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The knowledge, attitude and practices regarding commonly occurring mosquito borne diseases among people in catering area of urban health and training centre

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ABSTRACT

Background: Mosquito borne diseases are major public health problems and emerging diseases in India. These are endemic in some parts of country with periodic outbreaks. South East Rajasthan is one of the region which showed such major outbreak during post monsoon period.

Methods: This cross-sectional study was carried out in the month of September to November 2016 in field practice area of UTHC Mahaveer Nagar, Govt. Medical College, Kota. 1083 houses were selected for the study by systemic sampling and pre tested and semi structured questionnaire were filled by adult member of family. Data was analysed in Microsoft Excel 2010 & SPSS ver16.

Results: Out of 966 respondents 88.4% were aware about mosquito borne diseases. Fever as chief complaint was known to 97.16%. Majority of them believe that mosquito breeds in dirty water. Television and newspaper are main source of information on mosquito borne disease. Mosquito mat/coil/liquid vaporizer is used by most of them during night time only. Most of respondents neither check cooler for mosquito larvae nor changed water in coolers within a week.

Conclusions: Study recommends increasing the knowledge and application of preventive measures by massive awareness campaign before monsoon so to reduce the health care burden from mosquito borne diseases.

Keywords: Mosquito borne diseases, Awareness, Malaria, Dengue, Prevention, Kota

INTRODUCTION

The mosquito borne diseases of public health importance are complex and their occurrence depends on the interaction of various biological, ecological, social and economic factors.¹

Vector borne diseases (VBDs) account for 17% of the estimated global burden of all infectious diseases. Malaria, the most deadly VBD, caused an estimated 627,000 deaths in 2012. In recent years they have

emerged as a major public health problem in India, particularly dengue fever, Japanese encephalitis and malaria now occur in epidemic proportions almost on an annual basis causing considerable morbidity and mortality.²

The world's fastest growing VBD is dengue, with a 30-fold increase in disease incidence over last 50 years. Every year there are more than 1 billion cases and over 1 million deaths from VBDs. In India, 27% population lives in malaria high transmission area. The diseases are

commonly in tropical and subtropical regions and places where access to safe drinking water and sanitation system is problematic. They are on the rise because of failure of these existing methods of control of vector and VBDs and the climate change. A steep rise of VBDs is due to several factors such as selection of insecticide resistant vector population, drug resistant parasite population, and lack of effective vaccines against VBDs.³

Recently, it has been suggested that VBDs incidence is between 9 and 50 times greater than reported with approximately 13 fold under estimation of malaria-related mortality. The failure to cap the resurgence of VBDs and the continuing increased incidence of them is warranting a more proactive approach for their prevention.

Vector is an important link in transmission of VBDs and thus, protection from vector serves as one of the best strategies for prevention in population. Environmental pollution, public health hazard, and insecticide resistant vector population indicate that the insecticides are no longer a sustainable control method of vectors and VBDs. Personal protection measures (PPMs) have become important tool against VBDs. A variety of PPMs are available including repellent creams, mosquito nets, mosquito coils, liquid repellents, electric rackets, mats, smokeless coils, intense sticks, and naphthalene balls. Under national VBD control program, government has introduced insecticide treated nets for the endemic communities.⁵

The mosquito-borne diseases results in avoidable ill health and death which also has been emphasized in National Health Policy and Millennium Development Goals (MDGs) in India. National vector borne disease control programme (NVBDCP) under the aegis of National Rural Health Mission (NRHM) is one of the most comprehensive and multifaceted public health activities in India including prevention and control of mosquito-borne diseases. In recent years, vector-borne diseases have emerged as a serious public health problem in countries of the South-East Asia Region, including India. Page 1975.

In spite of mass communication and educational approaches, community participation is far below expectation. Community participation in turn depends on peoples' awareness, knowledge and attitude towards the disease. However, taking socially acceptable measures by the local government, in collaboration with other relevant sectors and social mobilisation for full involvement of the community is crucial. Thus, a need was felt to know the existing knowledge of the study population regarding mosquito-borne diseases which may be helpful in designing evidence-based effective prevention and control strategies as well as sustainable community participation.

