs to treat Dengue Fever and inefficiency of chemical intervention of vector control; Source reduction becomes the only effective and feasible way to control the spread of dengue. This can be achieved by increasing the awareness in the community. Hence this study was conducted with an objective to assess the knowledge, attitude and

practice and based on which the health education tool can be developed.

MATERIALS AND METHODS

A community based cross sectional study was conducted in both urban and rural field practice area of Bangalore medical college and research Institute. The study was conducted after taking Institutional Ethical committee clearance. The Urban field practice area has 4 sectors, having 38000 populations. A total of 544 house-holds with equal representation from all the 4 sectors were enrolled for this study. The houses were selected by simple random sampling. The rural field practice area is Sondekoppa Primary Health Centre which has a population of 16500, and 3 sub centres. A total of 507 house- holds were enrolled for the study. The study was conducted from February 2013 to June 2013. The house to house survey was conducted and participants were enrolled in the study based on availability and willingness of the participant. The purpose of the study was explained to the participants and verbal consent was taken.

A pre tested, semi structured questionnaire was administered by personal interview method to the one available and willing adult member of the house hold. To conduct the interview, Health

inspector students and Anganwadi workers were used and were trained by the investigators for the same. The data collection was supervised by investigators.

The questionnaire covered the following areas; (1) demographic information (area, gender, age, occupation, and education), (2) attitude towards DF using Likert's 5 point scale (3) knowledge about DF (symptoms, management, prevention,) (4) preventive practices (self-protection and source reduction and health seeking behaviour).

Data analysis: The collected information was entered in Excel sheet, and analysed using Epi-info 7. The descriptive results were given in percentages and proportions.

RESULTS

The study was conducted in urban and rural field practice area of Bangalore medical college and Research institute, Bangalore. The respondents were adults aged more than 20 years and participated in the study voluntarily. The total sample size was 1051 of which 544 participants were from urban area and 507 from rural area.

The socio demographic profile of study population (Table 1):

Rural population: The mean age of participants was 41.7 years (Median 40, SD 14.5 years). 95% of study population belonged to Hindu religion. Majority of the study population (93%) were married. Out of 507 participants, 31% were unemployed.

Table 1. Socio demographic profile of study population

Characteristics	Rural (n=507)		Urban (n=544s)	
Sex	Number	percentage	Number	percentage
Male	263	51.87	162	29.78
Female	244	48.13	382	70.22
Age				
20-40	272	53.65	369	67.83
41-60	185	36.49	142	26.10
>60	50	09.86	33	06.07
Education				
Illiterate	173	34.13	171	31.43
Primary	89	17.55	145	26.65
High school	190	37.48	174	31.99
College	37	7.30	40	7.35
Degree	18	3.55	14	2.57
Socio-Economic status (Modified Prasad's classification)				
Class I	6	0.99	20	3.68
Class II	63	12.45	55	10.11
Class III	108	21.34	118	21.69
Class IV	156	30.83	200	36.76
Class V	174	34.39	151	27.76

Table 2. The participant's source of information regarding dengue disease

Source of information*	Rural (n=507)		Urban (n=544)	
Television	279	55.03	263	48.35
News paper	153	30.18	133	24.45
Health care personnel	282	55.62	85	15.63
Family/friends	121	23.87	114	20.96

* Multiple responses

Table 3. Knowledge of study population about dengue disease*

Causative Agent	Rural (n=507)		Urban (n=544)	
	Numbers	Percentage	Numbers	Percentage
Virus	215	42.41	80	14.71
Symptoms				
High Fever	369	72.92	178	32.72
Myalgia	258	50.89	181	33.27
Headache	196	38.66	109	20.04
Blood in stools	34	6.71	8	1.47
Rash	28	5.52	2	0.37
Don't know	44	8.68	220	40.43
Complications				
DHF [#]	45	8.93	29	5.33
Shock	28	5.52	6	1.10
Death	235	46.35	141	25.92
Dehydration	49	9.66	25	4.60
Don't know	186	36.69	358	65.81

Note: *Multiple responses, #Dengue Hemorrhagic Fever

Urban population: The mean age of urban participants was 36.8 years (Median 35, SD 13.6 years). 83% of study population belonged to Hindu religion. Majority of the study population (86%) were married. Out of 544 participants, 41% were unemployed.

