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Awareness about Malaria Transmission and Its Preventive Measures among Households in an Urban Area of Mandya, Karnataka

Shashikantha SK[1], Sheethal MP[1]

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Author's Affiliation:
[1]Asst Professor, Department of Community Medicine, Adichunchanagiri Institute of Medical Sciences, B G Nagara- 571448, Mandya dist. Karnatak

Correspondence
shashikanth S K
shashikanth.85@gmail.com

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ABSTRACT

Introduction: Community perception, beliefs and attitude about malaria control can influence the national malaria control program implementation. This study was conducted to assess the awareness of malaria transmission and its prevention among urban community dwellers.

Materials and methods: This was a cross sectional study involving 280 households selected randomly. A structured interview schedule included demographic characteristics, adult residents' attitudes and understanding of malaria transmission, perceptions of cause, preventive measures and practices.

Results: More than half (64 %) of the subjects mentioned that malaria is transmitted by the bite of mosquitoes. Only one third (33%) of them could tell that mosquito rests even in dirty and stagnant water. Only 60 % of the total subjects in the study knew one or the other ways of avoiding mosquitoes and 40 percent of the subjects were using it.

Conclusion: Our study found low awareness about malaria transmission among the subjects. The overall practice of one or the other preventive measure was also low.

Key words: Malaria, mosquito bite, insecticide treated nets

INTRODUCTION

Vector borne diseases accounts for 17% of estimated global burden of all infectious diseases.[1] Even in the era of epidemiological transition, malaria still continues to be a major public health problem in south east Asian region and India alone contributes to upto 76% of malaria cases occurring in south east Asian region.[2]

In India, ninety five percent of the country's population is residing in malaria-endemic areas even today and around 17 million episodes of illness and 26,000 deaths in India in 2013 was due to Malaria.[3]Although malaria cases were most commonly seen in rural area, the surge of cases in urban area began during 1970s due to rapid urbanisation, immigration, increase in urban slums and construction.[4,5,6]

To combat this national malaria control programme was started during 1953 which led to the control of the disease. However resurgence of malaria was seen in 1970, and even now NVBDCP is implemented to prevent and control vector borne diseases including malaria.[7] One salient feature about malaria is that it has roots deep within human communities.[8]Community perception, beliefs and attitude about malaria control can influence the program implementation.[9] To have a sustainable program the key factor is acceptanceof the program by the community. Hence the present study was planned to determine their baseline knowledge, attitude and practice about malaria, as

prevention of such vector borne disease needs source reduction, environmental modification and following personal protective measures and creating awareness regarding the same plays a major role in prevention of disease.

MATERIALS AND METHODS

Study area: The study consisted of participants from an urban community in the district Mandya, which is a field practice area attached to a Medical College. The study area had a population of 62000 as per the registers in that centre.

Study design: The study was cross-sectional type, whichincluded structured interview schedule administered by the investigator himself. The questionnaire included demographic characteristics, adult residents' attitudes and understanding of malaria transmission, perceptions of cause, preventive measures and practices.

A total of 280 households were included in the study within the time period of 2 months from the start of the study. (The Sample size was calculated as 245 using the level of knowledge regarding Mosquito Borne Diseases as 62% as reported in previous study, with allowable error10% of p in formula $4pq/l^2$.[6] Final sample size was takenas 280 to improve the precision further). The households were selected using simple random sampling method from the list of households.The head of household or a responsible adult was interviewed. Only one person per household was interviewed. Informed consent was obtained from all the participants prior to data collection. Ethics committee clearance was obtained prior to the start of the study. Data collected were entered into Microsoft Access database and descriptively analysed using suitable statistical tests.

RESULTS

A total of 280 households were included in the study. The mean age of the respondents included in the study was 38.60 (± 13.70) years ranging from 18 to 79 years. Forty eight percent of respondents were females. Nearly two third of the participants had got formal education and 56 percent of them had a job with regular source of income.Eighty percent of the respondents felt that mosquitoes were nuisance to them as they bite and cause itching and 40% identified the noise that mosquitoes make as being a nuisance.

