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Original Research Article

A comparative study on knowledge and perception of vector borne diseases among rural and urban population in Tamil Nadu

Roselin V., Srisanthakrishnan V.*

Department of Community Medicine, Sri Muthukumaran Medical College and Research Institute, Tamil Nadu, India

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***Correspondence:**
Dr. Srisanthakrishnan V,
E-mail: drssanthanam.ssk@gmail.com

ABSTRACT

Background: Vector-borne diseases (VBD) remain a major public health challenge, in India. Knowledge about VBD, social, demographic and environmental factors strongly influence the vector transmission and results in major outbreaks. Hence this study was conducted to assess knowledge and practice along with environmental conditions prevailing in both rural and urban areas.
Methods: Cross sectional study was conducted in rural and urban field practice area of Sri Muthukumaran Medical College and Research Institute, Chennai, during June 2018 to December 2018. A total of 472 participants with 236 participants from each urban and rural area were included. Data was collected using proforma and analysis was done using SPSS 16.
Results: Knowledge about VBD like dengue was 63.6% and 76.7% among rural and urban population, respectively. Similarly malaria was known by knows 59.3% and 68.2% of rural and urban participants. Japanese Encephalitis was the least known mosquito borne disease in both the groups. (p=0.0136). Common breeding sites addressed by the rural population were artificial collected water (36.9%) and urban population was dirty water (42.8%).
Conclusions: Knowledge and practice of preventing vector borne disease is still lacking among both rural and urban participants. Spreading knowledge about VBD is a part in effective vector borne disease control which can be achieved by community education alone rather than insecticides and sprays.

Keywords: Vector borne diseases, Rural, Urban, Mosquito

INTRODUCTION

Vector borne diseases is a concern in India, which paves way for lot of health related problems among mankind and also leads to loss for the nation due to high prevalence of mortality and morbidity. Malaria and Dengue is two common mosquitoes borne disease in India, which affects millions of people and peak mainly during rainy season.

According to World Health Organization (WHO), 80% of the World's population is at risk of vector borne diseases. Vector-borne diseases account for more than 17% of all infectious diseases, causing more than 700 000 deaths annually.[1] Mosquito borne diseases are major public health issue in India and South East Asia. Dengue fever, Japanese encephalitis and malaria occur in epidemic proportions almost every year with considerable morbidity and mortality.[2]

Social, demographic and environmental factors strongly influence transmission patterns of vector-borne pathogens, with major outbreaks of dengue, malaria, chikungunya, yellow fever and Zika virus disease since 2014.*Global vector control response (GVCR) 2017–2030* approved by the World Health Assembly (2017) provides strategic guidance to countries and development partners for urgent strengthening of vector control as a fundamental approach to preventing disease and

responding to outbreaks.[3] To achieve this proper vector control programme is required, supported by strengthened monitoring and surveillance system and greater community participation.

The problems in rural and urban areas are different, which requires different kind of approaches. The problem in rural population is most of the times environmental sanitation and education, whereas in urban population access to houses and overhead tanks by the health workers pose a challenge.

National and International level actions are being done to reduce the burden of vector borne diseases. National Vector Borne Disease Control Programme (NVBDCP) initiated integrated approach to combat vector borne disease in the population. Information Education Communication (IEC) activities were one of the approaches to improve the awareness of the people regarding VBDs.

Inspite of the Government initiatives the knowledge gained by the community people is a big question. Community participation is a biggest strength to be achieved for the success of any kind of programme.

For effective prevention strategies, it is pertinent to study the existing knowledge of the population regarding the disease. Thus, the present study was undertaken with the objective to study the knowledge and perception about the vector borne diseases in both rural and urban areas.

Objectives

To assess the knowledge and perception of vector borne diseases along with environmental condition prevailing among Rural and Urban population covered by the field practice area of Sri Muthukumaran Medical College and Research Institute, Chennai.

METHODS

This study was done as a cross sectional- comparative study to assess the knowledge and perception about vector borne diseases in the rural and urban field practice area of Sri Muthukumaran Medical College and Research Institute, Chennai. The study was conducted during June 2018 to December 2018. Males and Females above 18 years of age, who is a local resident of the area for atleast 6 months and who has consented for the study were included in the study and morbidly sick people and persons not available during the three consecutive visits were excluded from this study.

