Original Research Article

Study on Awareness and Prevention of Dengue Fever in a Selected Rural Area, Salem, Tamil Nadu- Descriptive Longitudinal Study

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ABSTRACT

Background: Dengue is the most common disease among all the arthropod borne viral diseases. Although dengue is considered as an urban and semi-urban disease, in recent years, due to water storage practices and large-scale development activities in rural areas, dengue has become endemic in rural areas of India as well, increasing the scale of the dengue challenge in the country.
Objectives: To find out the knowledge on awareness and prevention of dengue fever in the selected rural population and to find out the same after health education
Methods
Study Design: Descriptive longitudinal study.
Study Setting: Seeragapadi and Chinna seeragapaadi villages, selected by convenient sampling
Subjects: 80, one member in each household.
Study period: 6 months
A pretested proforma was used to collect the knowledge on awareness and prevention on dengue fever. Health education material was prepared after assessing the knowledge. Change in knowledge level was assessed immediately and after one month after health education.
Results: Majority of the respondents had poor knowledge 30(37.5%) with mean 0.57±0.089. Immediately after heath education it was found 68(85%) of the respondents scored good score with mean 1.85± 0.359 and it was found to biostatistically significant in the paired T test (t-14.063, p<0.0001). One month later it was found that 38(47.5%) of the respondents had obtained good score, mean 1.48 ± 0.503. and this also found to be statistically significant (t=5.992, p<0.0001).
Conclusion: Health workers can educate the people about the causes and preventive measures.

Key words: Dengue, Health Education, Knowledge, and Questionnaire

INTRODUCTION

Dengue virus infection is increasingly recognized as one of the world's emerging infectious diseases.[1–4]

About 50–100 million cases of dengue fever and 500,000 cases of Dengue Hemorrhagic Fever (DHF), resulting in around 24,000 deaths, are reported annually.[5,6] Over half

of the world's population resides in areas potentially at risk for dengue transmission, making dengue one of the most important human viral diseases transmitted by arthropod vectors in terms of morbidity and mortality. [7]

WHO declares dengue and dengue hemorrhagic fever to be endemic in the Asian sub-continent. Presently, dengue is endemic in 112 countries of the world.[1]

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.[8] 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. [9] Of those with DHF, 90% are children < 15 years of age. [8]

Although dengue infection has been endemic in India since the nineteenth century, DHF has become endemic in various parts of India since 1987, with the first major widespread epidemics of DHF and DS Soccurring in 1996, involving areas around Delhi and Lucknow, Uttar Pradesh, and spreading to other regions in India. [10-13] However, the epidemics of Delhi and Pune in western India in2006 and in Kerala state in 2008 marked the changing epidemiology of dengue infection, with all four serotypes of dengue viruses found in co-circulation, leading to an increase in secondary dengue infection and, in some cases, co-infections with DENV-1 and DENV-3, DENV-2 and DENV-3 and DENV-1, DENV-2 and DENV-3. [11-15]

With these epidemiological developments, dengue infection changed its manifestation in India from the infection's asymptomatic and benign form to its severe forms of DHF and DSS, with increasing frequency of outbreak, morbidity and mortality. [10,11-14, 16-21] Although dengue is considered an urban and semi-urban disease, in recent years, due to water storage practices and large-scale development activities in rural areas, dengue has become endemic in rural areas of India as well, increasing the scale of the dengue challenge in the country. [19,22-24]

Hence this study has been planned to assess the knowledge on awareness about dengue fever in the selected rural area, Salem. Health education was given on preventive and treatment measures to the study population and the change in knowledge was assessed immediately and one month later after giving health education.

MATERIALS AND METHODS

This descriptive longitudinal study was conducted in 2 villages namely Seeragapadi and Chinna Seeragapaadi near Vinayaga mission medical college, Salem, Tamil Nadu. The major occupations in these villages were agriculture and weaving. Pre-tested semi-structured interview schedule was prepared in English and was translated to Tamil, the most widely spoken language of the community. The interview schedule consisted of 22 questions divided in four sections: (i) demographic profile; (ii) knowledge regarding dengue; (iii) sources of information regarding dengue; and (iv) practices related to dengue mosquito control. Health education material was prepared on the preventive and treatment measures for dengue fever.