Aims

The aims were to study the level of knowledge regarding mosquito borne diseases; to study the attitudes and

practices at house hold level regarding mosquito borne diseases

METHODS

This cross-sectional study was carried out in the month of May and June 2017. According to guidelines for conducting knowledge, attitude and practice study, Minimum sample required is 200, but to be more representative of the population a total of 1083 participants were included in the study. This cross sectional study was undertaken in field practice area of UTHC Mahaveer Nagar, Medical College, Kota. Total houses in the area were 10083. Every tenth house was selected by systemic random sampling method for collecting information. Therefore, 1083 houses were selected for the study. Out of which 117 houses were locked or their residents didn't want to take part in study. Hence, total houses visited were 966. In the selected house, an adult member in the family, who was present at the time of visit, was interviewed for collection of information using pre-tested structured questionnaire. Informed consent (verbal) was taken from all the respondents and confidentiality was ensured throughout the study. The questionnaire was translated into Hindi for the ease of the respondents. The questionnaire covered the following areas; (a) demographic information (gender, age, education and occupation, source of water supply, mode of waste disposal.), (b) knowledge about mosquito borne diseases (c) attitude towards mosquito borne diseases and (d) preventive practices. The questionnaire comprised of both close ended questions where the respondents could select the answer (yes / no questions) and open-ended questions. Data was analysed in Microsoft Excel 2010 & SPSS ver. 16.

RESULTS

966 respondents participated in study were divided in five age group of which most (33.02%) of participants were in age group of 18-26 years. out of these 54.5% were male and 45.85% were female. Most of respondents had education up to secondary (42.33%) followed by graduate (22.56%) and post graduate (14.15%). 93.47% of respondents had safe water supply and 62.3% had sanitary mode of waste disposal. Only 23% of participants have good ventilation in their residences. By occupation most of respondents were salaried employee (33.95%) followed by students (22.04%) and house wives (19.04%) (Table 1).

On asking regarding knowledge about mosquito borne diseases, 88.04% of respondents know about mosquito borne diseases. Most common known mosquito borne disease was malaria (94.5%) followed by dengue (82%) and chikungunya (71%). Mosquito bite is the mode of spread of mosquito borne diseases is known by 95.34% followed by drinking of dirty water (16.25%) and unhygienic food. When respondents were asked about the symptoms of mosquito borne diseases, fever was the

most common symptom known (97.16%), followed by severe headache (40.47%), muscular pain/ backache (33.84%). However, only 4.14% identified rash as a symptom. Regarding the biting habits of dengue mosquito, 56.15% responded mosquito bites during day time, 28.21% responded night time and 15.6% have no

knowledge about biting time. Majority of the participants (72.22%) thinks that mosquito breeds in standing dirty water, (57.14%) responded in domestic water storage/jars/tyres/ discarded container/coolers and 4.76% didn't have knowledge about this (Table 2).

Table 1: Socio demographic characters of study population (n=966).

Variable	Numbers	Percentage (%)
Age (in years)		
18-26	319	33.02
27-37	256	26.5
38-48	178	18.42
49-59	138	14.28
≥60	75	7.76
Gender		
Male	523	54.15
Female	443	45.85
Education		
Illiterate	87	9
Primary	115	11.9
Secondary	409	42.33
Graduate	218	22.56
Post graduate	137	14.18
Water supply		
Safe	903	93.47
Unsafe	63	6.53
Waste disposal		
Sanitary	123 (68.4%)	62.3
In Sanitary (Throwing discriminately)	57 (31.6%)	37.7
Ventilation		
Good	33 (18.4%)	23
Poor	147 (81.6%)	77
Occupation		
Student	213	22.04
Salaried	328	33.95
Self employed	97	10.04
House wife	184	19.04
Professional	144	14.90

Table 2: Knowledge regarding mosquito borne diseases.

