Short Note

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Awareness about dengue syndrome and related preventive practices amongst residents of an urban resettlement colony of south Delhi

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Dengue is the most common disease among all the arthropod-borne viral diseases. Due to occurrence of remarkable changes in the epidemiology of dengue, currently dengue ranks as the most important mosquito-borne viral disease in the world. In the past 50 years, its incidence has increased 30-fold with significant outbreaks occurring in five of the six World Health Organization (WHO) regions. At present, dengue is endemic in 112 countries in the world[1,2].

Around 2.5 to 3 billion people, living mainly in urban areas of tropical and subtropical regions are estimated to be at risk of acquiring dengue viral infections[2]. Estimates suggest that annually 100 million cases of dengue fever and half a million cases of dengue haemorrhagic fever (DHF) occur in the world with a case fatality of 0.5–3.5% in Asian countries[3]. Of those with DHF, 90% are children < 15 years of age[2]. In 1998 pandemic, 1.2 million cases of DHF occurred in 56 countries with 3 to 4% fatality. Major epidemics have been reported from Delhi, capital of India in the years 1967, 1970, 1982, 1996 and 2003[4–8]. In the year 1996, a total of 8,900 cases were reported and the case fatality rate was 4.2% and in 2003, a total of 2882 cases and 35 deaths of dengue were reported from Delhi[8]. Considering the magnitude of the problem the present study was undertaken to assess the knowledge of the community regarding dengue and the preventive practices undertaken by them.

A cross-sectional community-based study was undertaken in Dr. Ambedkar Nagar, a resettlement colony of south Delhi, Block No. 3 from June–July 2004. All the households with presence of an individual aged between 15 and 60 years at the time of the visit and residing in the area for at least six months were included in the study. If the house was found to be locked on two consecutive visits and if the subjects refused to participate in the study, they were excluded.

Pre-tested semi-structured interview schedule was prepared in English and was translated to Hindi, the most widely spoken language of the community. The interview schedule consisted of 17 questions divided in four sections: (i) demographic profile; (ii) knowledge regarding dengue; (iii) practices related to dengue/mosquito control; and (iv) sources of information regarding dengue.

The interview schedule was pre-tested in another block not included in the study. It was standardised

for data collection. The revised interview schedule was administered to the study participants. Modified Kuppuswamy scale was used to ascertain the socio-economic status of the family.

A batch of 12 students was allotted Block No. 3 that has 778 households. House-to-house visits were conducted to collect the data. Free and informed consent was taken from each study participant. They were supervised and cross-checked during the study by the residents and the faculty for quality control. About ten proformae for each student were checked.The data was entered in Microsoft Excel 8.0 and imported for analysis in SPSS version 11.0.

A total of 722 (92.8%) houses could be visited within the available resources (time and manpower) out of which 641 (88.78%) were included in the study. Rest were found either locked on two visits (5.4%) or adult member was not present (3.3%) or did not give consent (2.5%). Majority of the respondents (62%) were in the age group of 15–34 years. Mostly females (64%) were present at the time of the study. According to their literacy status, about one quarter (25.6%) were illiterate and only 5.9% were graduates and above. More than three-fourth of the respondents belonged to upper-lower class and very few (1.7%) to upper-middle class (Table 1).

Table 1. Distribution of respondents according to their socio-demographic characteristics

Distribution of respondent	Frequency	Percent
Age distribution (yr)		
15–24	198	31
25–34	198	31
35–44	155	20.2
45–54	84	13.3
>54	30	4.5
Gender distribution		
Males	230	35.9
Females	411	64.1
Literacy status		
Illiterate	164	25.6
Primary	243	38.0
High School	131	20.4
Intermediate	65	10.1
Graduate	23	3.6
Post-graduate	15	2.3
Socio-economic status		
Lower	65	10.3
Upper lower	485	77.1
Lower middle	68	10.9
Upper middle	11	1.7

(N= 641).

