International Journal of Community Medicine and Public Health
Singaravel SS et al. Int J Community Med Public Health. 2018 Feb;5(2):538-543
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20180116

Original Research Article

A cross sectional study on knowledge, attitude and practice of dengue fever among high school students in Villupuram municipality of Villupuram

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Received: 01 January 2018
Revised: 14 January 2018
Accepted: 16 January 2018

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ABSTRACT

Background: School-based education is an important way of transfer of knowledge and practices of dengue from classrooms to homes which helps to maintain clean environment for source reduction of dengue**.** Thus, this study was conducted with the main purpose of examining the knowledge, attitude and practices of dengue fever among school children in Villupuram.
Methods: The study area was at high school students of Villupuram municipality from November 2017 to December 2017. The sample size is calculated from Dimbulagedara et al study where the prevalence was 47.2%. Considering Confidence level of 95%, relative precision of 7% the sample size derived was 216. Multistage sampling was used. The required information obtained by means of validated questionnaire.
Results: Majority were of 14 years. More than 75% had a good knowledge on breeding source of infection, 50% were not aware that trashes were a breeding source with a significant p value of <0.05 between age and knowledge. The major source of knowledge was the school. More than half of them were of attitudes that they are not at risk of dengue. 59.7% of the respondents felt they were scared if they were to be infected. Removal of water stagnation (80.1%) was the commonly practiced preventive measures.
Conclusions: School students had adequate basic knowledge regarding dengue. There were some misconceptions regarding to dengue. Personal protection and trash removal was least practiced which can be made successful by behaviour change, communication.

Keywords: Dengue, School children, Villupuram

INTRODUCTION

Dengue is a rapidly spreading mosquito-borne viral disease which has become the major international public health problem in recent times. The global incidence has increased to an extent that nearly half of the world's population is at risk of dengue in recent decades. In some Asian and Latin American countries, dengue is a leading cause of death among children due to its lethal complications like dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS).[1] Dengue an emerging disease has an endemicity in 31 states and union territories of India.[2-4] In 2017, Tamil Nadu has reported 14.5% of the national burden of dengue cases.[5]

Due to developmental activities and improper water storage practices, dengue has spread to rural areas.[6-9] As school playgrounds and buildings favours the mosquito

breeding, school children are more prone to the risk of dengue.[10] The important factors that increases dengue prevalence are urbanization, population growth, travel and improper vector control.[11] There is no specific medication for treatment of dengue.[12] Hence WHO and CDCP signifies community educational campaigns for reducing vector breeding sites and avoidance of mosquito bites as an effective preventive method for dengue.[13,14]

School-based education is an important way of transfer of knowledge and practices of dengue from classrooms to homes which helps to maintain clean environment for source reduction of dengue. Therefore knowledge of school children is an important preventive measure for dengue eradication.[15] Thus, this study was conducted with the main purpose of examining the knowledge, attitude and practices of dengue prevention among school children in Villupuram.

METHODS

Study design: Cross-sectional study.

Study population: High school students of Villupuram municipality.

Study duration: November 2017 to December 2017.

Sample size

The sample size is calculated from Dimbulagedara et al study where the prevalence was 47.2%. Considering Confidence level of 95%, relative precision of 7% with 10% excess sampling to account for non- response, the sample size derived was 216.

Sample size was calculated using the formula:

$N = Z_{1-\alpha}^2 pq/d^2$

Where, $Z_{1-\alpha}$= standard normal deviant at 95% confidence level i.e. 1.96, p=prevalence =47.2%, d=relative precision of 7%, N=196.

Allowing a 10% non-response rate the sample size came around 216.

Sampling method

Multistage sampling method was used.

First stage

One municipality selected from 3 municipalities of the villupuram district by simple random sampling

Second stage

One high school was selected from the high schools of Villupuram municipality.

Third stage

216 students selected from the selected high school by simple random sampling from the total 225 students of std. VIII to X.

Inclusion criteria

An inclusion criterion was all students of standard VIII, IX and X.

Exclusion criteria

Exclusion criteria were students of other standards; students who were not willing to participate

Study tool

Validated semi-structured questionnaire was used. The questionnaire contained questions on

1. Dengue related knowledge
2. Attitudes related to dengue
3. Practice regarding prevention of dengue

Data collection

Official permission to conduct the study in high school students was obtained from the Headmaster of the school and the Institutional ethics committee. After obtaining the informed consent from the students, the semi-structured questionnaire was administered to them.