The study was conducted for a period of 6 months from November 2012. The interview schedule was pre-tested in another Village which was not included in the study. It was standardised for data collection. The revised interview schedule was administered to the study participants. House-to-house visits were conducted to collect the data and informed consent was taken from each study participant. After

assessing the knowledge on dengue fever causes, mode of transmission, preventive and treatment measures, health education was given individually. The change in knowledge was assessed immediately &one month later, after health education using the same questionnaire. Data analysis was done by using SPSS software (17 version). Statistical tests applied were frequencies, percentages and paired t test.

RESULTS

Majority of the respondents 44(55%) were in the age group of 15–34 years. Mostly females 81.3% (65) 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. (Table 1)

Table.1 Demographic characteristics of the study population

Characterstics	Frequency	Percentage
Gender distribution		
Female	65	81.3
Male	15	18.8
Literacy status		
Degree	4	5.0
Higher Secondary	14	17.5
Secondary	30	37.5
Primary	16	20.0
Illiterate	18	22.6
Housing status		
kaccha	24	30.0
Pucca	14	17.5
Semi Pucca	42	52.5

Respondents reported that newspaper had played as major source information for 10(33.3%) respondents followed by Television 8 (26.67%). (Table.2)

Knowledge on awareness on dengue fever

Awareness on dengue fever refers to the respondent's knowledge on the causes, symptoms, breeding places and the preventive measures which refer to the activities carried out to protect themselves from mosquito bites.

Table.2 shows that majority of the respondents 50(62.5%) have not heard about dengue. Out of those who were know 30

(37.5%) about dengue fever, stated that the most common cause of dengue was 'mosquito bite' 20(68%). Other causes mentioned included dirty drinking water 14(48%) and stagnant drainage water around the houses and improper disposal of solid wastes 18(60%). There is no significant difference was found in the knowledge level between males and females (chi square=0.662, p=0.416). Similarly there is no significant difference was seen among the respondents with different educational qualifications (chi square=5.038, p=0.411).

Table.2 Respondents knowledge regarding the dengue fever (n=80)

Heard about dengue fever	Frequency	Percentage
Do not Know about dengue fever	50	62.5
know about dengue fever	30	37.5
Sources of information		
News paper	20	66.67
Television	18	60
Friends	7	23.33
Causes of dengue		
Contaminated food	5	6.3
Dumping	5	6.3
Open disposal of wastes	70	87.5
Stagnation of water	43	53.8
Un clean Environment	66	82.5
Spread of dengue		
Spreads	18	60
Doesn't spread	10	33.33
Do not know	2	6.67
Mode of spread		
Dirty drinking water	14	46.67
Mosquito bite	20	66.67
Contaminated food	6	20
others	8	26.67
Symptoms of dengue		
Headache	12	40
Fever	20	66.67
Body pain	14	46.67
Myalgia	10	33.33
Practices to prevent the spread		
Cover water tanks	10	33.33
Use mosquito net or mosquito coil	20	66.67
Participate in community 'clean our surroundings' activities	24	80
Participate in community fogging	22	73

Majority 19(62%) of the respondents knew that dengue spreads through mosquito bite. Another 14(48%) said that 'dirty drinking water' was the mode of spread. Majority 20(66.67%) were aware of fever alone or accompanied by chills 10(33.33%), headache was mentioned by 12(40%) as

symptom of dengue. A majority 19(63.3%) did not know the symptoms of dengue. (Table.2)

Knowledge on preventive measures

Only very few respondents were aware about the preventive measures like using bed nets 7(23.3%), mosquito spraying 5(16.67%) and mosquito coils 3 (10%) will prevent the spread of dengue fever.(Table.2)

