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EFFECTIVENESS OF HEALTH EDUCATION ON KNOWLEDGE AND PRACTICES REGARDING AEDES AEYGPTI BREEDING SOURCES IN AN URBAN AREA, CHENGALPATTU

Community Medicine

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ABSTRACT

Introduction: Dengue is a major public health concern due to thirty fold increase in the dengue cases in the last 50 years. In India, recurrent dengue outbreaks occur due to climate changes, decreased rainfall and urbanisation. Community participation is an important key factor in the Aedes mosquito control. Hence, this study was planned to assess the knowledge and practices regarding Aedes breeding sources and effectiveness of the health education on the same. **Methodology:**A community based interventional study was conducted in the urban field practice area of Chengalpattu Medical College, during June to September 2025. Sample size was calculated as 142 and stratrified random sampling method was used. A semi – structured questionnaire was used to collect the information. After collecting the information, health education was given to the people. Reassessment of knowledge and practices was done after 6 weeks. **Results and Discussion:** Out of 142 participants, around two- third of the people had knowledge regarding Aedes aegypti breeding sources and this increased nearly to 85 % after health education. Preventive practices were increased to 80% after intervention. House index (1.4%) and container index (5.5%) were found to have decreased after the intervention. **Conclusion:** Health education is found to be an effective tool for control of dengue in the study population. Hence, this study recommends that health education should be reinforced in the integrated vector management.

KEYWORDS

Dengue, Knowledge, Practices, Breeding Sources

INTRODUCTION

Dengue is a rapidly emerging mosquito borne disease (1). Dengue is caused by flavivirus group (2). It is transmitted by Aedes aeygpti and Aedes albopictus vectors (3). Dengue fever predominantly occurs in South East Asia, the America, Africa and the Caribbean Islands (4). Dengue is spreading to new areas, including the Eastern and Mediterranean regions.

Dengue has become a major international public health concern because there has been a gradual global upsurge (more than 30 fold increase) over the last 50 years (5). Before 1970, only nine countries had experienced severe dengue epidemics, but now dengue is endemic in more than 100 countries worldwide (1). Two fifth of the world's population in tropical and subtropical countries are at risk of dengue disease.In 2024, more cases (14.6Million cases of dengue)were recorded than previous years. Among 14.6 Million cases, more than 12,000 dengue deaths reported (6) .From January to July 2025,over 4 millon cases and 3000 deaths have been reported to WHO from 97 countries.

Dengue has been present in India since 1956. In Tamil Nadu, the first outbreak was occurred at Vellore in 1961 and the viral aetiology was discovered by the isolation of dengue virus (7, 8). According to the national vector borne disease control programme, 233519 cases of dengue and 297 deaths have been reported across 31 states in 2024(9).

Recurring dengue outbreaks have been reported from Andhra Pradesh, Delhi, Goa, Haryana, Gujarat, Karnataka, Kerala, Maharashtra, Rajasthan, Utter Pradesh, Odisha, Pondicherry , Punjab, Tamil Nadu and West Bengal (9). The increase in number of dengue cases has been associated with climate changes, decreased rainfall, urbanisation and industrialisation (10).

Vector control is a key component in the prevention and control of Dengue. Prevention of Aedes mosquito breeding through source reduction measure practised by the community has been found to be effective in vector control (11). However, effective practice of source reduction method is dependent on the knowledge regarding the vector, mode of transmission and the sources of breeding (12). Previous studies have found that health education was an effective tool in improving the knowledge and practices regarding dengue (13, 14). A combination of health education with community-based environmental management has been shown to reduce the vector breeding.

Community participation like removal of artificial collections of water is the important key factor in dengue control when compared to other mosquito borne diseases. Knowledge and practices regarding the breeding sources of Aedes mosquito are critical determinants of dengue control. Hence, this study was planned to assess the knowledge and practices regarding dengue breeding sources and also to assess the effectiveness of the health education regarding the same.

Objectives:

- To estimate the knowledge and practices regarding Aedes aeygpti breeding sources
- To assess the effectiveness of the health education regarding the same

Methodology

A community based interventional study was conducted in Urban field practice area of Chengalpattu Medical College during the period of June to September 2025. Individuals 20 to 60 years of age residing at field practice area were included in the study. Sample size was calculated as 142 ($Z_{\alpha/2}$ PQ / L^2) based on an expected prevalence (P) of 73 % from previous study with Z value of 1.96 at 95 % Confidence level and with limit of accuracy (L) at 10% (precision) (15).