Based on review of literature, knowledge regarding vector borne diseases among rural population was found to be 62%.[4] The minimum sample size for the study was calculated to be 236. Houses were selected through systematic random sampling method; participants were selected by simple random sampling method. Two hundred and thirty six houses with one participant from each house in rural and urban field practice area were selected and the total sample size for the study is 472.

Institutional ethics committee approval was obtained and written informed consent has been obtained from the participants and the study was conducted using a questionnaire, covering knowledge and perception aspects of vector borne diseases as one-to-one interview schedule. Also the participants and their family members were educated regarding mosquito borne diseases and measures to protect themselves from vector borne diseases.

Statistical analysis

Data entry and analysis was done using statistical package for social sciences (SPSS) 16 version software. Following a descriptive analyses and chi square test was computed to find out the association between risk factors and knowledge regarding vector borne diseases. A p-value of <0.05 was considered to be statistically significant.

RESULTS

Among the 472 study participants from the rural and urban most of them 132 (28%) were in the age group of 41-50 years. In the age group of 31-40 years there were 106 participants (22.5%) and 87 (18.4%) were 51-60 years, 78 (16.5%) were in age group of 21-30 years 51 (10.8%) are 61 years and above and 18(3.8%) participants were less than 21 years (Figure 1). In this study 52.5% participants were females and 47.5% were males.

In this study, 29.2% of the rural participants and 34.7% of the urban participants have completed up to high school. There were 16.1% and 7.6% illiterates in rural and urban population respectively. The p value indicates educational status in rural and urban area was statistically significant. Among rural participants 17.8% were unemployed and 15.7% were unemployed in urban area. In our study most of the participants belong to socio economic class II and III.

Occupation, socio economic status and housing between rural and urban area was statistically significant in our study. Drainage system was available in 72.5% and 58.1% of the urban and rural participant houses respectively. 32.6% of the rural and 8.9% urban participants had cattle in their house. Water stagnation was present in most of the rural (81.4%) and urban (64.8%) areas. In most of the houses mosquitoes were the common vector in both rural (93.2%) and urban (95.8%), followed by houseflies. The difference was statistically significant with p value 0.0097 (Table 1).

Regarding mosquito borne diseases 63.6% of the rural population and 76.7% of the urban population knows

about dengue fever, malaria was known to 59.3% of the rural participants and 68.2% of the urban population. Japanese Encephalitis was the least known mosquito borne disease among the rural and urban people, with significant p value <0.05.

The common breeding sites addressed by the rural population were artificial collected water (36.9%) and urban population was dirty water (42.8%). Mosquito breeding sites in rural and urban was highly statistically significant.

Table 1: Socio demographic and environmental characteristics of the study participants.

Characteristics	Rural (%)	Urban (%)	Total (%)	P value
Education				
Illiterate	38 (16.1)	18 (7.6)	56 (11.9)	0.001*
Primary school	31 (13.1)	20 (8.5)	51 (10.8)	
Middle school	25 (10.6)	32 (13.6)	57 (12.1)	
High school	69 (29.2)	82 (34.7)	151 (32)	
HSC and diploma	42 (17.8)	63 (26.7)	105 (22.2)	
Graduates	24 (10.2)	10 (4.2)	34 (7.2)	
Post graduates	7 (3)	11 (4.7)	18 (3.8)	
Occupation				
Unemployed	42 (17.8)	37 (15.7)	79 (16.7)	0.005*
Unskilled	7 (3)	7 (3)	14 (3)	
Semi skilled	106 (44.9)	86 (36.4)	192 (40.7)	
Skilled	48 (20.3)	77 (32.6)	125 (26.5)	
Shop owner/clerk/farmer	15 (6.4)	3 (1.3)	18 (3.8)	
Semi professional	12 (5.1)	16 (6.8)	28 (5.9)	
Professional	6 (2.5)	10 (4.2)	16 (3.4)	
Socio economic class[5]				
Class I	9 (3.8)	16 (6.8)	25 (5.3)	0.0031*
Class II	100 (42.4)	122 (51.7)	222 (47)	
Class III	97 (41.1)	89 (37.7)	186 (39.4)	
Class IV	25 (10.6)	8 (3.4)	33 (7)	
Class V	5 (2.1)	1 (0.4)	6 (1.3)	
Type of family				
Nuclear family	167 (70.8)	182 (77.1)	349 (73.9)	0.1157
Joint family	69 (29.2)	54 (22.9)	123(26.1)	
Housing type				
Pucca	71 (30.1)	103 (43.6)	174 (36.9)	0.000*
Semi pucca	107 (45.3)	108 (45)	215 (45.6)	
Kutcha	58 (24.6)	25 (10.6)	83 (17.6)	
Common vectors present in house[#]				
Mosquitoes	220(93.2)	226(95.8)	446 (94.5)	0.0097*
Housefly	130(55.1)	99(41.9)	229 (48.5)	
Tick	14(5.9)	26(11)	40 (8.5)	
Mite	2(0.8)	8(3.4)	10 (21)	