Outcome variables

Responses regarding knowledge of dengue, breeding sources, attitude, source of information, preventive measures on dengue.

Analysis

The data were entered in MS Excel and were analyzed using SPSS Version 21.

Appropriate descriptive and inferential statistics were used to analyze the data $p<0.05$ was considered statistically significant**.** Data was checked for normality before applying appropriate tests of significance.

RESULTS

Male and female respondents were 62% and 38% respectively. Of the respondents 38, 22.2 and 49.1% were at 13, 14 and 15 years of age respectively. Thus the single largest group of respondents was at 14 years (Table 1).

86.1 percent of the respondents knew that mosquito bite was the mode of transmission of dengue (Table 2). Sustaining a very high fever for 2 to 7 days is usually a sign of dengue was acknowledged by 90.7% of the

respondents. Only 24.1% of the respondents were of the view that a person can be infected by dengue more than once. 76.9% of the respondents told that the outbreak of dengue occur only during rainy times and did not know that dengue has become a perennial one (Table 3). 91.7% of the respondents knew that dengue mosquitoes bite only during day times (Table 4).

Table 1: Characteristics of participants.

Details of the study participants		Frequency	Percentage (%)
Sex	Female	82	38
	Male	134	62
Age (years)	13	48	22.2
	14	106	49.1
	15	62	28.7

84.7% of the respondents told that stagnant water has been a breeding site for dengue mosquitoes with a significant p value of <0.05 between age and knowledge of the respondents. According to 95.8% of the respondents flower pots, thrown away tyres and pots were the sources of mosquitoes breeding places. Containers and jars with clean water were also the breeding places of dengue mosquitoes as per 82.9% of the respondents. Only 50.0 percent of the respondents considered trash as a source of dengue mosquito breeding sites. Thus majority of the respondents had a good knowledge that stagnant water, flower pots, tyres, pots, clean water storage containers, jars were breeding source of infection, whereas 50 percent of the respondents were not aware that trashes were a breeding source of mosquitoes with a significant p value of <0.05 between age and knowledge (Table 5).

Table 2: Knowledge on dengue transmission.

Knowledge questions		Age in years			
		13 yrs Frequency (%)	14 yrs Frequency (%)	15 yrs Frequency (%)	Total Frequency (%)
Knowledge on mode of transmission dengue	By contacting a dengue patient	1 (16.7)	3 (50.0)	2 (33.3)	6 (2.8)
	An infected dengue mosquito bite	45 (24.2)	89 (47.8)	52 (28.0)	186 (86.1)
	By drinking dirty water	2 (10.5)	9 (47.4)	8 (42.1)	19 (8.8)
	don't know	0	5 (100.0)	0	5 (2.3)

Table 3: Knowledge on dengue.

Knowledge questions	Age in years			
	13 yrs Frequency (%)	14 yrs Frequency (%)	15 yrs Frequency (%)	Total Frequency (%)
Very high fever sustained for 2-7 days is usually a sign of dengue	47 (24)	92 (46.9)	57 (29.1)	196 (90.7)
Yes	47 (24.0)			196 (100.0)
Person can be infected with dengue fever more than once	10 (19.2)	28 (53.8)	14 (26.9)	52 (24.1)
The rainy season is the only season outbreak of dengue infection	35 (21.1)	92 (55.4)	39 (23.5)	166 (76.9)

Table 4: Knowledge on dengue mosquito biting time.

Knowledge questions		Age in years			
		13 yrs Frequency (%)	14 yrs Frequency (%)	15 yrs Frequency (%)	Total Frequency (%)
Bite time of dengue mosquito	Night time	0 (0)	8 (80)	2 (20)	10 (4.6)
	Day time	47 (23.7)	92 (46.5)	59 (29.8)	198 (91.7)
	Don't know	1 (12.5)	6 (75.0)	1 (12.5)	8 (3.7)

The major source of knowledge regarding dengue to school students was the school itself according to 67.6 percent of the respondents (Table 6). 53.7% of the respondents were of the attitude that they were not at the risk of dengue infection. 96.3% of the respondents considered dengue as a serious illness with a significant p value of less than 0.05 between age and attitude. 83.3% of the respondents agree that dengue can be prevented. 33.8% of the respondent were of the wrong perception that dengue cannot be treated. 59.7% of the respondents

were scared of dengue infection. 94.0% of the respondents realised that it was their key responsibility of dengue prevention. 60.2% felt both government and individuals were responsible to prevention of dengue. Only 63% responded that all dengue patients have a chance for full recovery, 37% of the respondents perceived wrongly that all dengue patients do not have a chance for full recovery (Table 7).

