

Knowledge Attitude Practice study regarding Mosquitoes spreading Malaria and Dengue and their prevention in field practice area of Index Medical College Hospital Research Centre, Indore

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Abstract

Background: Malaria and Dengue are two important mosquito borne diseases but in recent past the incidence of Malaria has decreased while Dengue incidence was increased. Reasons behind this contrast change in the incidence should be evaluated. **Methods:** Cross sectional community based study was conducted to evaluate the KAP regarding Malaria and Dengue spreading mosquito and their prevention on 515 participants. KAP level, difference in KAP regarding Malaria and Dengue spreading mosquito, association of socio-demographic factors with KAP and co relation of Knowledge with Attitude and practice were evaluated. Chi square test, paired t-test and co-relation test were applied for analysis. **Results:** Overall Knowledge, Attitude and Practices of participants regarding Malaria and Dengue spreading mosquitoes were low. Statistically significant better knowledge, Attitude and Practices scores were noted for Malaria spreading mosquitoes as compared to Dengue spreading mosquitoes. Occupation, Education, SES, and type of family were the important socio-demographic factors which were found to be significantly associated with Knowledge Attitude and Practices of participants. Positive co relation was found between Knowledge, Attitude and Practices. **Conclusion:** KAP regarding Malaria and Dengue spreading mosquitoes were not found satisfactory. Difference in bionomics and preventive measures for Malaria and Dengue spreading mosquitoes should be convey to public by health education. Socio-economic development, increase knowledge level of population can help in reducing the incidence of Malaria as well as Dengue.

Keywords: Malaria spreading mosquito, Dengue spreading mosquito, Prevention, comparative KAP

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Introduction

Mosquitoes are responsible for more human deaths in history than all wars. Malaria and Dengue are the most prevalent Mosquito borne diseases because India's climate and geographic position are favourable for survival of both agent and vector[1]. In recent past Malaria incidence was dropped, but the incidence of Dengue has escalated dramatically. Between 2016-2017 Malaria incidence among population at risk decreased by 24%[2]. In the last 50 years, incidence Of Dengue has increased 30-fold[3]. According to endemicity classification of Dengue India falls in category A –hyper-endemic, where all 4 serotype is circulating[4]. It is endemic in 31 states/UTs with more than 1100 million populations at risk[5]. This contrast change in incidence in 2 mosquito born diseases may be attributed to difference in bionomics of both disease spreading vectors but common strategy for dealing with both. The community awareness regarding this difference is unknown. Mosquito control is a vital public-health practice. For the success of prevention and control of any mosquito borne disease, the most important prerequisite is participation of community. Poor knowledge, attitude, and practice of people hinder disease control and contribute in creating mosquito breeding source and thus in spread of diseases. We need to understand the knowledge, attitude and practices of the community for Malaria and Dengue spreading mosquitoes separately.

Present study is a sincere attempt to understand the knowledge, attitude and practice regarding mosquito spreading Malaria (Anopheles) and mosquito causing Dengue (Aedes) and its prevention among adult population of study area. A better understanding of how their Knowledge, Attitude and Practices level interact to create patterns of behaviour, mosquito infestation, and disease exposure risk would be valuable in creating more effective awareness campaigns and source eradication programme. That's why current study was planned with the objectives of to study the socio-demographic profile of participants, overall (for Malaria and Dengue causing mosquitoes) Knowledge Attitude and Practice level, difference in level of Knowledge, Attitude and Practice of participants about mosquito spreading Malaria and Dengue and its prevention and control and to find out the association of socio-economic-demographic status with knowledge Attitude and practice and association between level of knowledge, attitude and practice regarding disease prevention and control.

Methodology

Cross-sectional community based observational study was conducted in field practice area of Index Medical College Hospital and Research Centre, Indore Madhya Pradesh. For determining the Sample size first purposive sampling was done out of 30, 10 nearby villages of rural field practice area were chosen. Population of these 10 villages was approximately 25500, then approximate number of household were calculated ($25500/5=5100$). Out these 5100, 10% households and from each household 1 member was included in study as participant. Hence total sample size was 510 but finally 515 participants were taken. Recruitment of participants of study was done by fixing inclusion & exclusion criteria for selection of participants in design stage.