Question	Yes (%)	No (%)
Are you aware about mosquito borne diseases?		
Yes	854	88.40
No	112	11.59
Have you heard about various mosquito borne diseases?		
Malaria	913 (94.51)	53 (5.48)
Dengue	830 (85.92)	136 (14.08)
Chikanguniya	714 (73.91)	252 (26.09)
Kala-azar	24 (2.48)	942 (97.52)
Filariasis	13 (1.65)	953 (98.65)
Japanese encephalitis	56 (5.8)	910 (94.2)
How mosquito borne diseases spread?		
Mosquito bite	921	95.34
House fly	79	8.17

Minygienic food	Drinking dirty water	157	16.25
Kissing/hugging 38 3.93 What are the symptoms of mosquito borne diseases? Fever 943 97.16 Severe headache 391 40.47 Muscular pain/backache 327 33.84 Bleeding 105 10.86 Nausea/vomiting 189 19.56 Rash/spots on body 40 4.14 Mosquito bites during which time? Day time 150 15.52 Night 256 26.5 Both during day and night 456 47.02 Don't know 104 10.76 What are common breeding sites of mosquitoes? *** Water storage jars/ discarded containers/coolers/tyres 552 57.14 Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? ***			
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Muscular pain/backache 327 33.84 Bleeding 105 10.86 Nausea/vomiting 189 19.56 Rash/spots on body 40 4.14 Mosquito bites during which time? Day time 150 15.52 Night 256 26.5 Both during day and night 456 47.02 Don't know 104 10.76 Water storage jars/ discarded containers/coolers/tyres 552 57.14 Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? 34 24.22 Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55		943	97.16
Bleeding 105 10.86 Nausea/vomiting 189 19.56 Rash/spots on body 40 4.14 Mosquito bites during which time? Day time 150 15.52 Night 256 26.5 Both during day and night 456 47.02 Don't know 104 10.76 Water storage jars/ discarded containers/coolers/tyres 552 57.14 Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? What are the various methods to prevent mosquito bite? Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	Severe headache	391	40.47
Nausea/vomiting 189 19.56 Rash/spots on body 40 4.14 Mosquito bites during which time? Day time 150 15.52 Night 256 26.5 Both during day and night 456 47.02 Don't know 104 10.76 What are common breeding sites of mosquitoes? Water storage jars/ discarded containers/coolers/tyres 552 57.14 Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? Mosquito spray 234 24.22 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	Muscular pain/backache	327	33.84
Rash/spots on body 40 4.14 Mosquito bites during which time? Use time Day time 150 15.52 Night 256 26.5 Both during day and night 456 47.02 Don't know 104 10.76 What are common breeding sites of mosquitoes? Water storage jars/ discarded containers/coolers/tyres 552 57.14 Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? 34 24.22 Mosquito spray 234 24.22 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	Bleeding	105	10.86
Rash/spots on body 40 4.14 Mosquito bites during which time? Use time Day time 150 15.52 Night 256 26.5 Both during day and night 456 47.02 Don't know 104 10.76 What are common breeding sites of mosquitoes? Water storage jars/ discarded containers/coolers/tyres 552 57.14 Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? 34 24.22 Mosquito spray 234 24.22 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	Nausea/vomiting	189	19.56
Day time 150 15.52 Night 256 26.5 Both during day and night 456 47.02 Don't know 104 10.76 What are common breeding sites of mosquitoes? Water storage jars/ discarded containers/coolers/tyres 552 57.14 Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? SMA 24.22 Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55		40	4.14
Day time 150 15.52 Night 256 26.5 Both during day and night 456 47.02 Don't know 104 10.76 What are common breeding sites of mosquitoes? Water storage jars/ discarded containers/coolers/tyres 552 57.14 Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? SMA 24.22 Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	Mosquito bites during which time?		
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Don't know 104 10.76 What are common breeding sites of mosquitoes? Water storage jars/ discarded containers/coolers/tyres 552 57.14 Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? 234 24.22 Mosquito spray 234 24.22 Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55		256	26.5
What are common breeding sites of mosquitoes? Water storage jars/ discarded containers/coolers/tyres 552 57.14 Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? What are the various methods to prevent mosquito bite? Mosquito spray 234 24.22 Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	Both during day and night	456	47.02
Water storage jars/ discarded containers/coolers/tyres 552 57.14 Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? What are the various methods to prevent mosquito bite? Mosquito spray 234 24.22 Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	Don't know	104	10.76
Overhead tanks 317 32.18 Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? 234 24.22 Mosquito spray 234 24.22 Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	What are common breeding sites of mosquitoes?		
Dirty water 703 72.22 Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? 234 24.22 Mosquito spray 234 24.22 Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	Water storage jars/ discarded containers/coolers/tyres	552	57.14
Garbage/trash 248 25.67 Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? Mosquito spray 234 24.22 Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	Overhead tanks	317	32.18
Plants/vegetation 143 14.8 Don't know 46 4.76 What are the various methods to prevent mosquito bite? Mosquito spray 234 24.22 Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	Dirty water	703	72.22
Don't know464.76What are the various methods to prevent mosquito bite?Mosquito spray23424.22Mosquito repellant cream/odomas17231.04Mosquito mat/coil/liquid vaporizer65768.01Mosquito net49851.55	Garbage/trash	248	25.67
What are the various methods to prevent mosquito bite?Mosquito spray23424.22Mosquito repellant cream/odomas17231.04Mosquito mat/coil/liquid vaporizer65768.01Mosquito net49851.55	Plants/vegetation	143	14.8
Mosquito spray 234 24.22 Mosquito repellant cream/odomas 172 31.04 Mosquito mat/coil/liquid vaporizer 657 68.01 Mosquito net 498 51.55	Don't know	46	4.76
Mosquito repellant cream/odomas17231.04Mosquito mat/coil/liquid vaporizer65768.01Mosquito net49851.55	What are the various methods to prevent mosquito bite?		
Mosquito mat/coil/liquid vaporizer65768.01Mosquito net49851.55	Mosquito spray	234	24.22
Mosquito net 498 51.55	Mosquito repellant cream/odomas	172	31.04
		657	68.01
Window & door screen 189 19.56	Mosquito net	498	51.55
		189	19.56
Use of Smoke to drive away mosquitoes 142 14.69	Use of Smoke to drive away mosquitoes	142	14.69
Covering of body with clothes 356 36.85	Covering of body with clothes	356	36.85