*Significant; [#] Multiple response.

The proportions of participants suffered from various vector borne diseases, in this study were shown in figure 2. In this current study there was no significance for knowledge about signs and symptoms of mosquito borne diseases between rural and urban population. In rural area among the participants interviewed for mosquito borne disease in the family members 68.6% of them were not aware, 10.6% had dengue, 10.2% had malaria in the family, 8.5% gave history of chikungunya and 2.1% of the family members have suffered Japanese Encephalitis. Likewise in urban 72.9% of the study participants did not know whether their family members ever suffered mosquito borne diseases, 10.6% gave history of dengue, 7.2%, 5.5% and 3.8% had malaria, chikungunya and Japanese encephalitis respectively (Table 2).

Regarding knowledge about vector control measures 44.5% and 30.9% knows about environmental cleanliness and 36.4% and 55.1% about chemical insecticides in rural and urban respectively. The common method of water storage was in overhead tanks both in urban and rural areas. Both in rural (27.5%) and urban (21.6%) areas mosquito repellant coils are the commonly used protective measures. In rural houses 76.7% of the

participants cover the drinking water containers and in urban 81.8% cover the dirking water containers (Table 3).

In this current study 35.2% of the rural population and 39.8% of the urban population perceive that mosquito control is the responsibility of self and the government. 56.8% of the rural population and 42.4% of the urban population said some measures were taken by the government in their area to control mosquitoes (Table 4).

Regarding the information about vector borne diseases, 71.6% and 61.9% of the rural and urban population, respectively gained information from television, the next source of information was from friends in 20.8 % rural and 20.3% urban participants. Newspaper was the source of information in 32.6% of urban participants compared to 16.5% in rural and 10.6% of the participants gained information from health workers in rural area and 8.1% in urban area.

Table 2: Knowledge regarding mosquito borne diseases.

Variables	Rural (%)	Urban (%)	Total (%)	P value
Mosquito borne diseases[#]				
Malaria	140 (59.3)	161 (68.2)	301 (63.8)	
Dengue	150 (63.6)	181 76.7)	331 (70.1)	
Chikungunya	44 (18.6)	86 (36.4)	130 (27.5)	0.0136*
Japanese encephalitis	2 (0.8)	11 (4.7)	13 (2.8)	
Mosquito breeding sites[#]				
Artificial water collection	87 (36.9)	31 (13.1)	118 (25)	
Dirty water	71 (30.1)	101 (42.8)	172 (36.4)	
Plants	35 (14.8)	24 (10.1)	59 (40.1)	
Cattle shed	16 (6.8)	14 (5.9)	30 (6.4)	0.000*
Clean water	19 (8.1)	25 (10.6)	44 (9.3)	
Don't know	18 (7.6)	14 (5.9)	32 (6.8)	
Mosquito biting time				
Night	123 (52.1)	149 (63.1)	272 (57.6)	
Day	22 (9.3)	13 5.5)	35 (7.4)	0.0377*
Both	91 (38.6)	74 (31.4)	165 35)	
Mosquito borne disease signs and symptoms[#]				
Fever	175 (74.1)	198 (83.9)	373 (79)	
Headache	40 (16.9)	54 (22.9)	94 (19.9)	
Body aches	38 (16.1)	29 (12.3)	67 (14.2)	0.3009
Don't know	36 (15.3)	34 (14.4)	70 (14.8)	

*Significant; [#] Multiple response.

