



Awareness about Mosquito Borne Diseases and Practice about Preventive Methods Against Mosquito Bite in Rural Field Practice Area of a Tertiary Care Teaching Institute, Telangana State

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Abstract

Background: Mosquitoes can transmit various diseases like Malaria, Filariasis, Japanese Encephalitis, Dengue and Chikungunya. Awareness about the risk of mosquito bite and source reduction can prevent the transmission of these diseases. The present study was undertaken to assess the awareness of rural population about mosquito borne diseases and preventive methods against mosquito bite and the personal protective measures taken by them.

Methodology: A cross-sectional study was conducted in the rural field practice area of a tertiary care teaching institute in Medchal- Malkajgiri district of Telangana state during March 2015- May 2015. A predesigned pre tested questionnaire was used for data collection from 270 participants. Data was entered into MS Excel sheet & analyzed by using SPSS version 16.

Results: Among the 270 participants, 88.89% knew that mosquitoes could transmit serious diseases. 67.4% participants had heard about malaria. 9.25% of the participants could not name a mosquito borne disease. 28.89% participants did not know the breeding sites of mosquito. 69.63% participants used one or the other personal protective measures (PPM). The most common method of PPM used was mosquito coils (28.72%).

Conclusion: The present study shows that though most of the respondents could identify that mosquitoes transmit serious diseases, there is a gap in the knowledge regarding the diseases transmitted by the mosquitoes & their breeding sites. Their knowledge about insecticide treated bed nets is very poor. There is a need to educate the rural population about mosquito breeding sites and source reduction to prevent mosquito borne diseases.

Keywords: Mosquito borne diseases, awareness, personal protective measures, rural area.

Introduction

Mosquitoes are one of the deadliest animals in the world. Their ability to carry and spread disease to humans causes millions of deaths every year¹.

Malaria, Filariasis, Japanese Encephalitis, Dengue and Chikungunya are transmitted by mosquitoes. The transmission of vector borne diseases depends on prevalence of infective vectors and human- vector contact. Climate, sleeping habits of human, density and biting of vectors influence the human- vector contact².

As per the World Malaria Report 2015, India accounts for 70% of the total malaria Incidence in the South-East Asia Region. Data from 2014 shows the incidence of malaria is 0.89 per 1000 population at risk per year with 1.1 million cases and 562 deaths in population of nearly 1.25 billion. The population at risk in Telangana state is 34 324 thousand and with total positive cases being 5189 and total Pf cases being 4602 in 2014, Telangana state needs to have special mention in malaria elimination planning³.

The incidence of vector borne diseases viz. Malaria, Filariasis, Kala-azar, Acute Encephalitis Syndrome (AES) including Japanese Encephalitis (JE), Dengue and Chikungunya is linked with economic and social development of the community. There are various factors which govern the transmission of the diseases⁴.

Vectors play a very crucial role in the transmission of mosquito borne diseases and protective measures serve as one of the best strategies for prevention of these diseases. A wide variety of personal protective measures like mosquito nets, screening, repellents, vaporizers and anti mosquito coils serve this purpose. Insecticide Treated Nets (ITN) had been introduced by the Government under National Vector Borne Disease Control Programme⁵.

In this current scenario of increasing threat from the mosquito borne diseases, the people at risk must know the preventive measures from the mosquito bite and should implement them correctly⁶.

Community participation coupled with proper awareness about the risk factors and preventive

measures of the disease play a crucial role in the containment of the disease⁷.

The vector biology and behaviour was known extensively yet the behaviour of the host is not studied upon much. Without taking community attitudes and beliefs about malaria and other mosquito borne diseases into account, the programs cannot achieve sustainable control of these diseases⁸.

In different studies^{5,6,9,10,11,14} conducted across India other than Telangana state, the awareness about malaria was known to be 51% to 91% and the awareness of other diseases was mere 8.8% to 39% in the other studies^{5,9,11,14}.

Extensive search on Pubmed and other search engines have shown no data on the awareness of rural population about the risk of mosquito bite in Telangana state and particularly in Medchal- Malkajgiri district of the state.

In this backdrop, the present study was undertaken to assess the awareness and practices about preventive methods of mosquito bite in the rural population in the rural field practice area of the department of community medicine in a tertiary care teaching institute in Telangana state.

Methods

The community based cross sectional study was conducted in the rural field practice area of the department of community medicine, in a tertiary care teaching institute, Medchal- Malkajgiri district Telangana state during March 2015- May 2015.

Sample size: Sample size was calculated as 246 using the level of knowledge regarding mosquito borne diseases as 62% as reported in previous study⁹ (Taking 62% of people in the households as having good knowledge regarding vector borne diseases (p), the sample size was calculated using the formula $Z=4pq/d^2$ (where $p=62\%$, $q=100-p$ and $d=$ allowable error of 10% of p) and considering 10% non-response rate, the total sample size obtained was 270.

