

Knowledge, Attitude and Practice in Dengue Endemic Areas in Madurai District

R. Rahamath Nisha¹, V. Saravanabavan², D. Balaji³

ABSTRACT

Introduction: Dengue fever, otherwise called break bone fever, is a mosquito borne tropical illness brought about by the dengue virus. In the present study an attempt was made to identify the reason for the year wise increase of dengue incidence in Madurai District. The object of Medical Geography is to study the geographical environment of human society and its influence on the health of man. In this direction the present study helps to understand how the disease governed by people attitude, behavior and knowledge among dengue

Material and Methods: To fulfill the objectives Primary and Secondary data were collected. Stratified random sampling method was used to collect the primary data. 450 respondents who were interviewed by direct questionnaire method, 20 variables were selected. Year wise dengue cases were collected from Deputy Directorate of Health Department Madurai.

Results: During the previous ten years dengue cases become expanding significantly in Madurai district. In 2017 the percentage of dengue infection attains its zenith. When compared to 2012 dengue infection is doubled as 51% of cases in 2017. The increasing or decreasing rate of dengue infection depends on the knowledge, attitude and practice of people among dengue and it seems low in educated people also.

Conclusion: Dengue affected areas not up to the mark even in educated people also. The initial phase in real life against the dengue mosquito is to educate communities about what dengue is and what measure can be taken to battle it. A reliable water supply is essential to prevent dengue fever. Water shortage force people to store water, which leads to breeding places for dengue mosquitoes.

Keywords: Aedes Mosquitoes, Dengue Virus, Mosquito breeding.

mosquitoes, *Aedes aegypti* and *Ae. albopictus* are the most significant mosquito vectors of dengue fever in practically all nations. People are the essential host of the infection; a disease can be obtained by means of a solitary nibble from contaminated roset. The social estimation of medicinal services has as of late underlined the natural way to deal with human wellbeing, as the human framework includes consistent change in accordance with disintegration in the social, biological and physical environment.⁶

Geographical distribution and climatic variation of vector-borne ailments are to a great extent a component of climatic variables.⁷

Health geography sees wellbeing from a comprehensive point of view enveloping society and space, and it conceptualizes the place, location and geography in wellbeing, prosperity and disease.^{8,9}

The advancement and security of the strength of individuals are fundamental for a supported financial and social improvement, along these lines adding to a superior quality life. Similarly increased number of adult dengue patients is found in other South Asian, South East Asian and Latin American countries.¹⁰

The dengue viruses are transmitted to humans by the gnaw of infected *aedes* mosquitoes¹¹ the infection confines and repeats in different objective organs, for instance, nearby lymph hubs and the liver. The infection is then discharged from these tissues and spreads through the blood to contaminate white platelets and other lymphatic tissues. The infection is then discharged from these tissues and flows in the blood. At the point when a mosquito chomps an individual who has dengue infection in their blood, the mosquito salivary organs tainted with dengue infection. The infection recreates in the mosquito mid gut, the ovaries, nerve tissue and fat body, it at that point escapes into the body depression, and later taints another human and the cycle continues¹²

INTRODUCTION

Dengue fever, otherwise called break bone fever, is a mosquito borne tropical illness brought about by the dengue virus. About half of the world's population is now at risk.¹ Dengue is a major public health problem in several countries.^{2,3,4}

The spatial distribution of diseases is still a matter of importance and mapping plays a huge role in the field. Dengue is a viral disease transmitted by the *Aedes aegypti* mosquito. Dengue has become an important public health problem worldwide. It affects the tropical and subtropical region. 'Population growth and increased individuals movement, urbanization, and the limited financial and human resources are attributed to the emergence and reemergence of the disease.'⁵

Dengue infection is principally transmitted by *Aedes*

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The present study intend to study the reason for the year wise growth and endemic areas of dengue in Madurai district and to understand the people attitude, behavior, knowledge of dengue. This study also aims to derive a conceptual framework towards strengthening the foundation for integrated health care delivery system.

MATERIAL AND METHODS

A detailed field work was carried out in all 7 taluks of Madurai district for 6 months (2018 June to August) at all levels to find out the more relevant determinants of disease. Stratified random sampling method was used to collect the primary data. 450 respondents who were interviewed by direct questionnaire method, 20 variables were selected.

Inclusion criteria For Primary data

- a. Respondents: Male and Female
- b. Above 18 years
- c. Those who are willing to participate in the study

Inclusion criteria For Secondary data

- a. All age groups
- b. Dengue incidence

Exclusion criteria For Primary data

- a. Age below 18 years
- b. Those who were not willing to participate in the study

Exclusion criteria For Secondary data

- a. Dengue death cases

Sample size: Total 450 respondents were interviewed in seven taluks of Madurai district during the study period.