Table.3, Respondents educational level and knowledge on dengue fever

Education	Awareness	
	Aware	Not aware
Illiterate	10	8
Primary	12	4
Secondary	20	10
Higher secondary	8	6
Degree	3	1

(chi square=5.038, d.f=4,p=0.411)

Table.4, Respondents knowledge level with respect to Health education

Health education (HE)	Mean	Std.deviation	Tvalue	p value
Before and immediately after HE	1.275	0.811	14.063	0.0001
Before HE & one month after HE	0.900	0.880	9.146	0.0006
Immediately after HE & one month after HE	0.375	0.560	5.992	0.0001

Change in mean knowledge scores

A majority (62.5%) of the respondents had poor knowledge on dengue fever before health education. Mean knowledge score before health education was 0.57 and standard deviation was ±0.089. Around 85% (1.85±0.0359) of the respondents had obtained good knowledge on symptoms and preventive measures immediately after health education. Around 52.5% of the respondents had good knowledge score even after one month of health education. Lesser percentage (27.5%) of the respondents had forgotten about the symptoms and the preventive measures. These people need sustained motivation through health workers and via media and newspapers. Mean and standard deviation

was found to be 1.48±0.503 respectively after one month of health education

Areas where level of awareness was poor

Respondents' knowledge was poor about the signs and symptoms and the preventive methods to reduce the transmission of dengue fever.

Areas where level of awareness was good

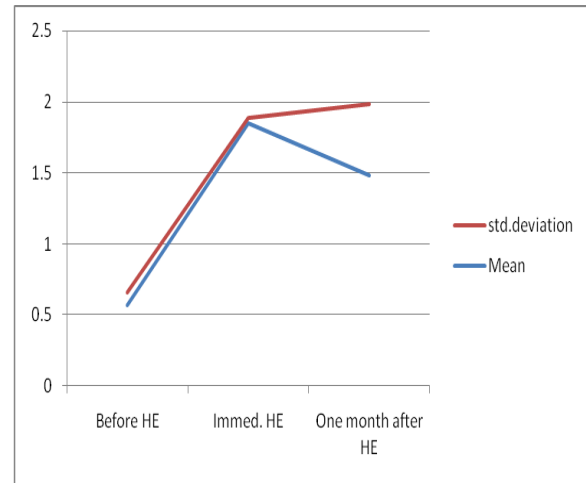Respondents' knowledge was good regarding the breeding places and the mode of transmission of dengue etc.

Fig.1 Respondents knowledge level score with respect to Health Education

DISCUSSION

Regarding knowledge on dengue the present study found that only 30(37.5%) respondents were aware of it. A similar finding was found in a recent study by Kumar et al [25] in India in which only 34.5% of the public was aware of dengue fever. This is contrast to the study conducted by Anita Acharya et al [26] found that 90% had heard about dengue. In another study from urban area of east Delhi 82.3% were reported to be aware of dengue, which is also contrast to our study. [27] The possible reasons for lower awareness could be lesser exposure to health education messages on dengue by the health workers and the media.

Mosquito bite was cited as a cause of dengue by 20(68%) respondents, which is

similar to a study done in Delhi and Brazil. [28] Knowledge about mosquito transmission in the present study was inadequate. However, as many as 14(48%) had the misconception that dirty drinking water could be the cause. In the east Delhi study, [27] it was 89%, slightly higher than the present study. If people do not know the cause then they cannot be expected to protect themselves from disease.

It is interesting to observe that though 20(68%) respondents mentioned mosquito bite as cause of dengue, only 9(30%) 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, only 10(33.33%) knew about fever, but associated features like headache, body pain were spelled out by< 10%. In contrast to the present study, east Delhi study, [27] showed that 92% knew about fever followed by headache as a symptom of dengue. In another study done in a suburb of Brazil, [28] 73.1% knew about fever. Knowledge about the symptoms is poor in the study respondents, hence awareness programmes has to be conducted periodically to improve their knowledge.