A stratified random sampling method was used to select the 142 households . In the first stage, 7 streets were selected from the list of 14 streets. In second stage, 20 families were selected from each of the streets (21 families were selected from two streets alone) using family registers maintained by Urban Health Nurses as the sampling frame. Simple random sampling using random number Tables was employed to select families from each street.

A semi – structured questionnaire was used to collect the information from the study participants both basic and post intervention. The questionnaire had socio demographic variables, variables regarding knowledge and practices of Aedes aegypti breeding sources. Entomological parameters like house index and container index were also calculated.

Intervention:

Health education materials used in this study were based on National Vector Borne Diseases Control Program. A pilot study was conducted, to ensure comprehensibility and clarity, before printing the posters and leaflets. At Community level health education was given by folk songs and role plays and individual health education was given by using the pamphlets and posters in their local language by trained medical college students.

Data collection

After getting the informed written consent, house to house survey was conducted to collect the basic information on knowledge and practices regarding Aedes aeygpti breeding sources. In addition, larval survey

was conducted to calculate the larval indices from the study area. Health education was given by using folk songs, plays and at individual household level using pamphlets by trained medical college students in the field. Knowledge and practices were reassessed after 6 weeks using the same questionnaire.

Statistical analysis

Collected data was entered in Microsoft excel and analysis was done by using SPSS 22 (Trial version). Socio demographic details, knowledge and practices of dengue were analysed by descriptive statistics. Chi – square analysis was used to compare the proportions of those with awareness before and after intervention groups.

Results and Discussion

This study was conducted to find out the effectiveness of health education regarding knowledge and practices regarding breeding sources of Aedes aeygpti mosquitoes in Urban field practice area.

Table. 1. Demographic characteristics, (N: 142)

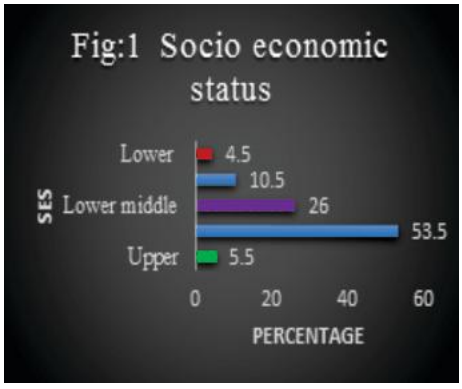
Variables	Frequency (%)
Age groups	
20 to 29	17 (12)
30 to 39	47 (33)
40 to 49	41 (28.8)
50 to 60	37 (26.2)
Sex	
Male	68 (48)
Female	74 (52)
Education	
Graduate and above	23 (16)
Higher Sec. School	42 (29.5)
High school	36 (25.5)
Middle & Primary school Illiterate	28 (20) 13 (9)
Occupation	
Professional / Semi professional	7 (5)
Clerical, Shop owner/farmer	46 (32.3)
Skilled	23 (16)
Semi- skilled	26 (18.3)
Unskilled	19 (13.4)
Unemployed	21 (15)

As given in Table. 1. one third of the respondents were in the age group of 30 to 39 years. Sex distribution was almost equal in the study population. Nearly two third (70%) of them had completed their high school or above education and only ten percent of them were illiterate. Majority of this study population were retail shop owners and clerical workers (30%) by occupation and around 15% of the study participants were unemployed.

Socio economic status

As per figure 1, when socio economic status was measured using Modified Kuppuswamy Scale, most of the study participants belonged to the upper middle or lower middle class. Only a small proportion of the people belonged to the upper and lower classes.

Fig.1.Socio economic status of the study population



Knowledge about breeding places

Knowledge about breeding sources of Aedes aeygpti of the study population are given in Table.2. At baseline, nearly 60 to 75 percent of the people were aware about the breeding places of Aedes mosquito in the study population. The ignorance in the remaining small group of people, will affect the control of breeding sources of Dengue mosquito in the study respondents.

Before health education, nearly two-third of the people had knowledge about coconut shells, plastic water containers, grinding stones and Air Conditioners as the breeding sources and this increased to nearly around 85% after effective health education as given in table.2. In this study, the observed difference between the knowledge about breeding sources between two groups (baseline and post intervention group) were found to be statistically significant (<0.01) similar to previous studies (18).