Mosquitoes and their problem:

All participants did get bitten by mosquitoes in some point of time throughout the day in their residing area, though 84.93% of urban and 69.82% of rural participants said that night is the commonest time when mosquitoes bite more. All participants do believe that mosquitoes cause health problems like fever, malaria, dengue etc.,

Source of Information: (Table 2)

All the study population has heard of dengue fever and the main source of information being mass media like TV, newspaper etc. In rural area, 56% of study participants said that their source of information was health workers compared to 15.63% of urban population who got the information from health workers.

Knowledge about Dengue: Disease, vector, transmission and prevention:

Table 3 & 4 shows that the rural study populations were more aware about dengue disease. Even though all participants knew about some symptoms of dengue, very few were aware of bleeding symptoms of dengue, an important finding which

decides hospitalization and further assessment of the disease.

Regarding the dengue vector and its transmission majority of rural (85%) and urban (59%) knew that mosquito bite causes dengue, but the day biting habit of dengue mosquito was known to 44% of rural and only 9.5% of urban population. Regarding the breeding of dengue mosquito, more than 40% of study population thought that the vector breeds in dirty water.

Attitude of urban participants towards dengue disease and mosquito control

The attitude was measured using Likert's scale; the responses like strongly agree and agree are combined as Agree for calculation purpose and similarly strongly disagree and disagree were combined. Overall the population's attitude is good towards the dengue disease and mosquito control (Table 5).

Practices regarding dengue prevention and mosquito control

In the present study, 94-97% of population said that hospitalization is required for a person suffering from dengue fever. Among urban individuals 199(36.58%) as compared to 139 (27.42%) of rural participants had history of fever in the last one month, of which 93% have visited health care facility and of these 46% urban and 65% of rural population, had their blood test done.

All the participants in this study are taking some type of self-protective measures against mosquito bites (Table 6).

Table 4. Knowledge of study population regarding dengue vector and its control*

Dengue disease	Rural (n=507)		Urban (n=544)	
Transmits by	Numbers	Percentage	Numbers	Percentage
Mosquito bite	349	84.91	307	59.27
Dirty water	29	7.06	44	8.49
Don't know	27	6.57	159	30.69
Dengue mosquito bites during				
Day time	220	43.56	52	9.56
Night time	279	55.25	320	58.82
Don't know	86	17.00	205	37.68
Dengue mosquito breeds in				
Clean water	182	39.74	28	5.23
Dirty water	212	46.29	277	51.78
Don't know	63	13.76	230	42.99
Prevention from mosquito bite				
Mosquito nets	299	58.97	58	10.66
Mosquito coils	371	73.18	372	68.38
Fans	228	54.83	329	60.48
Long clothes	142	28.01	21	3.86
Repellants	25	4.93	26	4.78

* Multiple responses

All the study participants do store water for drinking as well as domestic use, as there is scarcity of water both in urban and rural area. Among the rural population, 45% do empty the stored water and dry the containers before refilling.

DISCUSSION

This study was conducted with the objective of analyzing the awareness, attitude and practices with respect to dengue fever and mosquito control. Our study population perceives mosquito menace and is aware of health problems due to mosquito bite. Even though all the study population has heard of dengue fever, the health care provider as source of information is more in rural area 56% as compared to urban area (15%). Other sources of information are TV, Newspaper and family/friends. A similar study by GeethuMalhotra in North India also revealed that the role of health personnel in creating awareness in respect to DF was satisfactory as 44.87% of those who were aware, got the relevant information from health staff [4]. As there are many opportunities available, the community health care providers can be utilized for spreading the awareness especially in urban cities. In our study, 42% of rural and 15% of urban population was aware that the causative agent of dengue is virus, though 85% of rural

and 59% of urban population was aware that mosquito transmits dengue. The awareness with this respect is better in our study population as compared to the Chennai city participants in a study by Ashok kumar et al., which showed that 34.5% of house-holds surveyed were aware of dengue and only 3.3% of house-holds knew that virus is the causative agent for DF. Only 18.3% of respondents were aware that dengue was transmitted by mosquito bite [5].