Table 5: Knowledge on breeding site of dengue mosquitoes.

Breeding sites	Age in years				Fisher's exact test	P value
	13 yrs Frequency (%)	14 yrs Frequency (%)	15 yrs Frequency (%)	Total Frequency (%)		
Stagnant water	42 (23.0)	92 (50.3)	49 (26.8)	183 (84.7)	0.361	0.047
Flower pots, tyre and pots	47 (22.7)	101 (48.8)	59 (28.5)	207 (95.8)	0.820	0.153
Water storage jars/ containers	39 (21.8)	89 (47.5)	55 (30.7)	179 (82.9)	0.342	0.054
Trash	29 (27.1)	52 (48.6)	26 (24.3)	107 (50.0)	0.158	0.012

Table 6: Source of knowledge about dengue fever.

Source of knowledge	Frequency	Percentage (%)
1. Television	44	20.2
2. News paper	34	15.7
3. Radio	6	2.8
4. Friends	13	6
5. Doctor	25	11.4
6. School	146	67.6

Table 7: Attitude towards dengue fever.

Attitude questions	Age in yearrs				Fisher's exact test	P value
	13 yrs Frequency (%)	14 yrs Frequency (%)	15 yrs Frequency (%)	Total Frequency (%)		
I have risk of getting dengue	22 (22.0)	51 (51.0)	27 (27.0)	100 (46.3)	0.847	0.073
Dengue is a serious illness	47 (22.6)	104 (50)	57 (27.4)	208 (96.3)	0.117	0.044
Dengue can be prevented	44 (11.1)	80 (72.2)	56 (16.7)	180 (83.3)	0.011	0.101
Can dengue be treated	42 (29.4)	48 (33.6)	53 (37.1)	143 (66.2)	0.000	0.076
I feel scared when infected with dengue fever	29 (22.5)	59 (45.7)	41 (31.8)	129 (59.7)	0.395	0.060
I am the key individuals in preventing dengue	42 (20.7)	105 (51.7)	56 (27.6)	203 (94)	0.002	0.149
preventing dengue is responsibility of both government and individuals	25 (19.2)	68 (52.3)	37 (28.5)	130 (60.2)	0.362	0.061
all dengue patients have a chance for a full recovery	27 (19.9)	74 (54.4)	35 (25.7)	136 (63)	0.122	0.078

At home the common preventive practices followed were prevention of water stagnation as per 80.1% of the respondents with a significant of p value of 0.05 between age and practice. Only 15.7% used mosquito mat, coil, vaporizer with a significant p value of 0.033 between age and practice. Only 15.3% of the respondents used removal of trash, for prevention of dengue. 11.1% of the respondents used smoke to drive away mosquitoes with a

significant p value of <0.05 between age and practice. 10.2% of the respondents used mosquito nets, 6.9% used mosquito nets on windows with a significant p value of <0.05 between age and practice. Only 2.8% of the respondents used mosquito spray to prevent mosquito bite (Table 8).

Table 8: Methods of prevention against dengue.

Methods of Prevention	Age in years				Fisher's exact test	P value
	13 yrs Frequency (%)	14 yrs Frequency (%)	15 yrs Frequency (%)	Total Frequency (%)		
Mosquito spray	3 (50.0)	1 (16.7)	2 (33.3)	6 (2.8)	0.151	0.166
Mosquito mat/ coil/vaporizer	6 (17.6)	14 (41.2)	14 (41.2)	34 (15.7)	0.224	0.033
Mosquito net	4 (18.2)	9 (40.9)	9 (40.9)	22 (10.2)	0.446	0.067
Window and door screen	0 (0)	7 (46.7)	8 (53.3)	15 (16.9)	0.021	0.004
Cleaning of trash	8 (24.2)	6 (18.2)	19 (57.6)	33 (15.3)	0.000	0.007
Use of smoke to drive away mosquitoes	1 (4.2)	8 (33.3)	15 (62.5)	24 (11.1)	0.001	0.000
Prevent water stagnation	34 (19.7)	89 (51.4)	50 (28.9)	173 (80.1)	0.175	0.050

DISCUSSION

The study was done to find out the prevalence of knowledge, attitude and practice of dengue fever prevention among school children of VIII, IX, and X standard in Villupuram. In the present study majority of students were at age group of 14 years.