Table.2 Knowledge about breeding sources of Aedes aeygpti (N: 142)

Breeding Sources	Health education		χ^2	P value
	Before n (%)	After n (%)		
Coconut shells	95 (67.0)	124 (87.32)	16.77	<0.01*
Cement tanks (OHT)	103 (72.54)	125 (88.03)	10.77	<0.01*
Plastic water containers	97 (68.31)	121 (85.21)	11.37	<0.01*
Flower pots	101 (71.13)	118 (83.1)	5.77	0.02
Tyres	107 (75.35)	119 (83.8)	3.11	0.04
Grinding stones	93 (65.49)	113 (79.58)	7.07	<0.01*
A.C. coolers	90 (63.38)	112 (78.87)	8.3	<0.01*
Others	92 (64.79)	110 (77.46)	5.56	0.02

*Statistically significant

This study found that knowledge about OHTs as breeding source of Aedes was increased to around 90 percent from the baseline of 72 percent. A similar research conducted by Pant et al observed that 74.1% had knowledge about the breeding sources after health education (19). Haldar et al conducted a study about community perception of dengue in slums of metropolitan city of West Bengal found that only 39 percent of them had knowledge about breeding sources of Aedes (20).

Practices regarding source reduction

Practices regarding breeding sources of Aedes aegypti in the study population were given in Table.3.

Table: 3. Practices regarding breeding sources reduction (N: 142)

Practices	Health education n (%)		χ2	P value
	Before	After		
Storage of water less than 3 days	102 (71.83)	122 (85.92)	8.45	<0.01*
Proper coverage of water containers	107 (75.35)	126 (88.73)	8.63	<0.01*
Removal of artificial collections of water	96 (67.61)	120 (84.51)	11.13	<0.01*
Removal of bushes around the household	90 (63.38)	102 (71.83)	2.32	0.12

*Statistically significant

Before health education, two third of the people had been practising removal of artificial collections of water and bushes around the household and application of mineral oil in the water collections. Such practices were increased to nearly 80% after health education as given in table.3. This observed difference in source reduction practices between two groups were found to be statistically significant (<0.01), similar to Swaddiwudhipong W et al. study (21). But still small pockets of people had resist to adopt the source reduction practices in the study area.

Veerakumar A M et al found that nearly 90 percent of the people had known about the correct breeding sources for dengue in Pondicherry but only half of them were practising the preventive measures against dengue. They had also suggested that health education can induce people to practice source control measures (22). A similar study identified that nearly three fourth (73%) of the people were aware regarding the Aedes breeding sources but only half them were practising measures such as Checking for breeding sources (15) .

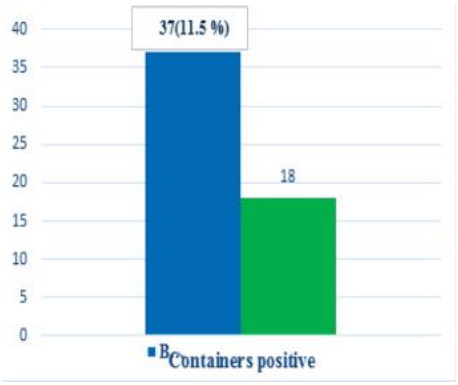


Figure 2: Aedes aegypti indices (containers inspected: 322)

House index had decreased from the baseline of 12.6% to 1.4% and Container index was decreased from 11.5% to 5.5% in the study area after the health education (Fig.2) The observed difference between two groups were found to be statistically significant (< 0.01) in both the Aedes aegypti indices.

CONCLUSION

Health education is an essential tool for the control of diseases such as dengue. It helps people to understand the mechanisms of infection transmission, prevention, and methods of mosquitoes control for health. This study has found that health education to individuals regarding breeding sources of mosquitoes and source reduction measures has an impact in increasing the knowledge and practices of the same.

As per National Vector borne diseases control programme guidelines, the study results also recommend that the health education component needs to be reinforced for effective integrated vector management. Periodic health education especially, during the pre-monsoon period would help. In addition, larval surveillance is also needed as well. This study had a short duration between the health education intervention and assessment of its effectiveness. Hence further follow up studies are required to study the sustained practices of source reduction measures.