Table 3: Attitude towards mosquito borne fever (n=966).

Question	Numbers	Percentage (%)
Can mosquito borne fever be prevented?		
Yes	870	90.06
No	57	5.90
Don't Know	39	4.04
What will you do if your family member has mosquito borne diseases?		
I would treat the patient at home	39	4.04
I will take the patient to a doctor/Hospital	927	95.96

Table 4: Source of information on mosquito borne fever (n=966).

Question	Numbers	Percentage (%)
What is your source of knowledge about mosquito borne diseases?		
Television	663	68.63
Newspaper/magazine	452	46.70
Radio	179	18.53
Friends and relatives	226	23.39
Hoarding /banners	181	18.73
Health Dept. Staff	219	22.67
Personal doctor	327	33.85
Advertisement/ messages/ pamphlets in print media	92	9.52

Table 5: Practices towards mosquito borne diseases (n=966).

Question	Numbers	Percentage (%)
What you will do to eradicate breeding sites of mosquito borne diseases?		
Prevent water stagnation in discarded empty containers/tyres/pots	509	52.69
Covering water containers and frequent water change in coolers	415	42.96
Covering overhead water storage tanks	398	41.2
Cutting trees and vegetation	222	22.98
Prevent collection of water near houses	657	68.01
What practices you use at your home for mosquito control?		
Mosquito spray	134	13.87
Mosquito mat/coil/liquid vaporizer	859	88.9
Mosquito repellent cream/ Odomas	243	25.15
Mosquito net	446	46.16
Window & door screen	121	12.52
Use of smoke to drive away mosquitoes	98	10.41
Prevent water stagnation in coolers/ empty containers/tyres/overhead tanks	416	43.06
At what time you use mosquito repellent/ cream/ vaporizer?		
During day time only	207	17.28
During night time only	606	62.73
Both times	103	10.66
Not at all	50	5.17
Do you have cooler at your residence?		
Yes	804	83.22
No	162	16.77
If yes, do you check cooler for mosquito breeding?		
Yes	164	16.97
No	802	83.02
How frequently you change water in your coolers?		
Less than one week	301	32.09
More than one week	629	65.11
Never	36	3.72

