International Journal of Mosquito Research

ISSN: **2348-5906**
CODEN: **IJMRK2**
IJMR 2021; 8(6): 31-34

www.dipterajournal.com
Received: 14-09-2021
Accepted: 16-10-2021

Malathi P
P.G and Research Department of Zoology, Periyar E.V.R. College, Tiruchirappalli, Tamil Nadu, India

Kurinchi Vanan C
Guest Faculty, Department of Visual Communication, Government Arts College, Tiruchirappalli, Tamil Nadu, India

Corresponding Author:
Malathi P
P.G and Research Department of Zoology, Periyar E.V.R. College, Tiruchirappalli, Tamil Nadu, India

Dengue fever in Kosur Panjayat of Karur district in Tamil Nadu: An investigation

Malathi P and Kurinchi Vanan C

DOI: https://doi.org/10.22271/23487941.2021.v8.i6a.569

Abstract
During December 2018, there was an outbreak reported from 8 villages in Kosur Panjayat of Kuliththalai thaluk, Karur District, Tamil Nadu, India. We want to analyze the environmental determinants of dengue vector breeding habitats in the affected villages and factors influenced for the outbreak of fever of kosur panjayat. The study was conducted in Kosur Panjayat at Karur district, Tamil Nadu, India. Total of 300 respondents were included for the study. Random sampling method was used for the survey. A structured questionnaire having four parts was used for the survey. Among the 300 respondents, 62% were female and 38% male. Most of the respondents 41% were between the ages of 36 to 45 years. Only 5% of the respondents correctly point out that virus is the cause of the dengue fever. Since they not aware that dengue mosquito is day bitter, they are not using any repellent during day time. Nearly all the households were practicing water storage. Many respondents (66%) in the sample reported that they have not taken any measures to prevent dengue mosquito larval breeding in water holding containers. The result found that lack of knowledge of dengue fever associated with lower education level and household income and house type.

Keywords: Dengue fever, Kosur village, outbreak, knowledge, awareness, practices

Introduction
Dengue fever is a mosquito borne tropical disease endemic over large areas of tropics and subtropics. Outbreaks of dengue have repeatedly occurred in world over the last 10 years. *Aedes aegypti and Aedes albopictus* has identified (Joshua *et al*., 2012; Krishnamoorthy *et al*., 2009; Palaniyandi., 2013; Malathi and Vasugi, 2015) [9, 3, 4, 5] as a vector for an arbovirus responsible for dengue fever, dengue haemorrhagic fever and dengue shock syndrome, and with unusual manifestations such as central nervous system involvement (Guzman *et al*., 1987) [18]. About two-fifth of the world's populations are at risk of catching dengue (Rigau, 1998) [17]. In India dengue is widespread &endemic in most major cities (NVBDCP, 2014) [12].
The invasion of Aedes mosquito is very close to human habitat and the preferable breeding sites are small water bodies near the vicinity of human like water tanks, waste pots, tyres etc. The size and spread of the dengue pandemic, the unpredictability of the epidemic occurrences and the circulation of virulent and non-virulent strain make DHF/DSS a model for emerging infectious disease. Despite of this challenge, the development of dengue virus vaccines is still a long way to be of any use due to several obstacles (National Institute of Allergy and Infection disease, 2008) [16].
The epidemiology of dengue fevers in the Indian subcontinent has been very complex. The density and distribution of the vector depend on a few vital environmental factors such as season, temperature, unusual rainfall pattern and humidity that vary with latitude and altitude (Johanssson *et al*., 2009; Chinery, 1970) [14, 15]. The life span of the vector is strongly influenced by temperature and humidity and it survives best between 16 °C and 30 °C and relative humidity of 60-80%. The abundance of *Aedes aegypti* fluctuates with unusual rainfall pattern and water storage, as it breeds well in the open containers in and around houses (NVBDCP, 2008) [16].
Recently, geographical information system has emerged as an important component of many projects in public health and epidemiology (Aileen *et al*., 2009) [10].

According to WHO, 2012 general assembly confirmed dengue fever as a matter of international public health priority through a resolution to strengthen dengue control and research (WHO, 2000) [11]. From 2010 till date, outbreak of dengue illness with severe clinical manifestations were reported from several districts of TN. In 2018 the outbreak of dengue in Thogaimalai taluk and Kulithalai taluk in Karur district triggered panic in the region.

Objective of the study

To analyze the environmental determinants of dengue vector breeding habitats in Kosur village.