Methods of data collection

Year wise and taluk wise dengue cases were collected from Deputy Directorate of Health Department Madurai. Knowledge Attitude and Practice about dengue have been collected by making use of a survey by direct observation method from the individual on stratified random sampling basis.

Study tools

Disease maps form an essential tool for analyzing the interrelations between disease and the associated environmental factors. It includes mapping of the study area using the GIS soft ware. ARC GIS is one of the significant GIS software, which is utilized in the present study to map the spatial distribution of selected dengue cases,

STATISTICAL ANALYSIS

Pre designed questionnaire was used to gather primary information and suitable statistical techniques were used to analyze the data collected from questionnaire survey. Spatial distribution of dengue was analyzed with the help of statistical tools by way of application of Z score values made by using SPSS.

RESULTS

During the past ten years dengue cases become increasing

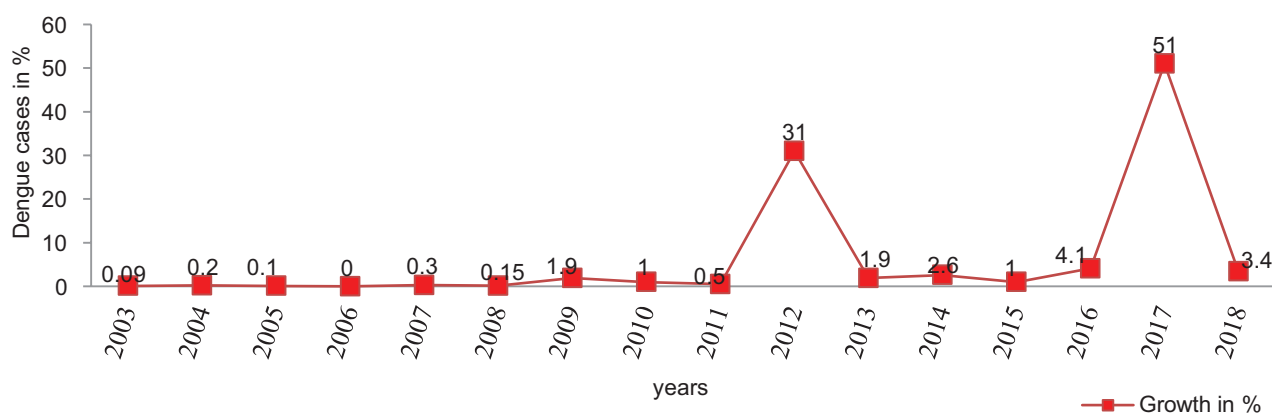


Figure-1: Madurai district year wise dengue cases in madurai district 2003-2018

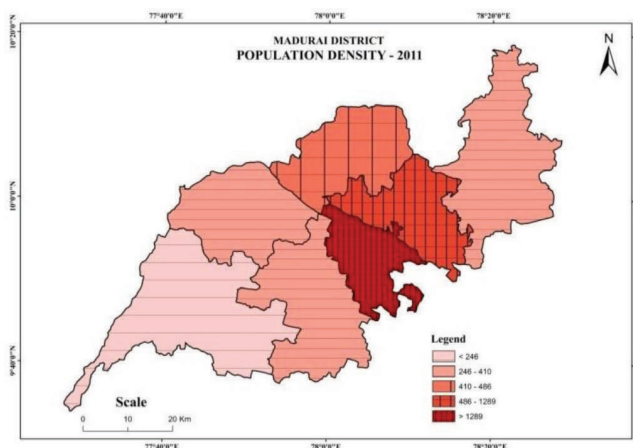


Figure-2: Madurai district population density

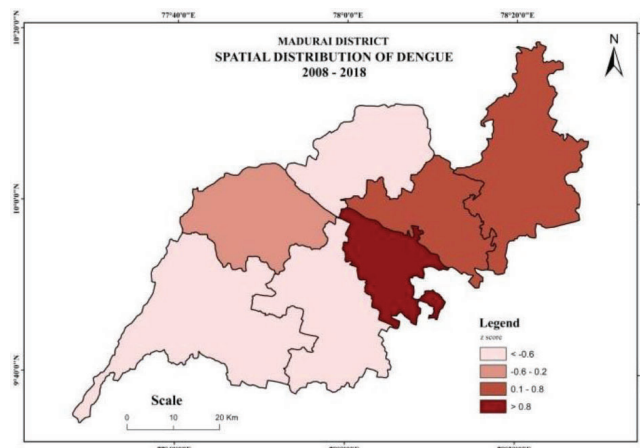


Figure-3: Spatial distribution of dengue 2008-2018

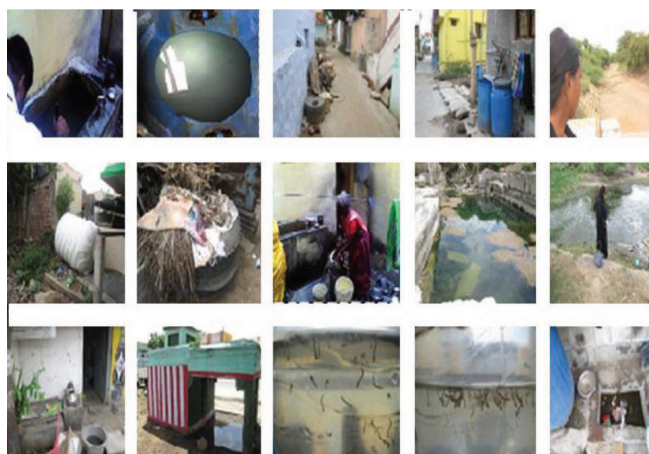


Figure-4: Mosquitoes breeding in different containers

S. N	Name of the Taluks	% Of Dengue Cases	Z score
1	Madurai North	19.7488704	0.777133
2	Madurai South	26.0878816	1.678856
3	Melur	18.0184549	0.530982
4	Vadippatti	7.61835318	-0.94843
5	Thirumanglam	9.191237	-0.72469
6	Usilampatti	10.1056466	-0.59461
7	Peraiyur	9.22955736	-0.71924
Mean 14.28; Standard deviation = 7.03			

Table-1: Z Score analysis of Total dengue cases 2008 - 2018

dramatically in Madurai district. The year wise dengue cases of Madurai district are shown in (Figure-1) the growth of dengue cases in Madurai district were analyzed for 16 years from 2003 to 2018. The diagram clearly shows the rise of dengue cases in Madurai district. The growth line clearly shows that percentage of case gradually increases from 2003 to 2008, in 2009 the percentage of cases increases as 0.15 to 1.9%. In 2010, 2011 the percentage of cases declined as 0.9% and 0.5% respectively. In 2011 there was a sudden increase 31% of dengue infection and 2013 there was a decline of dengue infection about 1.9% of cases were