Most common known mode for prevention mosquito bite was use of mosquito mat/coil/liquid vaporiser followed by use of mosquito nets and covering body with cloths. 90.06% respondents think mosquito borne diseases can be prevented for which 95.96% respondents would seek medical help while 4.04% would prefer treatment at home (Table 3).

Television was most common source of information on mosquito borne diseases followed by newspapers/magazine and by friends and relatives (Table 4).

Most common method used to eradicate mosquito breeding sites was prevention of collection of water near houses (68.01%) followed by prevention of water stagnation in discarded empty container/tyres/pot (52.69%) and covering water containers and frequent water change in coolers (42.96%). In this study it is revealed that use of mosquito repellent mat/coil/liquid/vaporiser (88.92%) was most common practice to control mosquito in house followed by use of mosquito nets (46.16%). Use of mosquito repellent mat/liquid/oil/vaporiser (62.73%) was most common during night time only followed by using during day time (17.28%).

83.22% respondents had coolers in their residences but only 16.97% checked cooler for mosquito breeding. only 32.09% participants changed water in cooler in less than a week followed by 65.11% in more than a week and for never 3.72% (Table 5).

DISCUSSION

Although studies have been done on mosquito borne fever in other parts of India, none has been done in Rajasthan as per the best of our knowledge; with the explosive increase in number of cases of mosquito borne diseases in Kota district, this study can help the District Health authorities to fill the gap in their endeavor against mosquito borne diseases.

88.04% respondents were aware about mosquito borne diseases which was similar to Malhotra et al and more than Kumar et al. 7.10 Malaria (94.51%) was most commonly known mosquito borne disease followed by dengue (85.92%) as studied by Maumita De et al. 6 Mosquito bite (95.34%) is the mode of spread of mosquito borne diseases which was consistent with finding by Malhotra et al and De et al. 6.10 When asked

about symptoms of mosquito borne diseases fever was most common response (97.16%) as founded by Virk et al, Malhotra et al followed by severe headache (40.47%). 9,10

Regarding biting habit of mosquito 47.02% respondents both in day and night, followed by in night (26.5%) and during day time (15.52%). Similar result were found by Malhotra et al and De et al. 6,10

Majority of respondents knew about the common breeding sites of mosquito which were dirty water (72.22%), water storage jars/coolers/pots/tyres/empty containers (57.14%). It is consistent with the results shown by Malhotra et al.¹⁰ Mosquito repellent mat/coil/liquid vaporizer (68.01%) was most commonly use to prevent mosquito bite which is consistent to result shown by Kumar et al, De et al and Virk et al, Malhotra et al.^{3,6,9,10}

90.06% respondent accepted that mosquito borne diseases are preventable as found by Malhotra et al (94.13%). 10

Study revealed that television (68.63%) was most common source of knowledge about mosquito borne disease which is consistent with findings of Kumar et al, Malhotra et al, De et al and Virk et al. 6.7.9.10

Majority of respondents think that preventing water stagnation in discarded empty container/pot/tyres will eradicate breeding sites. Mosquito repellent mat/coil/liquid/vaporiser (88.92%) were most commonly used to control mosquito in residences which is higher to found by Kumar et al (58.3%), Virk et al (83.3%), De et al (46.8%) and Malhotra et al (68.44%). 6,7,9,10 83.22% participants have cooler in their residence but only 32.09% changed water once weekly which is less than De et al (52%). Majority (83.02%) respondents didn't check cooler for mosquito larva in cooler which is similar to finding of Malhotra et al (75.5%).¹⁰

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Institutional Ethics Committee

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