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Inclusion criteria

Inclusion criteria for the current study was participants who gave informed consent for participating in the study and less than 18 year persons were excluded from study. Total Study duration was 3 months from September 2018 to November 2018. Ethical clearance was obtained from institutional ethical committee of Index Medical College. There were no suitable validated questionnaires available for the assessment of KAP regarding Malaria and Dengue causing mosquito and prevention so data was collected with the help of self-prepared, pre-tested semi structured questionnaire. It was prepared by literature search and help was taken from of experienced persons in this domain. Before the final implementation, proforma was tested by pilot study on 30 persons and necessary changes were done accordingly.

After obtaining written informed consent of participants KAP study was conducted in study area. The knowledge refers to understanding of a given subject. The attitude is their pre-fixed thought that they may have towards that subject. The practice refers to the ways in which they apply/display their knowledge and attitude through their actions.

Scoring system was adopted for assessing the KAP. In Knowledge questionnaires agent, vectors, feeding, breeding and resting habits of malaria and dengue causing mosquitoes, common symptoms and treatment of malaria and dengue, identification, and control measures of both disease causing mosquitoes were asked. Attitude questionnaires includes their idea about seriousness of both the disease, what will be their health seeking behaviour in case they will suffer from Malaria or Dengue, is Malaria/Dengue preventable, who is responsible for control of Malaria and Dengue causing mosquito. Practices regarding personal protective measures they use, frequency

of changing of cooler and drinking water, frequency of checking mosquito breeding sites, screened window/door, wearing full sleeves, presence of personal protective measures at time of interview, adequacy and timing of method used for prevention mosquito bite, method used for reduction of breeding sites were asked. For knowledge Attitude and practices Maximum score were 35, 15 and 21 respectively. Same questionnaires were asked for both Malaria and Dengue causing mosquitoes. Then both the scores were added to gather and considered as overall Knowledge, Attitude and Practice. Now maximum score for Knowledge, Attitude and Practice were 70, 30, 42 respectively. Information collected in the proforma was coded and entered in statistical package for the social sciences (SPSS Inc. SPSS for windows version 20) The qualitative variables were expressed in proportion & quantitative variables were summarized by mean. For assuring quality control specific inclusion & exclusion criteria were defined at design stage. Mean Knowledge, Attitude Practice scores were calculated and scores equal to or above mean was considered as satisfactory knowledge, positive attitude and good practices. Chi square test was applied to find out the association between socio-demographic factors and Knowledge Attitude and Practice-Alfa error was set at 5% with 95% of confidence level. It was taken as cut off for commenting statistically significant association. Paired t test was applied to find out the difference between Knowledge Attitude and Practice of Malaria and Dengue causing mosquito. Co-relation was seen between the overall knowledge attitude and practice of the participants. In current study there is possibility of selection bias, recall bias, non response bias and confounders.

Results**Table 1: Socio demographic profile of study participants**

Socio-demographic variable N=515	Frequency (percentage)
Age (in years)	
20-30	171(33.2)
31-45	176(34.2)
46-60	104(20.2)
>61	64(12.4)
Total	515
Sex	
Male	233(45.2)
Female	282(54.8)
Total	515
Marital status	
Married	480(93.2)
Unmarried	34(6.6)
Divorcee/separated	1(0.2)
Total	515
Occupation	
Employed	456(88.5)
Unemployed	59(11.5)
Total	515
Education	
Uneducated	146(28.3)
Up to primary	132(25.6)
Up to middle	121(23.5)
Up to higher secondary	70(13.6)
Up to high school	29(5.6)
Up to Graduate or more	17(3.3)
Total	515
Type of family	
Nuclear	231(44.9%)
Joint	284(55.1%)
Total	515
Socio-economic status	
Upper class	19(3.7)
Upper Middle class	74(14.4)

Lower Middle class	102(19.8)
Upper Lower class	208(40.3)
Lower class	112(21.7)
Total	515

Table 1 Is Showing Socio demographic profile of study participants about 68% population were of 20-45 years old, around 55% participants were female, majority (93%) participants were married, 88% participants were employed, 55% participants were from joint family and 72% belonged to lower socio-economic status.