Table 3: Proportion of participants practicing different preventive measures for mosquito control.

Preventive measures	Rural	Urban	Total
Personal protective measures			
Mosquitoes repellant coils	65 (27.5)	51 (21.6)	116 (24.6)
Bed nets	15 (6.4)	6 (2.5)	21 (4.4)
Full sleeve dress	14 (5.9)	15 (6.4)	29 (6.1)
Repellant creams	27 (11.4)	24 (10.2)	51 (10.8)
Insecticidal spray	2 (0.8)	19 (8.1)	21 (4.4)
Liquid repellants	55 (23.3)	41 (17.4)	96 (20.3)
Electrical baits	21 (8.9)	15 (6.4)	36 (7.6)
Multiple methods	23 (9.7)	62 (26.3)	85 (18)
Not using any method	14 (5.9)	3 (1.3)	17 (3.6)
Water storage[#]			
Over head tanks	95 (40.3)	116 (49.2)	211 44.7)
Plastic containers	81 (34.3)	61 (25.8)	142 (30.1)
Tanks	51 (21.6)	37 (15.7)	88 (18.6)
Practicing multiple storage methods	9 (3.8)	22 (9.3)	31 (6.6)
Covering the stored water	181 (76.7)	193 (81.8)	374 (79.2)

[#] Multiple response.

Table 4: Participants perception about responsibilities in control of mosquito borne diseases.

Variables	Rural (%)	Urban (%)	Total (%)
Responsibility in controlling mosquito borne diseases			
Our self	74 (31.4)	75 (31.8)	149 (31.6)
Government	56 (23.7)	47 (19.9)	103 (21.8)
Both	83 (35.2)	94 (39.8)	177 (37.5)
Don't know	23 (9.7)	20 (8.5)	43 (9.1)
Government measures taken			
Yes	134 (56.8)	100 (42.4)	234 (49.6)
No	79 (33.5)	114 (48.3)	193 (40.9)
Don't know	23 (9.7)	22 (9.3)	45 (9.5)

