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Original Research Article

Impact of health education-based intervention on community's awareness on dengue and its prevention in Chidambaram during COVID-19 pandemic

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ABSTRACT

Background: Dengue fever is a global public health issue. It is acknowledged that vast, repeated, intense, and persistent health education programs for community mobilization are essential to achieving the aforementioned goals. The main objective of the study was to increase the dengue-related awareness and behavioral change through health education-based intervention among the selected urban communities in Chidambaram.
Methods: A quasi experimental, community-based interventional study conducted among 150 residents of urban area of Annamalai Nagar, Chidambaram district consisting of both males and females of age groups between 18-75 years who were selected using stratified random sampling technique. Data was collected using semi structured questionnaire before and after intervention using flipchart, entered in Microsoft Excel and analysed using SPSS software. Descriptive and analytical statistics were applied.
Results: Most of the study participants (32.7%) were in the age group of 30-39 years. More women (68.7%) participated in the survey among which 50.7% were educated up to secondary and higher secondary class. On comparing the results of mean values of knowledge, attitude and practice between pre-test and post-test, reflected significant improvement upon after health education by flipchart intervention. It was found very highly significant ($p<0.001$) between mean knowledge scores and significant ($p<0.05$) between mean practice scores.
Conclusions: Health education could contribute to changes in perceptions, social capital, and a healthy house condition. It is very important to increase the awareness and participation of the community in controlling dengue prevalence.

Keywords: Community based intervention, Dengue, Flipchart, Health education, Prevention

INTRODUCTION

Dengue fever, often known as break bone fever, is a tropical sickness spread by mosquitoes and caused by the dengue virus.[1] Approximately half of the world's population is currently endangered. Dengue fever is a global public health issue in a number of countries, especially in the world's tropical and subtropical regions.[2-4] Over the last two decades, the number of dengue cases reported to WHO has increased by more than 8 times. Between 2000 and 2015, the number of deaths reported grew from 960 to 4032, with the younger age groups bearing the brunt of the burden.

During the years 2020 and 2021, the total number of cases, as well as reported deaths, appeared to drop. However, the information is incomplete, and the COVID-19 pandemic may have hampered case reporting in a number of nations.[5] The present pandemic has caused an unprecedented crisis in the health system, particularly in underdeveloped nations. According to research,

secondary infections like influenza, chronic hepatitis, and other concurrent infections impact 14.3% of COVID-19 patients.[6]

The dengue control and management program has been impacted by changes in health priorities and policies related to COVID-19.[7] The COVID-19 crisis caused a three to four month global lockdown, which had an impact on the door-to-door dengue survey and dengue site control actions.[8,9] It may have an impact on dengue cases' mortality. The fatality rate from dengue fever is typically less than 1%, but in cases of severe infection, it can reach 2-5%. In contrast, a variety of variables, including age, immunity, and other morbidities, have a significant impact on COVID-19 mortality.[10,11] Due to their similar clinical and biochemical characteristics, dengue fever and COVID-19 are difficult to distinguish from other patients.[12] Some researchers cited instances where COVID-19 was first suspected of being dengue but was later identified.[13]

The key to controlling dengue is the adoption of a comprehensive strategy that includes consistent vector surveillance, integrated management of Aedes mosquitoes through biological and chemical control, environmental management, legislation, as well as action at the household and community levels.[14] It is acknowledged that vast, repeated, intense, and persistent health education programs for community mobilization are essential to achieving the aforementioned goals.[15,16]

The main objective of the study was to increase the dengue-related awareness and behavioural change through health education-based intervention among the selected urban communities in Chidambaram. This also reports the change in dengue-related awareness and practices after implementing health education-based intervention.

METHODS

A health educational intervention using flipchart was implemented by students of Rajah Muthiah Medical College, Annamalai Nagar, Chidambaram during the period of 7 days in the month of November 2021 which was preceded by a baseline survey and the impact of the intervention was evaluated by conducting post interventional survey.

Study design

This was a quasi-experimental, community-based interventional study.

Study area and population

The study area, Chidambaram town is situated in North East of the Tamil Nadu and located in the plains. The longitude and latitude of this place is 79°5'E, 11°24' N respectively. 150 study participants consisting of both males and females of age groups 18-75 years who were residents of urban area of Annamalai Nagar, Chidambaram district were selected using stratified random sampling technique. Those who were not willing to participate were excluded.

Study tool consists of a pre tested, validated semi structured questionnaire of two parts, part-I sample characteristics, this part obtains personal information i.e. age, gender, educational status, family income, and number of family members, address and part-II questionnaire, this part consisted of structured questionnaire on different aspects of prevention and control of dengue fever to assess the knowledge, attitude and practices of general population. This questionnaire consisted of 20 items, each item contains one correct answer among the four choices and each correct answer carries one mark each and wrong answer carries zero mark. Maximum score =20 minimum score =0.

Methods of data collection

A pilot questionnaire was prepared and tested in a slum that is not a part of the study. The questions were assessed for their ease of comprehension, relevance, effectiveness in providing useful information and uniformity in meaning. All questions were asked in an open-ended manner. The responses were carefully read and similar responses were categorized into few groups (as shown in tables) for further analysis. Health education was given by using flipchart and demonstrating the breeding sites manually.