Table 2 Findings of observations from home and surrounding, source of knowledge and government efforts in mosquito control

Variables	Frequency (percentages)
Observation findings during study in household	
Mosquito breeding site/sites inside house	
Yes	333(64.7)
No	182(35.3)
Mosquito breeding site/sites outside house	
Yes	360(69.9)
No	155(30.1)
Confirmed case of MBDs in last one year in family	
Yes	73(14.2)
No	442(85.8)
Screened window and or doors	
Yes	105(20.4)
No	410(79.6)
Presence of any Personal protective measures during visit to household	
Yes	203(39.4)
No	312(60.6)
Source of knowledge about MBD	
Tv	180(35)
Others	148(28.7)
News paper	133(25.8)
Health care providers	45(8.7)
Don't know	9(1.8)
Method used to prevent mosquito bite	
Bed net	245(47.6)
Repellent	229(44.5)
Screening	4(.8)
Others	37(7.2)
Government Activities for prevention of Mosquito borne disease in study area	
Ever got bed nets from government	
Yes	5(1%)
No	510(99%)
Blood Sample collected for malaria from health department	
Yes	17(3.3%)
No	498(96.75)
Space spraying	
Yes	55(10.7)
No	460(89.3)
Survey conducted for data on MBD	
Yes	17(3.3)
No	498(96.7)
IEC activities from government side	
Yes	0
No	515(100)

Around 65%, 70% participants had in door and outside breeding sites at their home respectively. In last 1 year 14% participants had confirmed malaria /dengue cases in their family. Screened windows /doors were found at home of 0.8% participants. Any personal protective measure at the time of visit was found with 39% participants. Most common source of knowledge of participants regarding mosquito born infection and prevention was found to be TV. Most common method used for prevention from mosquito bite was bed nets(48%).Government contribution in prevention of mosquito born infection was found negligible.

Table -3 Overall Knowledge, Attitude and Practice scores

Domain	Score out of	Minimum	Maximum	Mean	SD
Knowledge	70	3	35	19.41	5.52
Attitude	30	3	15	8.37	2.77
Practice	42	6	24	11.06	3.38

Table 3 Mean overall Knowledge, Attitude and Practice scores were 19.41(out of 70), 8.37 (out of 30), and 11.06 (out of 42), respectively.

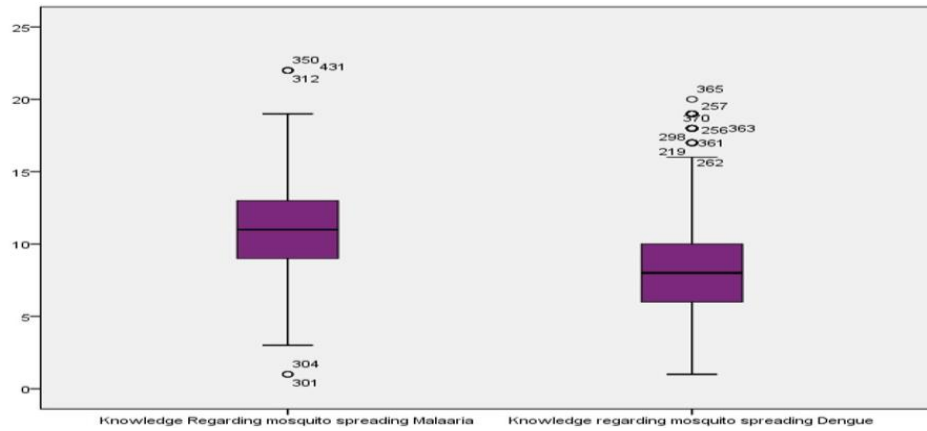


Fig 1: Difference in knowledge scores about Malaria and Dengue spreading mosquito