More than half (64 %) of the subjects mentioned that malaria is transmitted by the bite of mosquitoes.(Table1) Forty percent of them could tell the interviewer that diseases like dengue as well as chikungunya are a result of mosquito bites. Sixty percent of the subjects who had heard about malaria mentioned that dark places inside the house is the place where mosquito rests. Only one-third (33%) of them could tell that mosquito rests even in dirty and stagnant water. Only 60 % of the total subjects in the study knew one or the other ways ofavoiding mosquitoes like the use of bed nets, insecticide aerosols, repellents, mosquito bats, elimination of mosquito breeding sites and cow dung/leaves smoke and 40 percent of the subjects were using it.

Only 58 percent of the respondents mentioned one or the other symptoms of malaria like fever, with or without chills, nausea, vomiting, fatigue, excessive sweating and other symptoms.

Table 1: Modes of malaria transmission as mentioned by the respondents (N=280)

Modes of malaria transmission	Respondents (%)
Dirty Surroundings	152 (54)
Mosquito bites	180 (64)
Do not Know	17 (6)

Table2: Knowledge of respondents about mosquito behaviour

Knowledge	Yes Responder (%)
Mosquito Characteristics (n=280)	
Mosquitoes bite and cause itchiness	224 (80)
Mosquitoes carry disease	180 (64)
Do not know	11 (4)
Biting time (N=180)	
During night time	144 (80)
During day time	18 (10)
Do not know	18 (10)
Resting places(N=280)	
Dark place inside house during day	168 (60)
Dirty areas	92 (33)
Do not know	50 (18)
Others (Latrine, cattle shed)	11 (4)

Table 3: Practice of mosquito preventive measures among the respondents

Currently used preventive measures	Respondent (%)
Use mosquito (bed)net	101 (36)
Clean surroundings	84 (30)
Use insecticide aerosols	50 (18)
Use DDT (indoor residual spray)	17 (6)
Close windows and doors in evening	22 (8)

Note: percentages do not add up to 100% because of multiple responses

Majority of them knew that mode of transmission of malaria is through mosquito bite. However, around 30% of them opined that drinking unclean water, poor personal hygiene, inadequate food and exposure to cold weather and eating contaminated food are causes for malaria transmission (Table 1).

Majority of them knew about the biting time and resting places (Table2).

Regarding Insecticide Treated Bed Nets (ITN), 60% of them were aware about ITNs. Based on the source of information about ITNs, majority of them had heard the information from their health workers (40%) and on radio/television (40%) and around 20% had heard the information from their neighbours (Table 3).

Table 4: Relationship between educationand socio-economic (B G Prasad scale) [10] status withknowledge of mode of malaria transmission and preventive measures among respondents

Variable	Mosquito bites are modes of malaria transmission		Odds ratio	P value
	Yes	No		
Level of education				
No formal education	10	85	1 (reference)	<0.0001
9-12th grade	41	36	9.68 (4.37 to 21.40)	
Socio economic status				
I to III	50	45	1 (reference)	0.439
IV and V	95	70	1.22 (0.73 to 2.02)	

Table 5: Relationship between education and socio-economic (B G Prasad scale)[10] characteristics withpractice of malaria preventive measures among respondents

Variable	Practice		Odds ratio	P value
	Yes	No		
Level of education				<0.0001
No formal education	8	87	1 (ref)	
9-12th grade	30	47	6.94 (2.94-16.35)	
Socio economic status				0.41
I to III	44	51	1 (ref)	
IV and V	85	80	1.23 (0.74 to 2.04)	

("Yes" means respondents practice one or the other mosquito preventive measures like mosquito nets, insecticide aerosols etc., at home)

Subjects with formal education, male gender and higher socioeconomic status had a better knowledge regarding transmission of malaria by mosquito bites with odds ratio of >1 (Table 4).