In the present study, newspaper was the most important source of information 20(66.67%) followed by television 18(60%). This shows that mass media is very important source of information and this can be further used to disseminate more awareness regarding dengue. A similar observation has also been found in a Study done in Malaysia [32] found that television was reported as the most common source of information. This is similar to previous studies [27,29,30] whereby mass media was cited to have a major role in disseminating information about dengue. However, Nalongsack *et al* [31] found that friends and relatives (43.9%) were the main sources of information regarding dengue fever.

This study found that the most commonly practiced preventive measures used by the respondents were use of mosquito nets 7(23.33%), repellents 3(10%) and spraying 5(16.67%). In a study done in Pondicherry south India, [33] almost everyone (99.3%) used some personal protection measures. This is comparatively higher than the present study probably due to socio-economic differences.

Limitations

The results of this study were discussed bearing in mind that there were certain limitations. 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.

Recommendations

Aggressive health promotional campaigns and social mobilization by relevant agencies are needed to increase knowledge about dengue fever prevention. Community participation is essential for the rural people to eliminate dengue epidemics.

REFERENCES

1. Guzman MG, Kouri G (2002) Dengue: an update. Lancet Infect Dis 2: 33–42. doi: 10.1016/S1473-3099(01)00171-2
2. Gubler DJ (2002) The global emergence/resurgence of arboviral diseases as public health problems. Arch

Med Res 33: 330–342. doi: 10.1016/S0188-4409(02)00378-8

3. Gubler DJ (2002) Epidemic dengue/dengue hemorrhagic fever as a public health, social and economic problem in the 21st century. Trends Microbiol 10: 100–103. doi: 10.1016/S0966-842X(01)02288-0

4. Halstead SB (1999) Is there an inapparent dengue explosion? Lancet 353: 1100–1101. doi: 10.1016/S0140-6736(05)76460-6

5. Porter KR, Beckett CG, Kosasih H, Tan RI, Alisjahbana B, et al. (2005) Epidemiology of dengue and dengue hemorrhagic fever in a cohort of adults living in Bandung, West Java, Indonesia. Am J Trop Med Hyg 72: 60–66.

6. World Health O (1997) Dengue Haemorrhagic Fever: Diagnosis, Treatment, Prevention and Control: World Health Organization.

7. Gibbons RV, Vaughn DW (2002) Dengue: an escalating problem. Bmj 324: 1563–1566. doi: 10.1136/bmj.324.7353.1563

8. Prevention and control of dengue and dengue haemorrhagic feve: comprehensive guidelines. New Delhi: WHO SEARO 1999; Regional Publication No. 29.

9. Halstead SB. Is there an in apparent dengue explosion? Lancet 1999; 353: 1100–1.

10. Chandralekha, Gupta P, Trikha A. The north Indian dengue outbreak 2006: a retrospective analysis of intensive care unit admissions in a tertiary care hospital. Trans R Soc Trop Med Hyg. 2008 Feb; 102(2): 143-147.

11. Gupta E, Dar L, Kapoor G, Broor S. The changing epidemiology of dengue in Delhi, India. Virol J. 2006; 3: 92.

12. Sinha N, Gupta N, Jhamb R, Gulati S, Kulkarni Ajit V. The 2006 dengue outbreak in Delhi, India. J Commun Dis. 2008 Dec; 40(4): 243-248.

13. Raheel U, Faheem M, Riaz MN, et al. Dengue fever in the Indian subcontinent: and overview. The Journal of Infection in Developing Countries. 2011; 5(4): 239-247

14. Vijayakumar TS, Chandy S, Sathish N, Abraham M, Abraham P, Sridharan G. Is dengue emerging as a major public health problem? Indian Journal of Medical Research. 2005; 121(2): 100-107.

15. Gunasekaran P, Kaveri K, Mohana S, et al. Dengue disease status in Chennai (2006-2008): a retrospective analysis. Indian J Med Res. 2011 Mar; 133(3): 322-325.