Statistical analysis

Data was entered in Microsoft excel (version 2019) and imported into IBM SPSS (version 20). Descriptive and analytical statistics were applied. Categorical variables were expressed as proportion and percentage while continuous variables are expressed as median and interquartile range. Chi-square test was used for analytical statistics. All p values were two-tailed and considered significant if <0.05.

Ethical considerations

Ethical principles such as respect to the participant, beneficence and justice were strictly adhered. Ethical committee approval was obtained before starting the study. The approval to conduct the present study was obtained from the "Institutional Ethics Committee" (IEC). Informed written consent was obtained in a language comfortable to them. Confidentiality of the study participants was maintained throughout the study.

RESULTS

Most of the study participants (32.7%) were in the age group of 30-39 years. More women (68.7%) participated in the survey. 50.7% of them were educated upto

secondary and higher secondary class. 52.7% were home maker. 4.7% of them belonged to upper middle socioeconomic class (Table 1).

Table 1: Frequency and percentage distribution of sample characteristics (n=150).

Demographic variables	Frequency (n=150)	Percentage (%)
Age (years)		
Less than 20	15	10.0
20-29	34	22.7
30-39	49	32.7
40-49	26	17.3
More than 50	26	17.3
Sex		
Male	47	31.3
Female	103	68.7
Educational status		
Illiterate	9	6
Primary and middle school	24	22.7
Secondary and higher secondary	76	50.7
Diploma and undergraduate	25	16.7
Postgraduate and professional	6	4.0
Occupation		
Skilled/semi skilled	37	24.7
Unskilled	8	5.3
Dependent/student/ unemployed	19	12.6
Home maker	79	52.7
Retired with pension	7	4.7
Socioeconomic status		
Lower	8	5.3
Lower middle	5	3.3
Middle	43	28.7
Upper middle	67	44.7
Upper	27	18.0

On comparing the results of mean values of knowledge, attitude and practice between pre test and post test reflects improvement after health education by flipchart intervention. It was found very highly significant ($p<0.001$) between mean knowledge scores and significant ($p<0.05$) between mean practice scores (Table 2).

It was found that increase in mean attitude scores was not significantly mentioned (Figure 1).

On comparing the correct responses between pre and post test, the knowledge and practice parts increased drastically after the health intervention when compared with the attitude section (Table 3).

Table 2 (a): Comparisons of pretest and posttest mean knowledge score of adolescents on prevention and control of dengue fever (n=150).

	Mean	SD	t value	Significance
Pretest knowledge	14.63	±2.62	7.66	<0.001*
Post test knowledge	15.49	±2.04		

Table 2 (b): Comparisons of pretest and posttest mean attitude score of adolescents on prevention and control of dengue fever (N=150).

	Mean	SD	t value	Significance
Pretest attitude	6.36	±1.03	0.86	0.39
Post test attitude	6.55	±0.89		

Table 2 (c): Comparisons of pretest and posttest mean practice score of adolescents on prevention and control of dengue fever (N=150).

	Mean	SD	t value	Significance
Pretest practice	1.97	±0.18	-2.27	0.03*
Post test practice	2.00	±0.00		

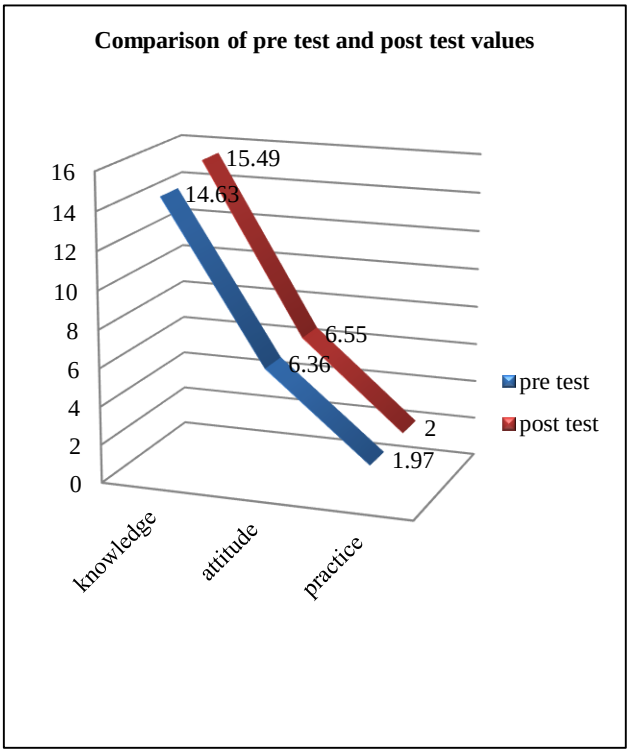

Figure 1: Line graph showing comparison of mean values of knowledge, attitude and practice between pre test and post tests.

Table 3: Distribution of correct responses among the study participants (N=150).

