

SHORT ARTICLE

Awareness and use of Personal Protective Measures against Mosquito Borne Diseases

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Abstract

Background: The key success of Vector Borne Diseases control depends not only on services provided by health authorities but also on awareness of vector borne diseases and community participation. **Objectives:** The present study was conducted to assess the knowledge and use of PPMs against MBDs in field practice area of UHTC amongst study participants. **Methods:** It was a community based Cross-sectional study conducted in the field practice area of UHTC among 245 families. **Result:** 94.7% respondents were aware that malaria is transmitted by mosquito bite. Maximum 102 families were using citronella stick, followed by 98 families using liquid vaporizer. 7.79% participants were using PPM adequately while 3.21 % were using PPM correctly. **Conclusion:** The general awareness regarding important parameters of mosquito borne diseases was less amongst respondents. Less cost, easy availability and simplicity in using PPM were the reasons cited by the respondents regarding their preferences for choosing PPM.

Keywords

Mosquito-borne diseases [MBD]; Vector borne diseases [VBD]

Introduction

Globally, Vector- borne diseases account for more than 17% of all infectious diseases, causing more than 7,00,000 deaths annually.(1) In India, there are approximately 1 million positive malaria cases reported annually.(2) Government of India launched the National Malaria program in 1952 and it has been renamed as National Vector Borne Disease Control Program in 2003. Government of India introduced Insecticides Treated Nets [ITNs] for community. Studies revealed that insecticide treated nets have proved effective against vector borne diseases

especially malaria.(3) Community participation in vector born disease control has considerable potential in source reduction. It is possible when decision making power is handed over to them, the people involved in conceiving planning, implementation and evaluation of all developmental programs is essential. (4) Anti-larval activities were assigned to link workers of Urban Health Centre. Link worker encourages client behavior change through door to door visit of their area. It is primary method, effective and simple also. (5) The Chhattisgarh Government was struggling with a dengue outbreak

in the city of Bhilai, 40 Km from Raipur and 30 Km from Rajnandgaon. According to statistics issued by Directorate of Health services, of the 314 cases recorded in the State this year, 282 including 4 deaths were in the District Drug and 3 cases also registered in Rajnandgaon.(6)

Aims & Objectives

The present study was conducted to (1) assess the socio-demographic profile of study participant (2) to find the knowledge regarding mosquito borne diseases amongst them and (3) to assess the usage of PPMs against MBDs among study participants in field practice area of UHTC, Rajnandgaon.

Material & Methods

It was a community based Cross-sectional study conducted in the field practice area of Urban Health Training Center, of medical college. The study was conducted from 15 August to 15 October 2019.

Sample size was 245 as the level of knowledge regarding MBDs was 62% as reported in previous study (7) with 10% relative precision at 95% confidence interval. So, 245 families were investigated to access the knowledge and use of PPMs against MBDs in field practice area of UHTC, of medical college. Multi-stage sampling technique was followed to identify the household. Urban health and Training centre caters its services to 17 wards having population of 103332 and 17168 households. In the first stage of sampling, wards were selected using simple random sampling method. Out of total 17wards, 4 wards were selected randomly by Lottery method. Total households were 2458 in all 4 wards with population of 14204. In the second stage, 245 households were selected by using systematic random sampling method. Every 10th household were included in the study. If the household was found locked during the visit, the right hand thumb rule was followed. Informed consent was obtained before their inclusion in the study. Permission from Institutional Ethics Committee was sought out before project initiation.

Study Tool - A pre-tested pre-designed, semi structured questionnaire was used for data collection regarding socio-demographic profile, knowledge about MBDs breeding sites of mosquito, various control measure and usage or non-usage of PPMs. The adequacy and correctness of use of Bed-nets, liquid vaporizers, mats, coils, spray and creams were also assessed as per standard procedure used by Anand T et al.(9) Socioeconomic status of the

families was assessed using modified Kuppu-swami scale 2019 taking consumer price index 307.

Data Collection and Analysis - From one household, only one participant was interviewed which was either head of the household or his wife. Using questionnaires, the reliable data was collected, compiled, entered in MS office excel and analyzed using software SPSS-V22. Statistical tools applied were percentages, confidence interval.

Results

30.6% respondents were in the age group of 40 to 49 years, 26.9% were belonged to geriatric age group. 60.8% respondents were male and 39.2% were female. 93.9% respondents were Hindu and 5.7% were Muslims. 54.3% respondents were belonged to upper lower, 31.8% were in lower middle group, 10.6% in upper middle, 2.9% in lower and 0.4% in upper socioeconomic status group according to modified Kuppu-swami scale 2019. 94.7% respondents were aware that malaria, one of the vector borne disease is transmitted by mosquito bite. 81.2% responded, dirty stagnant water as mosquito breeding place whereas 25.3 % respondents said that artificial collection of water such as tyres, coolers as a breeding place. 2.9% participants also stated incorrect breeding place such as garbage. 93.1.% responded that rainy season as highest season for mosquito born disease. 17.9% respondent said that one should drain the water in the container once a week. [Table 1] 47.34% respondents responded that fever with chills and rigor was suggestive of malaria. 18.77% respondent knew about source reduction method as method of prevention. 91% families were using Personal Protective Measures to protect against mosquito bite. 50.61% respondents were using only one personal protective measure as a method of prevention against MBD and 37.95% families were using two PPMs method.