recorded. Again there was a gradual increase of dengue infection but compare to 2003 to 2009 the percentage of cases were very high in 2013 to 2016. In 2017 the percentage of dengue infection attains its zenith. When compared to 2012 dengue infection is doubled as 51% of cases in 2017, but in 2018 the case declined as 3.4% of dengue cases. This growth line shows in future the cases may grow as doubled as 2017 dengue cases.

Dengue Endemic Areas in Madurai District 2008- 2018

Madurai is a major city in the Indian State of Tamil Nadu and the 2nd largest city by area in Tamil Nadu after Chennai and 25th most populated cities in India and 9th largest populated district in Tamil Nadu. Geographical location lies between 9°30” and 10° 16” northern latitude and between 77°15” and 78° 25” eastern longitude

The population density of Madurai district 2011 census (Figure-2) elucidate that very highest density of population 4768.198 person per sq.km was found in Madurai South taluks of Madurai district, the high density of 1289.66

populations found in the Madurai North taluk. The moderate level of population density (486.18) was found in vadipatti taluk. Low level of population density was observed in Thirumangalam 406.29, Usilampatti 410.0 and, Melur 400 and very low level population density observed in Peraiyur taluk 246.27 person per sq.km.

Examining spatial distribution of total dengue incidence 2008-2018 (Table No.1 Fig 3) reveals all the seven taluks of Madurai district affected by dengue incidence. The Very high Z score 1 standard deviation greater than the mean found in Madurai South taluk (1.67), the highest densely populated area. The High Z score above the mean found in Melur (0.53) and Madurai North (0.77). The low level of Z score below the mean found in Usilampatti (-0.59). The Very low level of Z score below the mean found in Peraiyur taluk (-0.71). Thirumanglam (-0.72) and Vadipatti (0.94) which are under the category of the low and very low populated areas. The Z score value above the mean level found in densely populated areas of Madurai south which have 4768.198 persons per sq.km and this taluk is a highly urbanized area. Madurai north the second densely populated taluk comprises 486 persons per sq.km. Dengue infection transmission may happen in a strikingly thin scope of people populace densities with a high mosquito/human host proportion without faucet water supply.¹⁶

Knowledge, Attitude, Practice among Dengue in Madurai District.

