Research Article

Knowledge attitude and practice about malaria transmission and its preventive measures among households in an urban area of Rohtak, Haryana

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Abstract

Background: Malaria is one of the major public health problem in India. Malaria affects about 1.5 million people in India causing about a thousand deaths annually. Malaria affects mainly the poor and the people living in urban area with majority of them being the migrant population. Knowledge about the modes of transmission and preventive measures against malaria thus play an important role in reducing its burden. **Objective:** To assess the Knowledge, Attitude and Practices (KAP) about modes of malaria transmission and preventive methods in the study area. **Materials and Methods**: This cross sectional study was undertaken in 320 randomly selected households in an urban area. The study was done in the month of July 2013 using the pretested semi-structured questionnaire. The data were analysed by appropriate statistical tests using the Epi-Info software. **Results:** Of 340 households selected for the study, 320 households participated, yielding a response rate of 94.12%. Respondents' ages ranged from 16 to 88 years with a mean age of 35.6 (± 12.44) years. Forty eight percent of respondents were females. About 70% of participants had attended formal education and 60% of them had a job with a regular source of income. Mosquitoes' ability to transmit malaria was mentioned by 48% of the respondents. Seventy percent of the respondents stated that mosquitoes were nuisances to them because they bite and cause itching and 40% identified the noise that mosquitoes make as being a nuisance. **Conclusions:** Better knowledge about malaria transmission and benefits of using available effective preventive and control measures by the individual households and the community could contribute much to the overall reduction of the malaria burden.
Keywords: ITN- Insecticide Treated bed Nets, KAP – Knowledge Attitude Practice.

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INTRODUCTION

In 2013, there are 97 countries and territories with ongoing malaria transmission, and 7 countries in the prevention of reintroduction phase, making a total of 104 countries and territories in which malaria is presently considered endemic. Globally, an estimated 3.4 billion people are at risk of malaria. WHO estimates that 207 million cases of malaria occurred globally in 2012 and 627 000 deaths.[1] Malaria not only poses a high risk to health, but the repeated clinical consequences of infection in endemic areas during early life and adulthood and outbreaks in epidemic prone areas place a burden on households, on the health services and ultimately on the economic growth of communities and the nation. Ignorance and impoverished conditions of people contribute in creating source and spread of malaria and hinder disease control strategy. Malaria affects about 1.5 million people in India causing about a thousand deaths annually. Malaria affects mainly the poor and the people living in urban area with majority of them being the migrant population. Knowledge about the modes of transmission and preventive measures against malaria thus play an important role in reducing its burden.[2, 3]

OBJECTIVE

To assess the Knowledge, Attitude and Practices (KAP) about modes of malaria transmission and preventive methods in the study area.

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MATERIAL AND METHODS

Study area

The study was carried out in an urban field practice area attached to the department of Community Medicine, Pt B D Sharma Post Graduate Institute of Medical Sciences, Rohtak, a tertiary care Institute in Haryana, India. The study area had a population of 52,000.

Study design and data collection

The study was a descriptive cross-sectional survey. A structured questionnaire was designed and administered by the investigator. The first part of the questionnaire included demographic characteristics, whereas the second part had questions on, adult residents' attitudes and understanding of malaria transmission, perceptions of cause, preventive measures and practices. The questionnaire was administered to 340 randomly selected households for two weeks in July 2013. 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. Data collected were double entered into Microsoft Access database and descriptively analysed using Epi-Info version.

RESULTS

Of 340 households selected for the study, 320 households participated, yielding a response rate of 94.12%. Respondents' ages ranged from 16 to 88 years with a mean age of 35.6 (± 12.44) years. Forty eight percent of respondents were females. About 70% of participants had attended formal education and 60% of them had a job with a regular source of income. (Table 1) Seventy percent of the respondents stated that mosquitoes were nuisances to them because they bite and cause itching and 40% identified the noise that mosquitoes make as being a nuisance. Mosquitoes' ability to transmit malaria was mentioned by 48% of the respondents. 80% of respondents identified that mosquitoes bite during the night. 58% of the respondents stated that mosquitoes rest in dark places inside the house during the day. Other mosquito resting places like dirty areas and the edge of the river/stagnant water were identified by 34% and 20% of the respondents, respectively. Measures to avoid mosquitoes identified by respondents included the use of bed nets, insecticide aerosols, elimination of mosquito breeding sites, and smoke cow dung/leaves. Modes of malaria transmission recognized by study participants were dirty environment (54%) and mosquito bites (48%). (Table 2, Fig.1) Forty percent of the subjects mentioned use of bed nets as the mode of prevention from mosquito bites and 30 percent mentioned as clean surroundings. Table2