Item	Correct response	Pre test	Post test
		N (%)	N (%)
Do you know anything about dengue?	Yes	12 2(81.3)	148 (98.7)
How is dengue fever transmitted to a person?	Mosquito bite	122 (81.3)	146 (97.3)
What is the type of mosquito, which cause dengue fever?	Aedes	18 (12)	128 (85.3)
When is usually Aedes active to bite?	6 am-8 am	64 (42.7)	81 (54)
What are the symptoms of dengue fever?	Fever, myalgia, headache, eye pain	43 (28.7)	57 (38)
How can we prevent dengue?	Remove water from artificial storage +spray + NET	38 (25.3)	110 (73.3)
Do you think dengue is dangerous for your family?	yes	104 (69.3)	15 (10)
Who has responsibility for avoiding breeding of mosquito?	Self	115 (76.7)	103 (68.7)
Where do you get treated for dengue?	GH	97 (64.7)	129 (86)
Do you keep your garden clean?	Yes	148 (98.7)	150 (100)
Do you keep the drain clean?	Yes	148 (98.7)	150 (100)
Do you take any steps to prevent the entry of mosquitoes into your house?	Yes	150 (100)	150 (100)
If yes, please mention those measures?	Remove water from artificial storage+ spray+NET	45 (30)	107 (71.3)
Do you take any personal protective measures to protect yourselves from mosquitoe bites?	Yes	145 (96.7)	150 (100)
Did you eliminate the mosquito breeding sites?	Yes	118 (78.7)	146 (97.3)
What do you do for dengue prevention?	Remove water from artificial storage+ spray+NET	50 (33.3)	105 (70)

DISCUSSION

In our study, health intervention provided using flipchart have successfully improved knowledge, attitude and practise levels on dengue fever among the general population in Chidambaram, Tamil Nadu compared by the mean values of pre test and post test. It is affirmed that health education material has a positive contribution to knowledge and practice.

Earlier research in Chennai city showed that health education-based interventions boosted knowledge, but some were unable to detect a meaningful improvement.[17,18] Positive impacts of community-based solutions were documented by Heintze et al.[19] Espinoza-Gomez et al showed that house-to-house education programs had a substantial impact and recommended that dengue prevention strategies should be more focused on community involvement than on the vertical application of pesticides.[20] Emphasis is placed on health education supported by stringent municipal legislation to reduce the danger of dengue by a study at Delhi by Katyal et al.[21]

For dengue vector control to be successful, close communication between communities and municipal vector control agencies is essential.[14] Some research from Delhi, Puducherry and Chennai claimed that the population had little understanding of dengue, whereas another study by Acharya et al said that the people had a strong understanding of the disease.[17,22-25] It is critical to step up efforts to educate the public and organize the community on the proper application of preventive measures against mosquito-borne diseases.[17] The current study and several other studies highlight the necessity for interventions focused on health education to give communities access to knowledge.[5,17,20,22,23,26]

Giving people information is crucial for changing their behavior, but more comprehensive strategies that included community engagement, social mobilization, and additional vector control and surveillance methods were required. According to Horstick et al vector-control services and cooperating agencies lack both the technical know-how to interact with communities and the necessary input from social sciences.[27] Additionally, they showed that although almost all countries had community engagement on their agenda, it was frequently implemented poorly.[27] Communities may be encouraged to adopt prevention and control measures by the coordinated involvement of local health services, skilled vector control employees, civil authorities, and the community.[19]

It was discovered that an eco-bio-social strategy was more efficient for putting into practice an integrated community-based strategy.[28] These studies emphasize how crucial intersectoral cooperation is. It is crucial to spread and raise awareness of dengue and the available preventative measures. However, to change behavior and prevent dengue, community education programs are

insufficient.[29] However, we believe that it is equally important to strengthen the staff's training component in health education and communication strategies and to work with the communities. The present study provides supportive evidence for the implementation of community health education as a part of the national program.

Only a little amount of dengue prevention practice measures were found in the results. It demonstrates how low dengue prevention prevails even when individuals stay at home during a lockdown. Furthermore, a study in Malaysia that examined populations living in hotspot and non-hotspot dengue locations found that more people in non-hotspot areas practiced dengue prevention than in hotspot areas.[30] Therefore, rather than the length of time people spend at home during a pandemic, the low level of dengue prevention behaviours in the research area may be related to people's health attitudes.

We acknowledge that our study has certain limitations, such as the relatively small sample size from just one site in Tamil Nadu. Although broad lessons can be learned because Chidambaram is comparable to many other areas of Tamil Nadu, caution should be used when applying these findings to other communities. We regrettably did not gather information on the number of homes or individuals who declined to take part, making it impossible for us to judge the response rate in our community or determine whether refusal to participate would have resulted in any selection bias. Additionally, as households were only visited during the day, most professionals who worked regular office hours were not eligible to participate. The 2:1 female to male ratio in our sample reflects this.

CONCLUSION

The current study showed that interventions based on health education increase knowledge, which is a requirement for modifying or adopting specific protective behaviors. To bring about long-lasting behavioral changes and disease control, however, community education must be combined with effective vector control techniques, community-based environmental management, and community participation and mobilization. Additionally, it is crucial to improve the healthcare staff's training in health education and communication techniques to collaborate with the communities.

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