The following variables were identified in each taluks and used in the present study to establish the relationship between the variables. The respondents both male and female who are in above 18 years of age are interviewed.

The variables such as, education, income, Water storage practice, knowledge and attitude about dengue etc have been collected by making use of a survey by direct observation method from the individual on stratified random sampling basis In analyzing the sex wise knowledge of dengue it seems high among males about 51% while comparing to female 49%. The analysis of the occupation structure of the respondent about 31% are labors, 20% are self employed, 18% are unemployed, 13% are professional, 12% are students and 6% of respondents are doing other kind of occupation. Education is an important aspect of disease infection. Illiterate leads to poor knowledge of disease infection. About 67% of respondents are Literate and 33% of the respondents are Illiterate. Even majority of respondents are literate but they are having less awareness of Dengue infection Vector borne infectious diseases remain among the most important case of global ill health. This burden is concentrated in the poorest region of the world. Poverty is the main reason for the infectious diseases.¹³ This is true here because most (76%) of respondents are at low income group Majority of the respondents about 38% were having (3000-6000) low income, 15% of the respondents get (6000 – 9000) only. 9% of the respondents get above 9000 income. This may be one of the reasons for dengue infection in Madurai District. Ventilation is yet another factor which emerged to reveal

the close association between dengue and breeding of mosquitoes⁶ due to lack of sun light. The absence of ventilation helps resting place for vectors. about 9% of respondents are having above four windows and having good ventilation. About 28% respondent's houses are having three windows and having good ventilation. About 26% of respondents houses having two windows and having somewhat good ventilations. About 37% of respondents having only one window and having very poor ventilation houses having two windows and having somewhat good ventilations. About 37% of respondents having only one window and having very poor ventilation.

Water Storage Practices

In Madurai District most of the places bore wells and wells are dry. Majority of people used piped and hand pump water supply. Majority of the respondents about 67% having piped water supply. 12% having hand pump. 9% having well water supply. 6% having bore well. 3% having water pump. 2% having water tanker. Only 1% use river water.

Most of the respondents in dengue affected area people having piped and hand pump water supply. Water scarcity leads to irregular water supply People store the water for a long time which helps Aedes to breed in various types of water storage containers. In Madurai district people store not only for drinking purpose but also for washing and cleaning purpose. About 7% store water for washing 23% for cleaning the house 40% for drinking and 30% store water for all purpose. People using different size of water containers for storing water. Increase the size leads to increase the surface area for breeding of mosquitoes and higher vector abundance. About 39% use large size of water container to store water, 27% use medium size water container. 34% use small size (buckets) of water containers, due to irregular water supply people use large size containers and use the water for more than 5 days this is the main reason for proliferation of adult mosquitoes.

In analyzing the Solid waste and rubbish disposal about 47% of disposal Collected by a man or truck. 25% of respondent emptying in a particular site 10% of respondents followed no fixed pattern. 18% disposed their waste by burning and other methods.

Madurai Corporation health department every year advised people every fifth day all water container should be emptied to break the mosquito life cycle. About 5% of respondents store water for only one day. 30% respondents store 3 to 4 days, 43% store 4 to 6 days. About 22% store water for more than 6 days,

This shows that majority of respondents store water for 6 days and provide the opportunity for the vectors to compete the life cycle. The respondents in Madurai district use different types of water containers like, Mud pot, Silver, Plastic, Cement container (Figure-4).

Knowledge and Attitude towards Dengue

At the end of sampling survey people's Knowledge and attitude among Dengue is perceive. About 87% heard about dengue only 13% have not the knowledge of dengue.

Majority of respondents having good attitude among dengue about 62% are in the opinion of dengue is a serious disease. 22% are in the opinion of mild disease. 14% are in the opinion of that dengue may be both, 2% of the respondents have no idea. About 66% of respondents are in the opinion of dengue is prevented 34% of respondents are in the opinion of dengue is not prevented. In sampling survey the knowledge of people about the origin of mosquito is tested. About 45% of respondents are in the opinion of dengue mosquito come from eggs, 21% are in the opinion of mosquito comes from larvae, 17% are in the opinion of both, 27% don't know about dengue mosquito origin. About 10% of respondents are in the opinion that mosquito breed in clean water 21% are mosquito breed in dirty water, 39% any water, 10% are in the opinion that mosquito lay eggs in plants, 20% don't know the breeding place of mosquito. The suggestion of people towards control the mosquito nuisance is perceive. In sampling survey about 31% do not use any methods to control mosquito nuisance, 6% use indoor spraying, 22% cleaning rubbish, 10% covered water containers, 21% used to putting insecticides in water, only 10% are having knowledge that putting fishes in the water to reduce the mosquito eggs that for event the mosquito breeding. This shows that 80% of the respondents used the method to control the adult mosquito . 10% are used the method to prevent mosquito breeding, 10% of respondent used the method to control the mosquito nuisance at egg stage, this shows only 20% of the respondents are having awareness towards control mosquito breeding.