Table1: Socio-demographic characteristics of respondents

Variables	Total (N=320)
Gender	
Male	166(52)
Female	154(48)
Marital status	
Single	32(10)
Married	253(79)
Divorced	6(2)
Widow/widower	29(9)
Religion	
Hindu	307(96)
Muslim	6(2)
Christian	3(1)
Others	4(1)
Family Size	
Single	16(5)
2-5 persons	192(60)
6-9 persons	96(30)
10 or more persons	16(5)
Occupation	
Variable source of income	128(40)
Regular source of income	192(60)
I	19(6)
II	32(10)
III	122(38)
IV	115(36)
V	32(10)

(The values in parentheses indicate percentage)

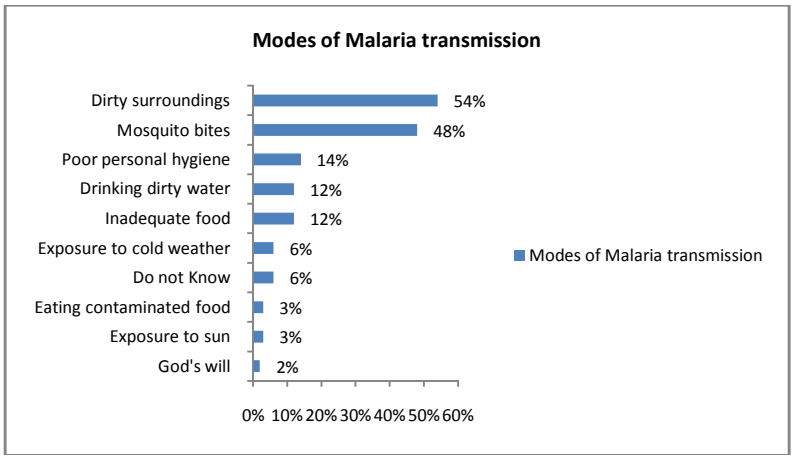

Figure 1: Modes of malaria transmission reported by study participants

Table 2: Knowledge about mosquito behavior and mosquito preventive measures among the respondents

Knowledge about mosquito behaviours	Responses
Mosquito Characteristics	**Yes**
Mosquitoes bite and cause itchiness	224(70)
Mosquitoes make noise	128(40)
Mosquitoes carry disease	192(60)
Mosquitoes contaminate food	6(2)
Do not know	13(4)
Biting time	
During night time	256 (80)
During day time	32 (10)
Any time	22(7)
Do not know	10(3)
Resting places	
Dark place inside the house during day	186(58)
Dirty areas	109(34)
Edge of the river/stagnant water/ponds	64(20)
Do not know	58(18)
Others (Latrine, cattle shed)	13(4)
Currently used mosquito preventive measures	
Use mosquito (bed)net	128(40)
Clean surroundings	96(30)
Take no measure (do nothing)	70(22)
Use insecticide aerosols	58(18)
Smoke cow dung and/or leaves	26(8)
Use DDT (indoor residual spray)	19(6)
Close windows and doors	26(8)

(The values in parentheses indicate percentage) Note: percentages do not add up to 100% because of multiple responses

Table 3: Relationship between socio-economic characteristics and knowledge about malaria mode of transmission and preventive measures among respondents

Variable	Mosquito bites are modes of malaria transmission		Odds ratio
	Yes	No	
Level of education			
No formal education	31(32)	65(68)	1
1-4th grade	20(42)	28(58)	1.49 (0.7321 to 3.0639)
5-8th grade	24(42)	34(58)	2.09 (1.0316 to 4.2620)
9-12th grade	38(54)	32(46)	2.48 (1.3185 to 4.7020)
College / University level	32(66)	16(34)	4.19 (2.0068 to 8.7631)
Gender			
Male	113(68)	53(32)	1
Female	89(58)	65(42)	0.96 (0.6117 to 1.5254)

Socio economic status		
I to III	78(45)	1
IV and V	85(58)	1.66 (1.0714 to 2.6022)

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 more than one. Table 3

Table 4: Knowledge about Insecticide Treated Bed Nets (ITNs) among respondents

Variable	Response
Awareness about ITN and sources of information Ever seen and/or heard about ITN	256(80)
Sources of ITN information	
Heard from health workers	102(40)
Heard on the radio/television	102(40)
Heard from neighbours	67(26)
Other sources	51(20)

(The values in parentheses indicate percentage) Note: percentages do not add up to 100% because of multiple responses

Table 4 shows Knowledge about Insecticide Treated Bed Nets (ITNs) among respondents with 80 percent of the subjects aware of ITN use.