Regarding symptoms of dengue, majority of our study population knew that high fever, myalgia and head ache are common presenting symptoms, but only 12% of rural and 2% of urban participants were aware of bleeding symptoms of dengue, an important finding which decides hospitalization and further assessment of the disease. These results were comparable to the findings of PrachethRaghuvver who assessed the knowledge with regards to mode of dengue spread, 168 (84%) told that dengue spreads through mosquito bite and 127 (63.5%) told fever will be the most common presenting symptom, followed by joint pain 62 (36%). However in their study it was found that knowledge regarding other common specific symptoms of dengue like bleeding and rash was very low, 9% and 15% respectively [6]. In our study 44% of rural and only 9.6% of participant were aware

Table 5. Attitude of study population, towards dengue disease, its prevention and health seeking behavior.

Statement	Agree		Disagree		No response	
	Rural	Urban	Rural	Urban	Rural	Urban
Treat a patient suspected of dengue fever with home remedies	87 (17.2)	130 (23.90)	394 (77.8)	363 (66.73)	26 (5.0)	51 (9.38)
Treat a patient suspected of dengue fever in hospital	477 (94.08)	527 (96.88)	04 (0.8)	02 (0.37)	26 (5.0)	15 (2.76)
In case of dengue occurrence in the neighborhood we should inform the concerned health authority	473 (93.29)	481 (88.42)	04 (0.8)	24 (4.41)	30 (5.91)	39 (7.17)
It is not our responsibility to control mosquito breeding	04 (0.79)	12 (02.21)	470 (92.7)	513 (94.29)	33 (6.51)	19 (3.50)
Check frequently for mosquito breeding sites in and around our house	475 (93.69)	471 (86.74)	01 (0.2)	20 (03.68)	31 (6.11)	53 (9.58)
We should always protect ourselves from mosquito bites	484 (95.46)	528 (97.06)	01 (0.2)	04 (0.74)	22 (4.34)	12 (2.21)
We should actively participate in mosquito control programs	457 (90.14)	420 (77.21)	01 (0.02)	34 (06.25)	49 (9.66)	90 (16.54)
We need to have more information on dengue fever	464 (91.52)	486 (89.34)	0 (0)	16 (02.94)	43 (8.42)	42 (7.72)

Note: percentages are in parenthesis.

Table 6. Participants practices to prevent dengue fever*.

	Rural (n=507)		Urban (n=544)	
	Numbers	Percentage	Numbers	Percentage
Self-protection from mosquito bites				
Mosquito nets	316	62.33	54	9.93
Mosquito coils	382	75.49	371	68.20
Fans	237	46.75	341	62.68
Protective clothing	130	25.64	13	2.39
Repellants	23	4.54	22	4.04
Preventing mosquito breeding in stored water				
Covering it air-tight	287	56.61	361	66.36
Emptying weekly, drying and refilling	228	44.97	151	27.76
Nothing	8	1.58	61	11.21
Preventing mosquito breeding around houses				
Remove stagnant water	277	54.64	401	73.71
Burning water collecting garbage	206	40.63	155	28.49
Filling small water collectors with soil	125	24.65	21	3.86

* multiple responses.

that the dengue mosquito bites at day time, but majority of them think that the mosquitoes bite at night and this could be due to less attention paid to mosquito bite during daytime. This finding is comparable to the findings of Geethumalhotra where 56.62% of their respondents indicated that the dengue mosquito bites in night time [4].