In analyzing the usage of Protective measures majority of respondents about 34% protect themselves from mosquito bites by using mosquito coils, 25% of respondents do not use any protective measures for mosquito bites, 23% of respondents use insect spray but commercial aerosol sprays to kill the mosquitoes found indoors are useful, but "knockdown resistance" may occur in some locations. Spray, insecticide has only temporary effect, knocking down or paralyzing mosquitoes that later recover and fly away¹⁶Screens on window and out doorways are effective protection against the entry of mosquitoes in homes but here only 12% of respondents are using screens on window and doors. Wearing long sleeve cloths resist mosquito bites .the main target of mosquito is lower elbow and lower knee but here only 6% of the respondents are used to wear long sleeve cloth

DISCUSSION

The present study indicates the incidence of dengue infection increases year by year in Madurai district and it becoming a serious public health problem. Similarly a number of studies indicate Dengue is a significant general medical issue in several countries Guzma² et al, Malavigeet³ al, WHO.¹

In 2004 the WHO reports Source of water supply is a better measure to analyze the origin of disease infection.¹⁴

Dengue is transmitted by mainly Aedes aegypte in Madurai⁶ and this is a domestic mosquito which breeds in houses and feeds mainly in man. Hence dengue viruses' transmission

depends on socio economic, knowledge, behavior and practice of the people.

Similar result also identified in this study area the Z score value of total dengue cases for 2008-2018 reveals the highest incidence recorded in Madurai south taluk with having highest density of population population 4768.198 person per sq.km. Similarly the study area also lacking in water supply. Most of the respondents the study area having piped and hand pump water supply. Due to Water scarcity they got irregular water supply and they store water for a long duration which helps *Aedes* to breed in various types of water storage containers and helps the mosquitoes to complete the life cycle.

The Nature of water container is the main determinants of vector population. Unused water containers in shaded areas produce highest pupal production.¹⁵ About 25% of respondents used broken old utensils, 40% use open containers, 15% use tightly closed . 20% used temporary closed containers. The broken and uncovered containers favorer *Aedes* breeding.

WPSchmid¹⁶ recognizes that serious dengue infection transmission may happen in a strikingly thin scope of people populace densities with a high mosquito/human host proportion without faucet water supply

Das et al¹⁷ found that aedes mosquitoes preferred to breed in discarded tyres, coconut shells and plastic containers. In Madurai District Public health officers visit every area and advised people to destroy the cement containers which is the main breeding habitat of *Aedes* mosquito. In sampling survey. 51% of the respondents using plastic containers 20% using steel containers, 20% using cement container, 9% using mud pot. People in Madurai District both in urban as well as rural areas using plastic and cement containers which are the major breeding source of mosquitoes.

The present study also identifies the high attack rate of dengue were observed in the highest urbanized area of Madurai south and Madurai North taluks similarly Duane J Gubler⁵ stated growth of population and unplanned urbanization are attributed to infectious disease reemergence

WHO¹³ Stated Vector borne infectious diseases continue among the most significant case of global ill health. This burden is concentrated in the poorest region of the world. Poverty is the main reason for the infectious diseases.¹³ This is true here because most (76%)of respondents in Madurai district are at low income group, the respondents about 38% were having (3000-6000) low income, 15% of the respondents get (6000 – 9000) only 9% of the respondents get above 9000 income. This may be one of the reasons for dengue infection in Madurai District.

Das et al¹⁷ ascertain that aedes mosquitoes preferred to breed in discarded tyres, coconut shells and plastic containers present study also find out similar result in sampling survey. About 51% of the respondents using plastic containers 20% using steel containers, 20% using cement container, 9% using mud pot which are the major breeding sources of *Aedes* mosquitoes.

CONCLUSION

Dengue is growing in Madurai district the socio economic background, knowledge, attitude and practice among dengue is low in educated people also. The initial phase in real life against the dengue mosquito is to wellbeing taught communities about what dengue is and what measure can be taken to battle it. A reliable water supply is basic to prevent dengue fever. Water storages force people to store water, providing breeding places for dengue mosquitoes. Regular and proper solid waste disposal will reduce potential mosquito breeding sites. House – to –house inspections will determine whether mosquitoes are breeding around the houses. Inspectors can teach household members how to prevent mosquito breeding.

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