REFERENCES

1. WHO, Geneva. Dengue and dengue haemorrhagic fever. Updated on 2024; Available at: http://www.who.int/mediacentre/factsheets/fs117/en/
2. CDC, Centres for Disease Control and Prevention. Dengue fever. Colorado: 2024, Available from: http://www.cdc.gov/ncidod/dvbid/dengue/
3. World Health Organisation, Health Education,2023.Available at: www.who.int / topics/ dengue /en
4. Ahmad T, Khan NA, Rahman MMU, Jadoon MA. A story of the disease free area to high endemic, Bulletin of Environment, Pharmacology and Life Sciences, 2014; 3(2)
5. WHO (2012), Global Strategy for Dengue Prevention and Control, 2012 to 2020
6. WHO (2011) Comprehensive Guidelines for Prevention and Control of Dengue and Dengue Haemorrhagic fever, Revised and expanded edition, regional office of SEAR.
7. Myere RM, Carey DE, Rodrigues FM, Klontz CE. The isolation of dengue type 4 virus from human sera in South India. Indian J Med Res1964; 52: 559 -65
8. Myers RM, Carey DE, De Ranitz CM , Reuben R, Bennet B. Virological investigations of the 1966 outbreak of dengue type 3 virus in Vellore, Southern India. Indian J Med Sea 1969 ; 1392- 401
9. Govt. of India (2024), National Vector Borne Disease Control Programme, Ministry of Health and Family Welfare, New Delhi.
10. Hales S, Maindonald J, Woodward A. Potential effect of population and climate changes on global distribution of dengue fever: an empirical model. Lancet 2002: 360 (9336): 830 [Pubmed]
11. Erlanger TE, Keiser J, Utzinger J. Effect of dengue vector control interventions on entomological parameters in developing countries: a systematic review and meta-analysis. Med Vet Entomology. 2008 September; 22(3):203-21, PubMed
12. Arunachalam N, Tana S, Espino F, Kittayapong P, Abeyewickreme W, Wai KT, Tyagi BK, Kroeger, Sommerfeld J, Petzold M. Eco-bio-social determinants of dengue vector breeding: a multicountry study in urban and periurban Asia. Bulletin. World Health Organisation.2010 March; 88(3):173-84. PubMed
13. Arunachalam N, Tyagi BK, Samuel M, Krishnamoorthi R, Manavalan R, Tewari SC, Ashokkumar V, Kroeger A, Sommerfeld J, Petzold M. Community-based control of Aedes aegypti by adoption of eco-health methods in Chennai City, India. Pathogens and Global Health, 2012.Available at: https://www.ncbi.nlm.nih.gov-articles
14. Castro M, Sánchez L, Pérez D, Carbonell N, Lefèvre P .Vanlerberghe V, Van der Stuyft P. A community empowerment strategy embedded in a routine dengue Vector control programme: a cluster randomised controlled trial. Royal Society of Tropical Medicine and Hygiene. 2012 May; 106 (5):315-21 (Pub Med).
15. Keerti S.Jogdand, Pravin N.Yerpude. The Community Knowledge and Practices regarding dengue fever in an urban slum area of South India. People's Journal of Scientific research, Dec 2012
16. Update of Modified Kuppuswamy scale of the year 2024, Mandal I et.al.Int.J Community Med Public health.2024 Jul: 11(7) : 2945-2946.
17. Guidelines for Prevention and Control of Dengue Fever and Dengue haemorrhagic fever-2024, National Vector borne Disease Control programme, Ministry of Health and Family Welfare, New Delhi.
18. Bota R, Ahmed M, Jamali MS, Aziz A. Knowledge, attitude and perception regarding dengue fever among university students of interior Sindh. Journal of Infection and Public Health, 2014 May- June, 7 (3):218-23 (Pub Med)
19. Pant et al, Health educational intervention is an effective tool for control the dengue disease as current menace. Asian Pac. J. Health Sci., 2014; 1(4): 411-416
20. Haldar A, Gupta UD, Majumdar KK, Las K, Ghosh S, Community perception of Dengue in slum areas Of metropolitan city of West Bengal. Journal of Communicable Diseases. 2008. Sep; 40(3):205-10. PubMed PMID: 19245159. [PubMed].
21. Swaddiwudhipong W et al, A survey of knowledge, attitude and practice of the prevention of