Study Population: The Rural Field Practice Area of the institute includes 10 villages and 3 hamlets, under Shamirpet mandal, Medchal- Malkajgiri

district. For good representation of the study, it was decided to consider all 10 villages and 3 hamlets for collecting Sample. Total population of villages and hamlets was 25869 based on census 2011. The total sample (270) was divided by probability proportion to size (PPS) in which the village with more population required more sample and village/hamlet with less population required fewer samples.

In the Village or Hamlet, required total sample was collected by using simple random sampling with random number.

The selected houses were visited, any one person in the household above the age of 18 years, giving consent, was randomly selected and interviewed. If the household was locked or the eligible persons were unavailable, the immediate next house was chosen for the study.

Inclusion criteria: Individuals of both sexes above 18 years of age were included.

Exclusion criteria: Those who are not willing to participate and who are not able to produce appropriate information were excluded from the study.

Data collection was carried out by interview method by using a predesigned and pre tested questionnaire which included the questions on knowledge on mosquito bite and practices on personal protective measures.

The data was entered in MS Excel sheet and analyzed using Statistical Package for the Social Sciences statistical software version 16. Results were interpreted as frequencies and percentages. Chi square test was used wherever applicable and a p value <0.05 was taken as significant.

Results

270 houses were visited for this study. There were 148 females and 122 males who were interviewed for the study. Majority of participants were females 148 (54.82%), in the age group of 40-49 (24.44%), literates 152 (56.3%), working class (63.7%) and middle socio- economic class according to Modified BG Prasad classification (24.44%) (Table 1).

Knowledge regarding MBDs:

Majority of the participants had heard about MBDs such as Malaria 182 (67.4%), Dengue 66 (24.44%), Chikungunya 33 (12.22%), Filariasis 40 (14.81%) and there were only 9.25% of the participants who had no knowledge about MBDs. A question was asked regarding the breeding places of mosquitoes. 28.89% participants did not know breeding sites of mosquitoes. 59.62% responded drains or polluted water and 15.56% of people associated clean water collections with mosquito breeding. Majority of the participants (67.4%) opined the MBDs will be high during and immediately after monsoon season (Table 2).

Practices and pattern of usage of Personal Protective Measures (PPM):

Majority of the respondents, 188 (69.63%) were using one or the other personal protective measures. The most common method of personal protective measure used was mosquito coils (28.72%) followed by liquid repellents (26.06%). Majority of the respondents (76.6%) use PPMs only during night time (Table 3).

The participants were asked about the source of their information. Majority of the participants (41.48%) gathered knowledge about mosquito borne diseases from friends or neighbours. (Table 4)

In the past one year, malaria cases were reported in 9 houses. Of the 9 cases, 7 were males, 5 (majority) were from the age group of 30-39 and 6 from low socio-economic status. There were no fatal outcomes. 5 patients received treatment from private clinics while 4 patients got treatment from Government hospitals.

The association of educational status of the respondents with the awareness about the role of mosquitoes in transmitting the serious diseases was tested by using chi-square test which came significant with $p < 0.05$. ($X^2 = 5.285$; $p = 0.021$) (Table 5).

The usage of PPMs was significantly associated with the socioeconomic status of the family ($X^2 = 23.903$; $p = 0.000$) (Table 6).

Table 1: Sociodemographic distribution of the participants:

Characteristics	Frequency	Percentage (%)
Age group (Years)		
18-29	45	16.66
30-39	61	22.59
40-49	66	24.44
50-59	46	17.03
60 and above	52	19.26
Gender		
Male	122	45.18
Female	148	54.82
Marital status		
Married	32	11.82
Unmarried	220	81.48
Widow	18	6.7
Educational status		
Illiterates	118	43.7
Primary school	40	14.81
Middle school	33	12.23
High school	36	13.33
Intermediate	27	10
Graduate	16	5.93
Occupation		
Working	172	63.7
Not Working	98	36.3
Socio-economic status		
Upper	49	18.15
Upper middle	60	22.22
Middle	66	24.44
Lower middle	43	15.93
Lower	52	19.26

Table 2: Knowledge regarding MBDs:

	Frequency	Percentage (%)
Name the mosquito borne diseases you heard of		
Malaria	182	67.4
Dengue	66	24.44
Filariasis	40	14.81
Chikungunya	33	12.22
Japanese Encephalitis	8	2.96
Didn't know/ Incorrect	25	9.25%
Name the mosquito breeding places?		
Drains/ Polluted water	161	59.62
Clean water collections	42	15.56
Didn't know/ Incorrect	78	28.89
MBDs maximally occur in which season?		
Correct answer (During monsoons or immediately after monsoons)	182	67.4
Incorrect answer	88	32.6
What is the recommendation for draining water and cleaning water storage tanks?		
Correct answer (One week)	31	11.48
Incorrect answer	239	88.52

Table 3: Practices and pattern of usage of PPMs:

	Frequency	Percentage (%)
PPMs being used by the families		
Mosquito coils	54	28.72
Liquid repellents	49	26.06
Untreated bed nets	36	19.14
Repellent creams	25	13.3
Electric rackets	15	7.98
Burning natural substances, Neem leaves	9	4.79
Time of usage of PPMs		
Night time	144	76.6
Throughout 24 hours	44	23.4