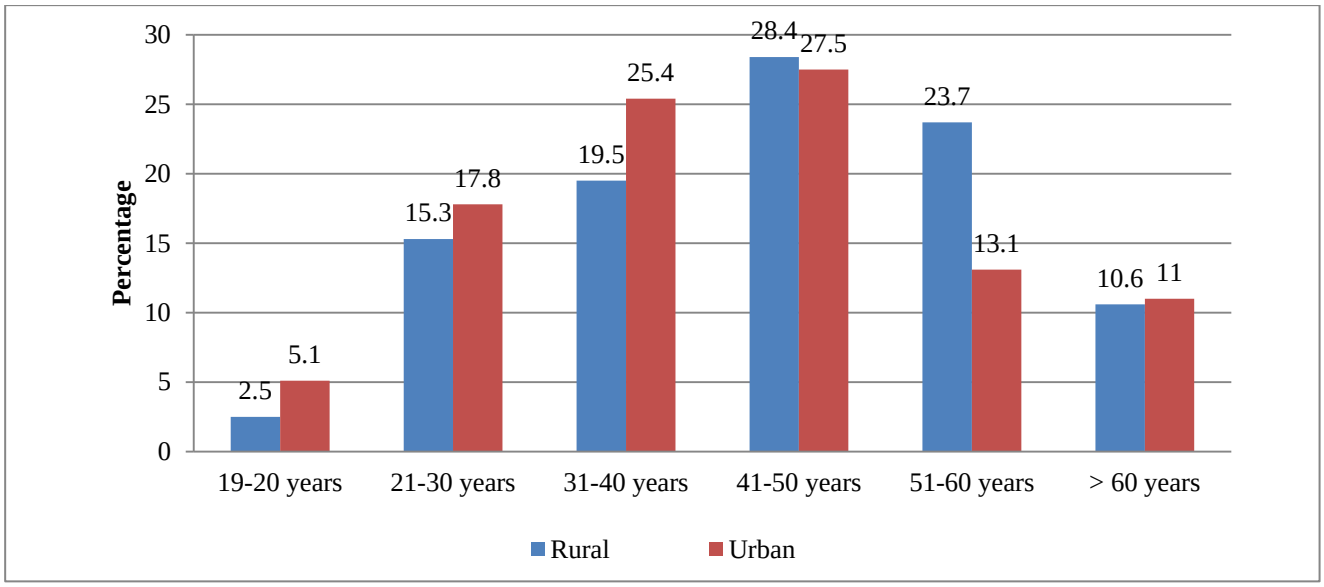

Figure 1: Age group of the study participants.

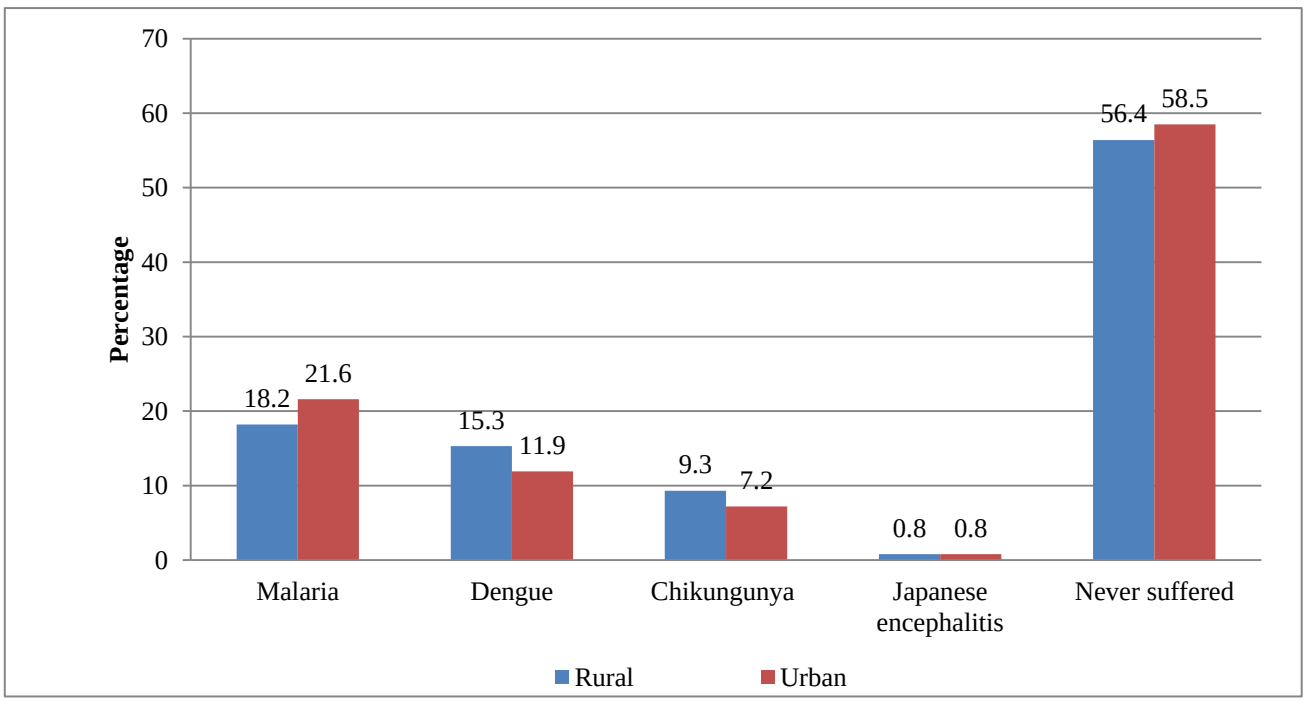

Figure 2: Proportion of participants suffered from various vector borne diseases.