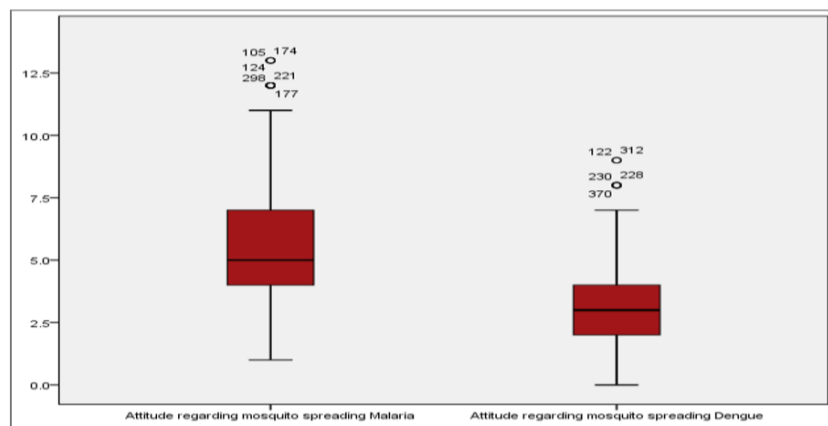


Fig 2: Difference in Attitude about Malaria and Dengue spreading mosquito

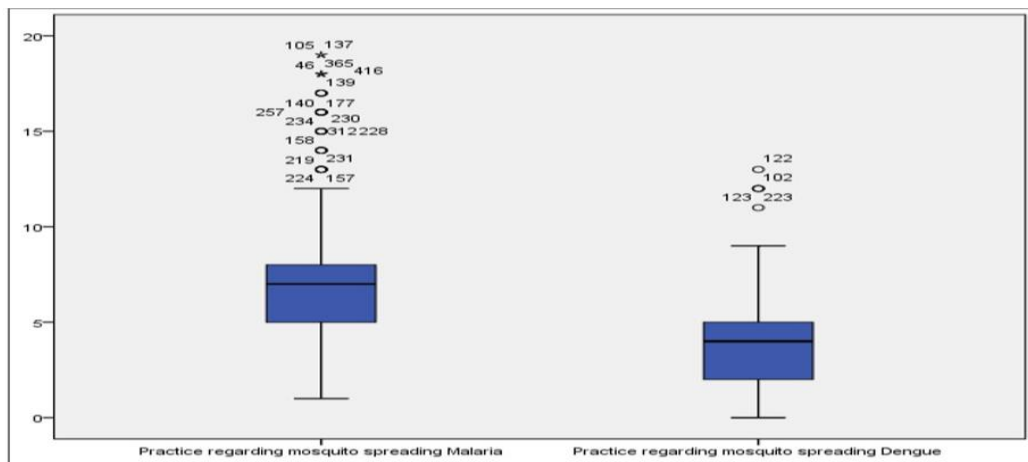


Fig 3: Difference in Practices regarding Malaria and Dengue spreading mosquito

Figure 1, 2 and 3 is showing that Knowledge, Attitude Practices are better for Malaria causing mosquito than Dengue spreading mosquito as Median of Knowledge, Attitude and Practice are higher for Malaria spreading mosquito than Dengue spreading mosquito.

Table 4: Differences between knowledge attitude practice about Malaria and Dengue spreading mosquitoes

		N	Mean	SD	CI at 95%	t-test	p-value
Knowledge	Malaria spreading mosquito	515	2.74	4.66	Lower 2.3	13.35	0.000
	Dengue spreading mosquito				Upper 3.14		
	Malaria spreading mosquito				Lower 2.67		

Attitude	Dengue spreading mosquito	515	2.91	2.84	Upper 3.16	23.29	0.000
Practice	Malaria spreading mosquito	515	3.59	3.76	Lower 3.26	21.66	0.000
	Dengue spreading mosquito				Upper 3.92		

Table 4 shows Knowledge ,Attitude and Practice regarding mosquito spreading malaria and mosquito spreading Dengue was found to be significantly different (p<0.000).It was better for malaria causing mosquito as compared to Dengue spreading mosquito.