Table 4: Source of knowledge:

Response	Frequency	Percentage
Experience/ Observation	67	24.81
Friends/ Neighbours	112	41.48
Television/ News papers	61	22.59
Healthcare workers	28	10.37
School/ College	49	18.15

Table 5: Association between educational status of the participants and the knowledge about mosquitoes as the vectors of serious diseases:

Whether mosquitoes transmit the serious diseases?	Yes	No
Literates	99	19
Illiterates	141	11
$X^2 = 5.285; p = 0.021$		

Table 6: Association between usage of socio-economic status according to Modified BG Prasad classification and personal protective measures:

Socio economic status	Yes	No
Upper class	47	2
Upper middle class	42	18
Middle class	41	25
Lower middle class	30	13
Lower class	28	24
$X^2 = 23.903; p = 0.000$		

Discussion

The present community based observational study assessed the knowledge and practices regarding MBDs and their prevention in a rural area in the field practice area of a tertiary care teaching institute, Ghanpur, Medchal- Malkajgiri District, Telangana. Out of 270 participants, 54.82% were females and 45.18% were males which was similar to a study by Sheraz Jamal Khan et al⁸ in Peshawar, Pakistan. This can be attributed to the fact that

majority of the women stayed at home as compared to men. The study revealed that knowledge regarding MBDs like malaria (67.4%) was good in the study participants. But Dengue was named by 24.44% and Chikungunya was by only 12.22%. The findings are in consistent with that found in a study by Pandit N⁵ et al in Gujarat in 2010 where 71% of study population had knowledge that mosquito bite was the cause of malaria but only 39% of the population knew that dengue, chikungunya and kala-azar were transmitted by mosquito. The present study finding about knowledge of the population on Dengue (24.44%) is similar to a study done by Boratne et al⁶ in 2010 in peri-urban areas of Puducherry, where the knowledge about dengue was 19%. A study in Rajkot⁹ in 2011 also revealed similar knowledge about MBDs with only 62% being aware of malaria. The diseases other than Malaria are also important in causing morbidity and mortality of the people at risk and the study throws light on intensified IEC activities regarding Mosquito borne diseases apart from Malaria. In the present study 240 participants (88.89%) were aware that mosquitoes transmit serious diseases. This finding correlates with a study by Nitin J et al¹⁰ in Mangalore, Karnataka where 90.7% participants knew that mosquitoes transmit diseases. This awareness about the risk of mosquito bite can bring about behavioural changes in the risk population.

Regarding awareness on mosquito breeding places, 30.4% participants did not know about where mosquitoes lay eggs in a study done in Rajkot⁹. The present study yielded similar findings where 28.89% participants could not name the breeding sites of mosquitoes. In a study done in Guntur¹¹, only 8.5% people were unaware of the mosquito breeding places. This could be because of the fact that effective IEC activities would have helped in imparting knowledge about the commonest breeding sites of mosquitoes in the community.

Majority of the participants (69.63%) in this study used at least one of the personal protective measures against mosquito bite which was similar to a study¹⁴ by Snehalatha et al done in Pondicherry

where 73% of rural participants used one of the PPMs.

The commonest preventive measure in this study was use of mosquito coils (28.72%) which was similar to findings in several other studies^{13,14}. But in a study¹⁵ done in Jamnagar, majority of the participants (55.8%) used mats. In other studies, done in Delhi¹ (60%), Rajkot⁸ (61.4%) and Mangalore⁹ (64.7%), liquid repellents were the most preferred protective measure against mosquito bite. Thus it is evident that the choice of personal protective measures varies from place to place throughout India.

In this study, the use of repellent creams as protective measure against mosquito bites was very less (13.3%) which was similar to studies done in Guntur, India¹¹ (15.85%) and in Virginia, USA¹⁶ (17.5%).

Only 19.14% were using bed nets in the present study while none of them used insecticide treated bed nets. There was lack of awareness about insecticide treated bed nets in the participants. Similar findings were reported by Babu B V¹² et al and Ziba C¹⁷ et al.

Majority of the participants (41.48%) gathered knowledge about MBDs from their friends or neighbours and similar findings were reported by a study¹⁸ by K. Ravi Kumar et al done in Karnataka state where source of knowledge of the participants was mostly from neighbours (34.1%) followed by experience or observation (28.2%).

Conclusion

The awareness about the risk of mosquito bite was satisfactory but some myths were still observed in the rural population about the breeding sites of mosquitoes. There is a need to intensify the IEC activities regarding mosquito borne diseases other than malaria especially Dengue, Chikungunya and Japanese Encephalitis. The mass media campaign through television and radio to create awareness on the importance of weekly draining of water and cleaning of water storage tanks can be more beneficial to prevent the transmission of mosquito borne diseases. Healthcare workers, community

volunteers and self help group members can be instrumental in creating awareness about source reduction. Insecticide treated bed nets is an effective preventive measure to combat the dreadly diseases transmitted by mosquito and they can be supplied through social marketing system. The present study threw light on the importance of Government healthcare facilities in dissipating the information in the community so as to prevent and control mosquito borne diseases.

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