Majority (86.1%) were aware that dengue was a mosquito borne disease. This is similar to a study by Taran et al in Malwa region where 80% responded the same view.[16] 75.9% of the respondents were unaware that dengue infected person can be infected more than once. 76.9% of the respondents considered dengue outbreak occurred only in rainy seasons. The fact that dengue has now become perennial is not known to them. In the present study more than 3/4th of the students were aware that stagnant water, water stored containers, jars and flower pots, tyres and pots (84.7%, 82.9%, 95.8% respectively) were breeding sites for dengue mosquitoes. This knowledge of breeding sites for dengue mosquitoes was only 47% of children in Bhatnagar et al UP and 19.5% of students in Taran et al.[16,17] In this study only 50% of the respondents considered trash as a source of breeding factor which needs to be emphasised for prevention of breeding of mosquitoes.

School was the major source of knowledge regarding dengue (67.6%) which revealed that dengue prevention activities such as educational campaigns in schools are considered significant tool to create awareness to public through student's community.

Television and newspapers contributed to only 20.2% and 15.7% respectively as source of information in contrast to Bhatnagar et al study and Taran et al and patel et al where newspaper and television were the major source of information.[16,17] This may be contributed to the awareness created by the public health system in the schools. The knowledge that dengue mosquitoes are a day biter was known to 91.7% which was only 49% at Bhatnagar et al study and 48% in Majra et al.[17,18]

Almost 94.0% of the respondents felt that individuals have the key responsibility in dengue prevention and 60.2% felt it should be a combined responsibility of Government and individuals with a significant p value (<0.05) between age and attitude. More than half of the students were of the attitudes that they are not at risk of dengue. Majority (59.7%) of the respondents felt that they were scared if they would to be infected with dengue and only 63% of the respondents were of the view that dengue patients could be recovered fully. This reveals that more emphasis should be given on pattern of disease, signs and symptoms and their early detection and admission in hospitals will lead to a greater chance of full recovery and the fears of the respondents regarding dengue could be alleviated.

WHO and CDCP recommended community educational campaigns that emphasize on reducing vector breeding sites and avoiding mosquito bite as an effective way to prevent dengue.[13,14] In the present study removal of water stagnation (80.1%) was the most commonly practiced method of prevention of mosquitoes whereas other personal protective measures (like use of mosquito nets, use of smoke to drive away mosquitoes, coils, repellants screens and sprays) were less practiced. This may be due to the fact that source reduction was more emphasized. This reveals the need for behavioural change and communication in adopting personal protective measures. Removal of trash was practiced only by 15.1% of the respondents which needs impartation of knowledge of trash like plastic cups, plastic bags, coconut shells and other trashes where water accumulates, if there is rainfall and if not discarded properly will lead to spread of dengue infection.

CONCLUSION

The study revealed that school students had adequate basic knowledge regarding dengue. There was some misconceptions regarding to dengue. Personal protection against dengue and need to trash removal was least practiced which can be made successful by behaviour change, communication.

Literacy and media exposures are factors that determine awareness among school students and can be helpful to raise their knowledge regarding dengue. Education regarding knowledge and prevention should be introduced and made compulsory in schools.

Therefore with adequate knowledge, positive attitudes and practice to stay healthy on the part of students, the spread of disease can be halted.

Limitations

The study was limited to only one school in rural municipality of Villupuram. The study cannot to generalized. Absence of a comparative group.

ACKNOWLEDGEMENTS

We gratefully acknowledge the students, teachers, Headmaster of the Government Municipality School without whom this study wouldn't be possible.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Singaravel SS, Kandaswamy EK. A cross sectional study on knowledge, attitude and practice of dengue fever among high school students in Villupuram municipality of Villupuram. Int J Community Med Public Health 2018;5:538-43.