16. Kumar A, Rao CR, Pandit V, Shetty S, Bammigatti C, Samarasinghe CM. Clinical manifestations and trend of dengue cases admitted in a tertiary care hospital, Udupi district, Karnataka. Indian Journal ofCommunity Medicine 2010 Jul; 35(3):386-390.

17. Gupta P, Khare V, Tripathi S, et al. Assessment of World Health Organization definition of dengue hemorrhagic fever in North India. J Infect Dev Ctries. 2010 Mar; 4(3): 150-155.

18. Bhaskar ME, Moorthy S, N.S K, Arthur P. Dengue haemorrhagic fever among adults-An observational study in Chennai, south India. Indian Journal of Medical Research. 2010; 132(6): 738-740.

19. Hati AK. Studies on dengue and dengue haemorrhagic fever (DHF) in West Bengal State, India. J Commun Dis. 2006 Mar; 38(2): 124-129.

20. Zaki SA, Shanbag P. Clinical manifestations of dengue and leptospirosis in children in Mumbai: an observational study. Infection. 2010; 38: 285-291.

21. Kishore J, Singh J, Dhole TN, Ayyagari A. Clinical and serological study of first large epidemic of dengue in and around Lucknow, India, in 2003. Dengue Bulletin. 2006; 30: 72-79.

22. Kumar A, Sharma SK, Padbidri VS, Thakare JP, Jain DC, Datta KK. An outbreak of dengue fever in rural areas

of northern India. J Commun Dis. Dec 2001 ;33(4): 274-281.

23. Ukey PM, Bondade SA, Paunipagar PV, Powar RM, Akulwar SL. Study of seropervalence of dengue fever in central India. Indian J Community Med. 2010; 35(4): 517-519.

24. Paramasivan R, Dhananjeyan KJ, Leo SV, et al. Dengue fever caused by dengue virus serotype-3 (subtype-III) in a rural area of Madurai district, Tamil Nadu. Indian J Med Res. 2010 Sep; 132: 339-342.

25. Kumar AV, Rajendran R, Manavalan R, et al. Studies on community knowledge and behavior following a dengue epidemic in Chennai city, Tamil Nadu, India. Trop Biomed 2010; 27: 330-6.

26. Acharya A, Goswami K, Srinath S, Goswami A. Awareness about dengue syndrome and related preventive practices amongst residents of an urban resettlement colony of south Delhi. J Vector Borne Dis 2005; 42: 122-7.

27. Gupta P, Kumar P, Aggarwal OP. Knowledge, attitudes and practices related to dengue in rural and slum areas of Delhi after the dengue epidemic of 1996. J Com Dis 1998; 30(2): 107–12.

28. Degallier N,Vilarinhos PT, de Carvalho MS, Knox MB,Caetano J Jr. People's knowledge and practice about dengue, its vectors, and control means in Brasilia (DF), Brazil: its relevance with entomological factors. J Am Mosq Contr Assoc 2000;16(2): 114–23.

29. Kittigul L, Suankeow K, Sujirarat D, Yoksan S. Dengue hemorrhagic fever: knowledge, attitude and practice in Ang Thong Province, Thailand. Southeast Asian J Trop Med Public Health 2003; 34: 385-92.

30. Ibrahim NKR, Al-Bar A, Kordey M, Al-Fakeeh A. Knowledge, attitudes and practices relating to Dengue fever among females in Jeddah high schools. J Infect Public Health 2009; 29: 30-40.

31. Nalongsack S, Yoshida Y, Morita S, Sosouphanh K, Sakamoto J. Knowledge, attitude and practice regarding dengue among people in Pakse, Laos. Nagoya J Med Sci 2009; 71: 29- 37.

32. Rozilawati H, Zairi J, Adnan CR. Seasonal abundance of Aedes albopictus in selected urban and suburban areas in Penang, Malaysia. Trop Biomed 2007; 24: 83-94.

33. Snehalatha KS, Ramaiah KD, Vijay Kumar KN, Das PK. The mosquito problem and type and costs of personal protection measures used in rural and urban communities in Pondicherry region, south India. Acta Tropica 2003; 88(1): 3–9.

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