DISCUSSION

Our study found that more than half (64%) of the subjects mentioned that malaria is transmitted by the bite of mosquitoes. Forty percent of them could tell the interviewer that diseases like dengue as well as chikungunya are a result of mosquito bites. Sixty percent of the subjects who had heard about malaria mentioned that dark places inside the house are the place where mosquito rests. Only one third (33%) of them could tell that mosquito rests even in dirty and stagnant water. Only 60 % of the total subjects in the study knew one or the other ways of avoiding mosquitoes like the use of bed nets, insecticide aerosols, repellents, mosquito bats, elimination of mosquito breeding sites and cow dung/leaves smoke and 40 percent of the subjects were using it.

In a study conducted by Kumar et al, 86% of the them knew that polluted water was a breeding place for mosquito and 89.5% knew that malaria was spread by mosquitoes, 84.5% knew that the most common symptom of malaria was fever & rigor and also 65% of the subjects used mosquito coil for protective measure. [11]

In a study done by Tripathy et al, 40 percent of respondents knew malaria is caused by mosquito bite. The study of knowledge of respondents regarding signs and symptoms of malaria revealed that seven percent of respondents could not mention even one sign or symptoms of malaria, whilst 65% of respondents could identify only 1 to 3 symptoms of malaria and rest could identify more than one symptom.[12]This finding is very much similar to the findings from our study.

Patel et al in his study in Rajkot city concluded that 54.2% of them opined that mosquitoes breed in polluted waters, 62% knew that malaria was transmitted by mosquitoes and 42.6% knew that most common symptom was fever and also mosquito repellents was used by 61.4% of the study subjects. [13]

In a study done in Ethiopia showed, about 48% of the respondents mentioned that malaria could be transmitted from person to person of whom 95.6% linked the transmission with mosquito bite. All respondents replied that malaria is a preventable

disease. Sleeping under mosquito net (93.7%), draining stagnant water (84.2%) and IRS (78.9%) were the most frequently mentioned malaria preventive methods by the study participants.[14] This is in contrast to our study finding which had less awareness about malaria preventive methods. The reason could be lack of much emphasis on frequent awareness programmes to be conducted in the community we studiedand also negligence on the part of community leaders as well as members of that community.

In a study done by Ahmed SM et al in Bangladesh, more than 90 % of the respondents knew that malaria gets transmitted by mosquito bite. More than 70% of the respondents mentioned fever as the most common symptom of malaria. [15]A study done by Al-Adhroey et al in Malaysia also found the similar findings. [16]In a study done in Mumbai by Dhawan G et al, found that more than 90 % of the subjects were aware about malaria transmission and its symptoms.[17] A study by Tyagi P et al., in eastern Delhi also showed a better awareness about malaria and its transmission among the study respondents. [18] In a study by Manana PN et al in South Africa, 99% had heard about malaria and correctly associated it with mosquito bites. Approximately 63% of the participants were able to identify three or four symptoms of malaria.[19]

In a study conducted by Yadav SP et al in Rajasthanfound less than half of the subjects in a forward community knew about malaria symptoms and only 30 percent of the subjects from a Backward community had knowledge about malaria symptoms.[20] The reason for the poor knowledge in this study could be due to the backward status of that community in terms of education, occupation and reach of various government services. In a multicentric cross sectional study done by Sharma AK et al, respondents with education level above college level had better odds (4.96) of malaria knowledge compared to illiterates.[21] This finding is very much similar to the findings from our study.

Overall awareness of malaria was much lesser in our study compared to this study, probable reason being gross neglect from the community leaders in the community. There can be an urban rural difference also in the study findings.

CONCLUSION

Our study found low awareness about malaria transmission among the subjects. The overall practice of one or the other ways of mosquito preventive measure was also low. Awareness programme at regular intervals about malaria transmission and other mosquito borne infections targeting the community as a whole is thus very much necessary to combat the problem.

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