Regarding knowledge of breeding habit of dengue mosquito, 40% of our rural and only 5% of urban population said that the mosquito breeds in clean water container and majority of the remaining participants opined that dirty water is the breeding place. Similarly in Chennai study, only 8.3% of the house-holds informed that clean water-holding containers contributed to vector breeding [5]. Even in Geethumalhotra's study, among rural respondents 65.5% people and 45% slum dwellers says that collected dirty water is the common breeding site for mosquito. Stagnant water/cooler/tyre is according to 29.75% slum dwellers and 20.75% rural people. The dengue mosquito breeds in clean standing water (2.6%) was unaware by all the respondents [4].

Majority (more than 60%) of our study population knew that mosquito coils, fans and mosquito nets can be used as personal protective measure, similar to 50% of the Raghuvier's study participants who told that the disease can be prevented by using mosquito mat/coil/liquid vaporizer [6].

Regarding the common self-protective measures taken by the participants, majority of them are using mosquito coils (75% rural and 68% of urban) followed by mosquito nets (62%) in rural and fans (63%) in urban area. But these measures are taken mainly during the night time, as majority of them are not aware of day biting habit of Aedes mosquito. This has resulted in non-use of protective measures during day time. This again requires creating awareness about Aedes mosquito.

The findings of similar study in south Delhi by Anita Acharya, the common preventive practices prevalent in that community were mosquito repellents (59%), mosquito net was used by very few (5.5%). About 8% people did not practice any preventive measure. Among those using mosquito repellents and spraying majority (77%) did during night time [7].

In a study by Poonam Ramesh Naik et al., the participants were using mosquito repellents (46.57%) as protective measures. Very few of them practiced weekly emptying of containers (9.58%) and use of mosquito nets (11.64%) [8].

CONCLUSION

The overall knowledge of rural population were better than the urban population, this could be attributed to the awareness campaign by health workers in rural area. But the knowledge about symptoms and complications of dengue fever was low which may delay health care seeking by the population. Attitude of the study population towards dengue fever as well as mosquito control was favorable. Practices adopted by the study population like seeking hospital services for dengue fever and universal use of personal protection against mosquito bite during night time was encouraging but day time use of protection was not practiced. It was also observed that mosquito nets are used more among rural population and this practice can be utilized to distribute Insecticide Treated Bed Nets. There is a knowledge gap regarding day biting habit and characteristic small container breeding of Aedes mosquito which should be filled by active awareness campaign.

REFERENCES

1. National vector borne disease control programme Training manual for medical college faculty. New Delhi: National institute of health and family welfare; 2010.p.1-5.
2. Park K. Park's Textbook of Preventive and Social Medicine. 21st ed, Jabalpur: Banarasidas Bhanot; 2011.p.224,260.
3. National vector borne disease control programme [internet]. 2012 Nov 26 [cited 2012 Dec 9]; Available from URL: www.nvbdc.gov.in/den-cd.html.
4. GeetuMalhotra, AmanYadav, Puja Dudeja., Knowledge, Awareness and practices regarding Dengue among rural and slum communities in north Indian city, india., International journal of Medical Science and public Health, 2014/Vol 3/Issue: 282-286.
5. Ashok Kumar, V., Rajendran, R., Manavalan, R., Tewari, S.C. et al., Studies on community knowledge and behavior following a dengue epidemic in Chennai city, Tamil Nadu, India., *Tropical Biomedicine* 27(2): 330336 (2010)
6. Pracheth Raghuvier, Mayur S Sherkhane, Jayprakash V Chowti., Comparative Study of Dengue Knowledge among Adults of Urban and Rural Population in India International Journal of Health and Rehabilitation Sciences Volume 2 Issue 4: 222-229.
7. Anita Acharya, K. Goswami, S. Srinath & A. Goswami., Awareness about dengue syndrome and related preventive practices amongst residents of an urban resettlement colony of south Delhi., *J Vect Borne Dis* 42, September 2005, pp 122127
8. Poonam Ramesh Naik, Abhay Subhashrao Nirgude, Kranthi Prakash G, Knowledge and preventive practices regarding dengue among adult population of rural area of Nalgonda district, South India. *Int J Biol Med Res.* 2011; 2(3): 652-655.