To identify factors influenced for the outbreak of fever the study was mainly undertaken to assess the level of knowledge about dengue, its spread, symptoms and prevention among the population of Kosur Panjayat.

We are also keen to find out the level of awareness regarding the preventive measures against dengue fever.

2. Materials and methods

The study was conducted in Kosur Panjayat at Karur district, Tamil Nadu, India. Total population of the village is 5,000 with 1000 households. Based on feasibility, assuming coverage of 10 households per day, taking 20 working days per month and 3 months for data collection, a total sample size of 600 households was targeted.

A structured questionnaire having following four parts was used for the survey:

i) Socio demographic factors.
ii) Knowledge, awareness and practices about the mode of spread of dengue and its prevention.
iii) Observational checklist of house and its surroundings and calculation of vector indices (Breteau index, House index and Container index).
iv) Survey of public places for breeding of Aedes mosquitoes.

Questionnaire was prepared in English and communicated to the households in their local language (Tamil).

3. Results and Discussion

Table 1: Demographic details of the study sample

Characteristics	Frequency	Percentage
Gender		
M	162	
F	138	46
Age (in Years)		
15-25	27	9
26-35	90	30
36-45	123	41
46-55	42	14
56 & above	18	6
Education		
No Education	84	28
Primary	105	35
Secondary	42	14
Tertiary& above	66	22
Occupation		
Coolie-Indoor-13 Outdoor-19 Both-11	129	43
Farmer	57	19
Driver	6	2
Students	69	23
Housewives	27	9
Unemployed	12	4
Income		
Below 5000	84	28
5000-10000	183	61
10000-15000	30	10
15000-20000	3	1
Type of house		
Hut	165	55
Multistory	72	24
Roofed house	57	19
Tiled house	6	2

A total of 300 respondents from 5 villages of Kosur panjayat in the study participated in this study. Table-I describes the demographic characteristics of the study population. Among the 300 respondents, 62% were female and 38% male. Most of the respondents 41% were between the ages of 36 to 45 years. The most common occupations among the respondents were Coolie (43%), among them, 13% were working indoors and 19% were working outdoors. 11% reported that they worked both indoors and outdoors. Majority of 35% had primary education level only. The most common category were under monthly household income of 5000-10000 (61%). More than fifty percent (55%) of the respondents lived in hut (Table 1).

Table 2: Knowledge and awareness of the study sample

Knowledge/Awareness	Frequency	Percentage
Causes of the disease		
Virus	15	5
Bacteria	30	10
Don't know	255	85
Transmission of dengue		
Mosquito bite	93	31
Environmental pollution	87	29
Water contamination	75	25
Don't know	45	15
Source of breeding		
Water storage containers	60	20
Drainage water	81	27
Around the garbage	12	4
Inside the bushes	87	29
Don't know	60	20
Dengue can be prevented by means of		
By using Insecticides (killing mosquito)	102	34
By taking medical care	129	43
Prevent mosquito breeding	69	23

It could be inferred from this investigation that the level of knowledge and awareness about dengue among the study population was very less. Only 5% of the respondents correctly pointed out that virus is the cause of the dengue fever. Only 31% of the respondents has the knowledge of the transmission of dengue fever is by mosquito bites, and majority of 80% correctly pointed out the various sources of breeding. Only 23% correctly pointed out that preventing mosquitoes from breeding as an effective preventive measure for dengue (Table 2).

Table 3: Practices followed by the respondents

Practices	Frequency	Percentage
Type of containers used to store water		
Plastic	75	25
Cement	168	56
Metal	57	19
Measures adopting to prevent dengue mosquito larval breeding in water holding		
Tightly cover containers	18	6
Cleaning frequently by scrubbing	36	12
Emptying / Keeping dry one day	48	16
No measures taken	198	66
Frequency of cleaning		
Once in two days	87	29
3-4 days	78	26
More than 5 days	135	45
Use of mosquito repellent		
Mosquito Coil	79	26
Spray	0	0
Cream	0	0
Electronic hit	6	2
Natural fogging (Using neem stick)	162	54
Mosquito net screens in window	21	7
Not taking any repellent	32	11

From the sample nearly all the households having the practice of water storage for their daily uses. Most of the (56%) of the people store water in the cement tank 25% were in plastic container and (19%) were using metal container. Many respondents (66%) among the sample reported that, they have not taken any measures to prevent dengue mosquito larval breeding in water holding containers like frequency of cleaning etc. But 45% of the people not having the knowledge that, the frequency of cleaning the water holding containers can minimize the mosquito breeding, and they do it once in 5 days (Table 3).