Majority of the respondents (90%) had heard about dengue. The most common cause of dengue was cited as 'mosquito bite' (68%). Other causes mentioned included dirty drinking water (48%) and environment (20%). Only 68% respondents said that dengue can spread and out of them only 55% knew that it spreads through mosquito bite. Another 27% said that 'dirty drinking water' was the mode of spread. Though 577 (68%) mentioned mosquito bite as cause, only 218 (38%) said that mosquito could spread it from one to another in the community. Over 90% were aware of "fever alone" or accompanied by chills (19%), headache was mentioned by 38% as symptom of dengue. A little less than a quarter (23.4%) did not know the symptoms of dengue. A highly significant statistical association was found between literacy status and knowledge about 'fever' as a symptom of dengue (Table 2) ($p<0.001$).

Regarding knowledge about preventive measures, majority (70.3%) knew about mosquito repellents like matt/liquid vapourisers/coils. More than half (55.7%) mentioned, "cleaning of the house" as an important preventive practice. However, lesser proportion of houses were observed to be clean (41.5%). Other preventive measures cited were prevention of water stagnation (46.5%), insecticidal spray (42.8%), use of

Table 2. Distribution of respondents according to their knowledge about dengue

Distribution of respondents	Frequency	Percent
*Causes of dengue**		
Mosquito bite	394	68.28
Dirty drinking water	278	48.18
Environment	118	20.45
Contaminated food	44	7.62
Organism	16	2.8
Others	44	7.62
Spread of dengue		
Spreads	393	68.11
Doesn't spread	139	24.1
Don't know	45	7.8
*Mode of spread***		
Mosquito bite	218	55.5
Dirty drinking water	106	26.97
Contaminated food	63	16.03
Polluted air	98	24.94
Others	3	0.76
Symptoms of dengue		
Fever only	415	71.92
Fever with chills	108	18.72
Headache	83	14.38
Malaise	62	10.74
Others	90	15.60
Don't know	135	23.40
Knowledge about preventive measures†		
Matt/liquid vapouriser/coil	449	70.3
Cleaning of house	354	55.7
Prevent water stagnation	295	46.5
Spray	272	42.8
Use of oil in cooler	203	31.9
Mosquito net	170	26.6
Cream	37	5.8
Others	11	1.7
Don't know	30	4.7

* Multiple responses (N = 577); **Only those who had said that 'dengue' spreads (N = 393); †Total study subjects (N = 641).

oil in cooler (31.9%) and mosquito net (26.6%) (Table 3). Common preventive practices prevalent in the community were mosquito repellents (59%), prevention of water stagnation around the house (29%), insecticide spraying (11%) and putting oil in their coolers (19%). 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. A little more than half of the respondents (54%) practiced preventive measures daily and the rest used sometimes.

Amongst those who possessed coolers (459), cleaning and use of oil was asked. Adequate cleaning was defined as cleaning of the coolers within a week. It was observed that only 87% of them adequately cleaned their coolers and 46% used oil adequately (Table 3). Majority (86.2%) said that in the past one year no MCD spraying was done inside their houses.

Important sources of information about dengue were from television (59%), health personnel (38%), friends and neighbours (30.5%) and schools (8.32%). Role of media (Table 4) was found to be limited with magazines (22%), newspapers (16.47%) and radio (5%) being the common ones.

Fifty-seven respondents had a known person suffering from dengue in the past, in family members (12.28%), neighbours (38.59%), relatives (12.28%) and others (12.28%) majority (94.7%) of them had been treated and recovered healthy except for one death and two were still under treatment. Only 23% houses were observed to have net/screen in the doors and windows. Stagnant water was observed to be present in the vicinity of 44% of the houses.