Most common PPM used by participants was citronella stick (41.63%) against MBD. 98 families were using liquid vaporizer, in which 3 were adequate and 5 correct. 68 Families were using Coil in which 3 were adequate and none correct. (17/218) 7.79%% participants were using PPM adequately while (7/218) 3.21% were using PPM correctly. [Table 2]

78 respondents cited stick use because they were cheap and 56 respondents said it as popular and available rapidly. 57 cited liquid vaporizer use

because of its effectiveness and convenience to use while 13 respondents considered it safe.

Discussion

In the present study, 94.7% respondents could name malaria, one of the vector-borne disease is transmitted by mosquito bite. Regarding diseases transmitted by mosquito, 62% answered malaria and 37.4% interviewees were not aware of any diseases being transmitted, as evident from the study conducted by Patel A et.al. in an urban area of Rajkot city. (7) A study conducted by Kohli C et. al. in urban area of Delhi, found that 63.6% subjects in urban area were able to name at least one mosquito borne disease. (8)

In the present study, 81.2% responded, dirty stagnant water as mosquito breeding place and 12.2% said that clean stagnant water, as a breeding place. 93.1% responded that rainy season as highest season for mosquito born disease. 17.9% respondent said that one should drain the water in the container once a week. A study conducted by T. Anand et.al.in resettlement colony of Delhi, revealed that 68% respondents knew that mosquito breed in stagnant clean water whereas nearly one-third (29%) believed that breeding occurs in polluted stagnant water. Majority of Participants (70%) also believed that MBDs are highest during and after monsoon largely because of collection of water. The recommendation about draining water and cleaning coolers at least once a week, was answered correctly by only 20% of the respondents.(9)

In the present study, most common PPM used by participants was citronella stick (41.63%) against MBD. 7.79% participants were using PPM adequately while (7/218) 3.21 % were using PPM correctly. A study conducted by T. Anand et.al.in resettlement colony of Delhi, revealed that 90% participants were using PPM. The most common PPM being used by the study population was liquid vaporizers (54/90; 60%) followed by insecticidal spray (29/90; 32%). However, they were just handful of the participants who were using methods correctly (1/90; 1.1%) and adequately (5/90; 5.6%).(9) The study conducted by Kohli C et. al. in the slum Balmiki Basti of Delhi, found that Liquid vaporizer(33.6%) was most common method used as PPM followed by coil (30%).(10) In the present study, 78 respondents cited stick use because they were cheap and 56 respondents said it popular and available rapidly. A study conducted by T. Anand

et.al.in resettlement colony of Delhi, revealed that nearly one third of the participants stated convenience, effectiveness and cost as the main reasons for choosing a particular PPM.(9)

Conclusion

91% families were using Personal Protective Measures to protect against mosquito bite. Most common PPM used by respondent was citronella stick followed by liquid vaporizer. Less cost, easy availability and simple to use were the reasons cited by the respondents. The adequacy and correctness of PPM used by respondents was found to be very less.

Recommendation

Determinants like less cost, easy availability of PPM should to be taken into consideration by the Policy makers while formulation of plan of action so that the vulnerable, needy people residing in urban slum will be benefitted. The knowledge regarding the adequacy and correctness of PPM as well as general awareness regarding MBDs must be explored to them not only by mass media but more efficiently by health personnel posted at their respective health centre.

Limitation of the study

Adequacy and correctness of two PPM, Burning Neem Leaves and electric racket was not assessed.

Relevance of the study

This study assessed various measures taken by the families to prevent MBDs and reasons of choice for various PPM used against MBDs. This study also assessed general awareness knowledge regarding VBD which need to be explored by qualitative studies.

Authors Contribution

Concepts: HM, DB; Design: HM, KM; Definition of intellectual content: HM, KM, DS; Literature search: HM, DB; Data acquisition: DB; Data analysis: HM, DS; Statistical analysis: HM, DS; Manuscript preparation: HM, DB, KM, DS; Manuscript editing and reviewing: HM, DB, KM, DS; Guarantor: HM, KM.

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Tables

TABLE 1 KNOWLEDGE REGARDING MOSQUITO-BORNE DISEASES

Characteristics	Distribution of respondent	Frequency	Percentage
* Naming diseases transmitted by Mosquito bite	Malaria	232	94.7
	Dengue	165	67.3
	Chikungunya	16	6.5
	Filaria	2	0.8
	Japanese Encephalitis	0	0
* Mosquito breeding places type of collection	Clean stagnant water	30	12.2
	Dirty, polluted stagnant water	199	81.2
	Artificial collection of water e. g cooler, tyres	62	25.3
	Other e.g Garbage, toilet	7	2.9
Highest season for mosquito-borne diseases	Summer	3	1.2
	Winter	14	5.7
	Rainy season	228	93.1
Frequency of draining of water from container	Once in a month	133	54.2
	Twice in a month	68	27.7
	Once in a week	44	17.9
*Results are not mutually exclusive			

TABLE 2 USE, ADEQUACY AND CORRECTNESS OF PPM

PPM	*Using PPM	95% CI	Adequate	Correct
1 Liquid Vaporizer	98(40%)	33.7-46.3	3	5
2 Coil	68(27.76%)	22-33.5	3	0
3 Citronella Stick	102(41.63%)	35.3-47.9	4	0
4 Mat	3(1.22%)		1	1
5 Bed Net	46(18.78%)	13.8-23.8	8	0
6 Repellent cream	7(2.86%)		3	3
7 Insecticidal spray	1(0.41%)		1	0
8 Electric racket	3(1.22%)		Not assessed	Not assessed
9 Burning Neem Leaves	3(1.22%)		Not assessed	Not assessed
10 Nil	21		NA	NA