As the survey conducted in rural area they have not adopted any mosquito repellent like cream and sprays which most are frequently using in urban areas. Because of not having the awareness that, dengue vector is a day bitter, most of 54% of them still following the traditional raw neem stick fogging, 26% using mosquito coil in night times. Not even a single person using spray and cream and a very minimum of 7% using mosquito net in their window screen. Out of theses 11% of the people was not taking any repellent. The reason for not adopting is, the consequences of mosquito bites are not serious among them, So they have not taken any preventive measures".

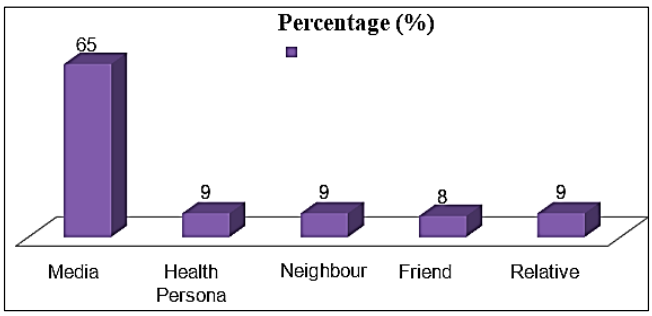

Fig 1: Known of Dengue related information

Major source of information about the disease was came from Media (65%) and through health personal (9%), followed by neighbour (9%), friends (8%) and relatives (9%) (Figure 1).

In a developing country like India preventable disease such as dengue have the potential to cause the greatest mortality. It is believed to have more cases of dengue than any other country, and except for a slight dip in 2011 its incidence rate has grown steadily in recent years. From our study we came to result that there is no evidence exists on the awareness and practices of adult population regarding dengue fever. The number of dengue cases has been alarming this year and we are in a situation to make an impact and educate people that how we can work together to curb this disease. The total population of these affected villages was 5381. They were mainly farmers and labourers by occupation and some of them moved for work to dengue-endemic areas and visit their houses frequently. It was also evident that movement of villagers to dengue endemic areas had contributed to this outbreak, which was similar with the findings of other studies (Victor *et al*., 2002; Paramasivan *et al*., 2010) [1, 2]. The spread of dengue fever in the villages needed preventive actions. The health authority, along with local administration, took joint initiatives to increase awareness of dengue fever and its signs and symptoms and early referral of severe cases to hospital was conducted.

Small water containers such as plastic tea cup, water bottles, tyres, coconut shells, earthen pots, etc. were present in these villages, which favoured mosquito breeding. Vector-control measures were carried out, especially reduction of breeding sources by destroying unnecessary and discarded water containers.

During this study fairly less awareness of the community of

Kosur and nearby villages was found regarding the mosquito borne illnesses, Dengue. A majority of respondents exactly don't know the symptoms and mode of transmission. Awareness was also comparatively less regarding breeding habits of the mosquito and means of source reduction of mosquitoes by eliminating/appropriately treating mosquito breeding sites. The result found that lack of knowledge of dengue fever associated with lower education level and household income and house type. Gender wise no difference was found regarding the awareness and knowledge. This is similar to a study conducted in Dhaka city (Hossain Ismail *et al*., 2000) [6]. Knowledge and awareness in the study is less and similar to that of the study conducted in kerala (Vijayakumar *et al*., 2010) [7]. This study was just contrary to other study conducted by Catherine malliga *et al*., 2018 [8] were conducted a study at urban of Tiruchirappalli, Tamil Nadu. The knowledge about Dengue as a disease with fever as a symptom, a viral disease and mosquito being the transmitting agent was more among women, men and school students. Since the study was conducted at urban place, the awareness, attitude and practices towards dengue fever is more would be the reason for contrary of our study.

Conclusion

The main dissatisfaction found during the survey study were "insufficient information on dengue fever by health personnel not well covered or clear in rural areas". Government other non-government organizations should strengthen their programs on massive educational campaigns in rural areas to increase awareness and knowledge regarding dengue and preventive measures to reduce mosquito breeding sites. Health departments carry out regular monitoring of rural areas and Print materials needs to be provided in every households. Health and community centers making it more accessible for the public to obtain information.

Acknowledgement

The authors are thankful to The Principal, Periyar E.V.R. College, Tiruchirappalli, Tamil Nadu, India for providing facilities to carry out the research work. My heartiest thankfulness to my research mentor Dr. S.R. Vasugi for her valuable suggestion and constant encouragement and support throughout study. My special thanks to my husband for his moral support and help for the entire field study.