DISCUSSION

The present study was done to find out knowledge and perception regarding vector borne diseases among rural and urban population. In our study out of 472 participants 59.3% and 62.8% of the rural and urban participants were aware about malaria. A study done in South India found 90.7% participants know about malaria.[6] Awareness about malaria varies from 51% to 91% in other studies.[7-10]

In a study done in Rajkot, India, 30.4% respondents did not know about breeding sites of mosquitoes which was poorer than the findings in our study were only 2.5% from both rural and urban area are not aware of breeding sites.[11]

The common personal protective measure followed by the rural population in this study was mosquito coils whereas in urban area it was multiple methods commonly liquid repellants which was similar to studies done in Delhi (60%) and Rajkot (61.4%) respectively.[4,11] Rural population finds coils as economical. The reason for not using bed nets was found to be fear of suffocation and maintenance from the study participants.[6]

In our study most of the urban and rural population have no much knowledge about various mosquito breeding sites, disease symptoms were also found to be less known to the people specifically headache, retro- orbital pain body ache were not known as one of the signs and symptoms of the killing disease dengue. Even though there was significant difference in education and occupation of the participants between rural and urban area, knowledge regarding signs and symptoms of mosquito borne diseases was not greatly different between rural and urban people.

Less awareness is the main reason for the ignorance of the disease and less care was taken by the patients and family members even if they suffer disease. Even though in this study participants have awareness regarding personal protective measures people were found to be not practicing the personal protective measures effectively.

A study conducted by Sahoo et al concluded in their study, most of the study population have knowledge about malaria and filariasis compared to other mosquito borne diseases and found community participation needs to be addressed for effective mosquito control.[12]

VBDs form a major part of the communicable diseases in India. Ignorance and impoverished conditions of people regarding tropical diseases contribute in higher morbidity and mortality. Urban slums are more vulnerable to vector borne diseases because of poor environmental condition, standard of living and poverty.

In this study most of the study population has little knowledge about breeding sites and many of them find mosquito control is the responsibility of government alone. People attitude must be changed in order to achieve the diseases under control.

This study throws light on the awareness level of the people regarding other vector borne diseases. Most of them were not aware about Japanese Encephalitis, information regarding breeding sites and control measures. The knowledge should be conveyed to community in innovative and efficient ways, to improve awareness of the community and behaviour change communication can play a better way to change the local people attitude towards water stagnation, water storage and other protective measures. The practice of over the counter drugs, self medication also a reason for higher mortality. Most of the malaria and dengue cases were under diagnosed and treated like other fever conditions.

Climate change has also played an important part in the establishment of the mosquito; raise the risk of mosquito-borne diseases surge and outbreaks. Therefore, targeted health education concerning mosquito and mosquito-borne diseases are also necessary to improve local resident's awareness and self-protection.[13]

A study conducted by Sharma et al found Geographical variations also influenced knowledge about malaria.[14] It may be inferred that improvement in knowledge, attitude and practices related to malaria may be attained only after looking at its predictors at micro level. In Manipur, Singh et al found that rural tribal residents had relatively inferior level of knowledge compared to their urban counterparts.[15]

Most vector-borne diseases can be prevented by vector control, if it is implemented well. For reducing the burden of vector-borne diseases, vector control has not yet been used to its full potential or had maximal impact. This situation can be reversed by realigning programmes to optimize the delivery of interventions that are tailored to the local context.[3] Targeting the vectors that transmit disease-causing pathogens is an effective preventive approach against most important vector-borne diseases.

Interventions that reduce human– vector contact and vector survival can suppress and even halt transmission. This requires major support from the government and strong commitment of the general people which together can halt the vector that causes diseases. Behaviour change communication in controlling vectors will make the change expected.

CONCLUSION

The knowledge and practice of preventing vector borne disease is still lacking among both rural and urban participants. Vector borne disease knowledge is a part in effective vector borne disease control which can be achieved by community education alone rather than insecticides and sprays. Every individual holds the

responsibility in controlling mosquito's inorder to prevent the disease. By improving the awareness and the attitude regarding mosquito control most of the morbidity can be reduced which occurs due to malaria and dengue.

People who are living in endemic areas should be informed well through mass media and other measures to prevent mosquito breeding sites during rainy seasons and other precautionary measures well in advance. With the intensified efforts from the public and the Government sector the challenges of vector borne diseases can be met.

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