Table 5 Association of socio-demographic factors with KAP

Socio demographic factors		Score		Chi -square Value	P value
		Low	High		
Knowledge					
Occupation	Employed	240	216	2.91	0.05
	Unemployed	38	21		
Education	Uneducated	88	58	13.24	0.02
	Primary	67	65		
	Middle	71	50		
	Higher secondary	37	33		
	Intermediate	8	21		
	Graduate and more	7	10		
SES	Upper class	6	13	13.58	0.00
	Upper middle	29	45		
	Lower middle	61	41		
	Upper lower	122	86		
	Lower	60	52		
Attitude					
Occupation	Employed	206	250	5.26	0.01
	Unemployed	36	23		
SES	Upper class	5	14	10.21	0.03
	Upper middle	26	48		
	Lower middle	52	50		
	Upper lower	108	100		
	Lower	51	61		
Practice					
Occupation	Employed	231	225	3.95	0.03
	Unemployed	38	21		
Type of family	Nuclear	110	121	3.57	0.03
	Joint	159	125		
SES	Upper class	5	14	18.59	0.001
	Upper middle	26	48		
	Lower middle	59	43		
	Upper lower	122	86		
	Lower	57	55		

Table 5 Shows occupation, education, Socio-economic status found to be significantly associated with overall knowledge of participants. Overall attitude of participants was found to be significantly associated with occupation and socio economic status. Occupation, type of family and socio economic status was found to be significantly associated with overall practices of participants regarding mosquito causing malaria and dengue and its prevention.

Table 6 Co-relation between knowledge attitude and practices

	Value	Knowledge	Attitude	Practice
Knowledge	r	1		
	p			
Attitude	r	0.84	1	
	p	0.00		
Practice	r	0.84	0.88	1
	p	0.00	0.00	

Table 6 shows strong positive co relation between knowledge attitude and practice. There was linear co relation between knowledge, attitude and practice. Significant positive perfect co relation between knowledge and attitude as r=0.84 p=0.00, so attitude increases as knowledge similarly there is strong positive co relation between knowledge and Practice as r=0.84 and p=0.00, practices increases with knowledge.

Discussion

Main results of present study are that overall knowledge, attitude and practices of participants regarding Malaria and Dengue spreading mosquitoes were low .Statistically significant better knowledge; attitude and practices were noted for malaria spreading mosquitoes as compared to Dengue spreading mosquitoes. Occupation, education and SES were found to be significantly associated with knowledge.

Attitude was found to be significantly associated with Occupation and SES of participants. Practices were found to be significantly associated with Occupation, type of family and SES of participants. Positive co relation was found between knowledge, attitude and practices. As there were no studies with similar objectives of present study was found so studies with partial similar objectives were considered for discussion.