References

1. Victor TJ, Malathi M, Gurusamy D, Desai A, Ravi V, Narayanasamy. Dengue fever outbreaks in two villages of Dharmapuri district in Tamil Nadu. Indian J Med Res 2002;116:133-39.
2. Paramasivan R, Dhananjeyan KJ, Leo SV, Muniara M, Thenmozhi V, Rajendran R. Dengue fever caused by dengue virus serotype-3 (subtype-III) in a rural area of Madurai district, Tamil Nadu. Indian J Med Res 2010;132:339-342.
3. Krishnamoorthy K, Harichandrakumar KT, Krishna Kumari A, Das LK. Burden of chikungunya in India: estimates of disability adjusted life years (DALY) lost in 2006 epidemics. J Vector Borne Dis 2009;46(1):26-35.
4. Palaniyandi M, Mariappan T. Master plan for mosquito control in the metropolitan cities in India using GIS. Journal of Geospatial Today 2013;12(8):28-30.
5. Malathi P, Vasugi SR. Evaluation of mosquito larvicidal effect of Caria papaya Against Aedes Aegypti. International Journal of Mosquito Research 2015;2(3):21-24.
6. Hossain Ismail M, Wagatsuma Yukiko, Monjur A Chowdhury, Tauhiduddin Ahmed, Md. Ashraf Uddin, Nazmul Sohel SM. Pattamaporn Kittayapong: Analysis of some socio-demographic factors related to DF/DHF outbreak in Dhaka city. Dengue Bulletin 2000, 24.
7. Vijayakumar T, Anish TS, Sreekala KN. Ramachandran Reshmi, Philip Rachel Rekha: Environmental factors of households in five districts of Kerala affected by the epidemic of chikungunya fever in 2007. The National Medical Journal of India 2010, 23(2).
8. Catherine Malliga S, Geetha Rajasekar, Vasugi SR, Malathi P. Knowledge, Attitude and Practices on Prevention of Dengue Fever among Various Groups of People of Urban Tiruchirappalli. International journal of Pharma Research and Health sciences 2018;6(1):2389-93.
9. Joshua V, Joshua VA, Elangovan V, Selvaraj TP, Mehendale AS. Public health & GIS: Views & opinions of Indian users. Indian J Med Res 2012;136:299-300.
10. Aileen Y Chang, Maria E Parrales, Javier Jimenez, Magdalena E Sobieszczyk, Scott M Hammer, David J Copenhaver. Combining Google Earth and GIS mapping technologies in a dengue surveillance system for developing countries, International Journal of Health geographic 2009;8(49):1-11.
11. WHO/TDR: Dengue/Dengue Haemorrhagic Fever, A summary of research and control in South East Asia. New Delhi, WHO-Southeast Asia regional office 2000.
12. National Vector Borne Disease Control Programme. Dengue/dengue haemorrhagic fever 2013. http://www.nhp.gov.in/nvbdcp - accessed 16 March 2014
13. World Health Organization. Dengue and severe dengue. Fact sheet No. 117. Geneva: WHO 2012. http://www.who.int/ mediacentre/factsheets/ fs117/en/ - accessed 27 February 2014.
14. Johansson MA, Dominici F, Glass GE. Local and global effects of climate on dengue transmission in Puerto Rico. PLoS Neglected Trop. Dis. 2009;3(2):e3-82. Doi: 10.1371/journal. pntd.0000382.
15. Chinery WA. A survey of mosquito breeding in Accra, Ghana during a two-year period (Sept. 1964-Aug. 1996) of larval mosquito control iii. The breeding of Aedes aegypti, Linnaeus, in Accra. Ghana. Med. J 1970;9:197-200.
16. NVBDCP, Guidelines for clinical management of dengue fever, dengue haemorrhagic fever and dengue shock syndrome 2008. http://nvbdcp.gov.in/doc/clinical%20guidelines.pdf
17. Rigau-Pérez JG, Ayuso-Lamadrid A, Wolff DR, Reiter P, Kuno G. Dengue severity throughout seasonal changes in incidence in Puerto Rico, 1989-1992. Am. J Trop. Med. Hyg 1994;51:408-415.
18. Guzman MG, Kouri G, Martinez E. Clinical and serologic study of Cuban Children with Dengue Haemorrhagic Fever/Dengue Shock Syndrome. Pan Amrican Health Organization Bulletin 1987;21:270-278.