'Dengue' was heard by 90% of respondents. In another study from urban area of east Delhi 82.3% were reported to be aware of dengue, which is similar to our study[9]. In a study done in Brazil[10], 78% subjects knew about dengue, whereas in Thailand, knowledge about dengue was 67%[11]. The possible reasons for

Table 3. Distribution of respondents according to the use of preventive practices for mosquito control

Distribution of respondents	Frequency	Percent
*Method used**		
Matt/liquid vapouriser /coil	377	58.8
Cleaning of the house	266	41.5
Prevent water stagnation	166	25.9
Spray	71	11.4
Use of oil in cooler	125	19.5
Mosquito net	35	5.5
Cream	7	1.1
Nothing	53	8.3
Others	21	3.3
*Time of usage (liquid vapouriser/cream/spray)***		
During day-time only	41	9
During night time only	352	77.36
Both times	22	4.84
Anytime	40	8.79
Regularity of use		
Sometime	211	46.43
Daily	244	53.57
Cleaning of the cooler†*		
< One week	290	63.18
One week	111	24.18
>One week	44	9.59
Occasionally	5	1.09
Never	9	1.96
Use of oil in cooler (N=459)†		
< One week	146	31.8
One week	65	14.16
>One week	21	4.58
Occasionally	22	4.79
Never	205	44.66

Multiple responses *(N = 641); ** (N = 455); †(N = 459).

Table 4. Distribution of respondents according to source of their information regarding dengue

Distribution of respondents	Frequency	Percent
*Source of information**		
Television	342	59.27
Health personnel	219	37.95
Friends & neighbours	176	30.50
Newspapers	95	16.47
Magazines	126	21.84
Radio	29	5.0
Banners	27	4.68
Schools	48	8.32
Others	11	1.9

Multiple responses *(N = 577).

better awareness could be repeated exposure to health education messages on dengue and other mosquito-borne diseases by undergraduate and nursing students and exposure to mass media like television and geographic differences.

Mosquito bite was cited as a cause of dengue by 68% respondents, which is similar to a study done in Brazil[10]. However, as many as 48% had the misconception that dirty drinking water could be the cause. In the east Delhi study, it was 89%, slightly higher than the present study, probably because it was carried out after the 1996 epidemic in Delhi. If people do not know the cause then they cannot be expected to protect themselves from disease. It is interesting to observe that though 68% respondents mentioned mosquito bite as cause of dengue, only 38% (218) believed that the disease could spread by mosquito bite. This shows their inadequate knowledge and a need for more health education for their better participation in control measures.

Regarding symptoms of dengue, 91% knew about fever but associated features were spelled out by < 20%. Since so many other causes of fever are prevalent in the community, knowledge of other fea-

tures would have been more specific indication of their knowledge. In the east Delhi study 92% knew about fever followed by headache as a symptom of dengue[9], which is similar to our study. In another study done in a suburb of Brazil[10], 73.1% knew about fever.

A gap was seen between knowledge and preventive practices. About 59% used measures against adult mosquitoes although 70% were aware of these measures. In a study done in Pondicherry south India[12], almost everyone (99.3%) used some personal protection measures. This is comparatively higher than the present study probably due to socio-economic differences and also issues related to reliability. Thirty percent used anti-larval/breeding measures and only 8% did not use any measure. Though 59% used mosquito repellents, majority of them (77%) used it only during night time whereas *Aedes aegypti* is a day biter. Also regular use was practiced by just half of them (54%) and just 5.55% used mosquito nets, which is similar to another study[12].

In the present study, television was the most important source of information (59%). This is similar to a study from east Delhi and Kuala Lumpur[13]. This shows that mass media like television is a very important source of information and this can be further used to disseminate more awareness regarding dengue. Stagnant water was found to be present in as much as 44% of houses which is considerably high and the proportion of netted doors and windows was found to be very less (23%).

In conclusion, although the awareness regarding dengue and mosquito control measures was quite high, more emphases should be laid on putting this knowledge into practice. This can be achieved by more aggressive health education campaigns in the community through the health workers, and also involving the schools in the community. In addition, community level activities like proper water drainage are required for controlling the disease.

The above observations may be true only for the study population because of convenient sample and cannot be generalised to other populations belonging to different socio-economic or cultural backgrounds. Local studies are needed to provide the true picture about awareness regarding dengue syndrome so that appropriate specific action can be taken for control of disease.

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