D. Mehta, H. Solanki, P. Pate et al[6] concluded, that there was adequate knowledge of mosquito borne diseases. As most (88.1%) respondents were well informed about MBDs & 3/4 (76.3 %) were familiar about measures that can prevent MBDs. In above study, 68.1% fever cases were found of which 88% took treatment from government doctor. Nearly all of (94.8%) respondents were taking help of personal protective measures unlike present study. **R. Mejia, A. Ribó, E. Quinteros et al[7]** drawn the inference by their study that about MBDs prevention, respondents had acceptable knowledge (76.8%), favourable attitude (92.1%) and an acceptable practices toward preventing reproduction of mosquitoes (58.5%) and a poor practices for prevention of mosquito sting (38.3%) unlike current study as knowledge, attitude and practices were not satisfactory. **R. Kumar and G. Gururaj[8]** disclosed by their study that a large number of people were oblivious about mosquitoes breeding places. Those who had knowledge mentioned stagnant water and drains as the main breeding places. More than one third of the interviewees did not know of any preventive measures against mosquitoes at the community level. More than 75% were using any type of personal prophylactic measures for preventing bites from mosquito. Results are similar to current study. **Maumita De1, Diptanshu Mukherjee2, Shubhadeep Paul3, et al[9]** uncovered that 87.8% of the participants heard about malaria & 70.8% of them knew mosquito bite as causative agent & 71.5% of them mentioned drain as breeding places of mosquito. About 46.8% of the population was mosquito repellent users. **Mayur C. Vala1*, Umed V. Patel2, Nirav B. Joshi3 et al[10]**. let out by the study unlike current study that all together knowledge regarding malaria was fair. Knowledge regarding prevention of malaria was good and majority of the households were using preventive measures against mosquito bites. **Rajiv Kumar Gupta1, Sunil Kumar Raina2, Tajali N. Shora1, et al[11]** revealed that KAP among respondent were reasonably good contrasting to our results. **Animesh Gupta1*, Aishwarya Bhat[12]** revealed that majority of the respondents was familiar with the malaria symptoms, mode of transmission and vector control measures. They had good knowledge of malaria disease and good practices of malaria control measures. **Ashutosh Sharma, Vinita Gupta, Ashish Khandelwal[13]** concluded that out of 966 part takers 88.4% was aware about mosquito borne diseases. Fever as chief complaint was recognised by 97.16% participants. Greater number of them considers that mosquito breeds in dirty water. Television and newspaper are principal source of details on mosquito borne disease matching to our results. Mosquito mat/coil/liquid vaporizer is used by many of them during night time only. **Chinnakali P, Gurnani N, Upadhyay RP et al[14]** concluded that awareness level is good but the practices were poor. **Daudé É, Mazumdar S, Solanki V[15]** revealed by study that poor practices were there regarding Dengue as also seen in current study. **Amar Taksande and Bhavna Lakhkar[16]** found that knowledge Attitude practice were not satisfactory, identical to current study. **S. singru, D. Debnath, S.B. Bhosale[17]** et found that 68.4% in urban areas and 40.4% participants in rural area acquainted that dengue is transmitted by mosquito. Around 63% in urban areas and 47% in rural areas respectively identified fever as a main symptom of dengue. The utilization of anti-adult mosquito measures was 48.05% and 51.42% in urban and rural area respectively. **Vishal Malhotra, Paramjeet Kaur[18]** found that among of 410 respondents, 87.32% were familiar about dengue fever. Fever as presenting symptom was known to 90.5% but very less understanding about other symptoms of dengue fever. Majority of them think that dengue mosquito breeds in soiled water. Most of them make use of Mosquito spray and coil/liquid vaporizer during night time only. Most of the respondents neither check their coolers for mosquito breeding nor changed water in their coolers within a calendar week. Television news channels and newspaper are key source of their information. **Jogdand, K. S., & Yerpude, P.[19]** arrived at the opinion that out of 370 respondents, 291(78.65%) knew that dengue fever is pass on by mosquito. Scarcely 38(10.27%) persons could name 3 symptoms of Dengue (fever, headache and bleeding). Concerning knowledge about breeding places 276 (74.59%)

respondents knew about breeding points of mosquitoes. Regarding the source of information on Dengue fever, 191 (51.62%) came to know about Dengue fever by mean of television. Despite desired awareness about dengue fever acquisition of the mosquito control methods was deficient in the area. **Nilofur banu1, kalaivani a2*, muthukumar t3[20]** found even though majority of respondent were aware of Dengue fever almost all of them were not aware that Dengue mosquito is a day time biter and resulting in untimely use of anti mosquito measures. The finding from this study can be used as an input for government and policy makers to frame appropriate strategies to prevent future outbreaks.

Conclusion

Present study concludes that overall Knowledge, Attitude and Practice of community regarding Malaria and Dengue spreading mosquitoes were found to be displeasing. When the comparison was made between KAP of prevention regarding Malaria and Dengue causing mosquitoes, it was better for Malaria spreading mosquito as compared to Dengue causing mosquitoes. This dissimilar KAP can be attributed to fall in incidence in Malaria and rise in Dengue incidence. Both malaria and dengue spreading mosquitoes are different, having different bionomics and thus different preventive measures and treatment. Even community did not have idea that there is difference in the mosquitoes causing Dengue and Malaria. This type of perception affects their attitude and practice regarding prevention of diseases. Apart from the community perception we have common interventions for prevention -more targeted towards prevention of Malaria. There is need to make clear the difference between bionomics of both mosquitoes by IECs (Information, Education and Communication) activities, as well as should have different specific interventions and strategies for both diseases causing mosquitoes.

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