Table 5: Determinants of respondents' awareness of ITNs (Insecticide Treated Nets)

Socioeconomic variable	Awareness of ITN Yes	No	Odds ratio
Level of education			
No formal education	44(46)	52(54)	1
1-4th grade	25(52)	23(48)	1.28 (0.6416 to 2.5718)
5-8th grade	38(66)	20(34)	2.24 (1.1444 to 4.4060)
9-12th grade	57(82)	13(18)	5.18 (2.5123 to 10.6877)
College / University level	43(90)	5(10)	10.16 (3.7041 to 27.8880)
Occupation			
Variable source of income	51(40)	77(60)	1
Regular source of income	127(66)	65(34)	2.94 (1.8563 to 4.6879)
Socio economic status			
I to III	90(52)	83(48)	1
IV and V	112(76)	35(24)	2.95 (1.8211 to 4.7823)

Subjects with formal education, regular source of income and higher socioeconomic status had a better knowledge regarding Insecticide Treated Nets with odds ratio of more than one. Table 5

DISCUSSION

The potential contribution of KAP studies to Malaria research has not received much attention in most of the developing countries. The results showed that most people had information about malaria. The most important source of information is health facilities. In this study 48% of those who had heard about malaria made correct association between malaria and mosquito bite. The awareness was high in male which may be because the females stay at home and less informed than males. Similarly the awareness was high among the educated people than the less educated people and in high income group as compared to low income group population which is quite obvious as people with higher education and economic status has better understanding. In general, the knowledge about breeding and resting behaviour of mosquitoes is concerned was low in the total population but there was a good awareness about how the malaria is transmitted and how it can be prevented. The various mosquito preventive measures told by the respondents are use of bed nets (40%), maintaining clean surroundings (30%), use of insecticide aerosols (18%), smoke cow dung/leaves (8%) and use of indoor residual spray (6%). In a study by Madne G *et al*, the majority of the study participants had ever heard of the malaria (70.7%). A large proportion of participants (83.7%) mentioned that mosquito transmits malaria through biting while 82.1% individuals were aware that mosquitoes bites during dusk and night. Many respondents were aware about the common symptoms of malaria (60.9%) but only 31.7% participants had knowledge that malaria can be a deadly disease without proper treatment. Almost all participants 241 (98%) had information about preventive measures of mosquito bites. A total of 93.7% of participants were using one or other anti-adult mosquito measures whereas

only7.3% participants were employing engineering methods to prevent water stagnation.[5] In a study by Singh RK *et al*, on being asked about malaria transmission, mosquito breeding and resting sites, 28.4% of the respondents were not aware of malaria transmission by mosquito bite. Only one fourth (26.5%) community were aware about mosquito breeding in clean water bodies as ponds, rivers and streams etc., only one third (32.6%) respondents were taking control measures. The knowledge of resting sites of mosquito was as good as 48.8% respondents reported cattle sheds and 32.4% reported human dwellings and 15.7% dump dark places.[6] In a study by Kumar S, Correct knowledge about the cause of malaria was 2.77 times higher in males than females and 11.53 times higher in literate tribal people than in illiterate.[7] In a study by Zaidi SHN *et al*, More than 94% of the people interviewed perceived mosquitoes as a problem. Malaria was known as the main disease transmitted by mosquitoes. Regarding breeding sites, a significant number of people had no knowledge about the breeding sites of mosquitoes.[8] Thus a vast number of community studies in India and abroad on knowledge of malaria and its prevention depicts the similar findings as malaria is a very widespread public health problem.[3, 9, 10, 11]

CONCLUSION

In conclusion, knowledge on the role of mosquitoes in malaria transmission and comprehensive knowledge about malaria prevention strategies was observed to be lower among the study population. There were significant misconceptions about both modes of malaria transmission and preventive measures. Despite the fact that respondents were well aware of ITNs, access to various sources of malaria prevention information differed by socioeconomic status. These results call for targeted health education/communication to increase the population's comprehensive knowledge of effective malaria control strategies in general, and ITNs in particular. Better knowledge about malaria transmission and benefits of using available effective preventive and control measures by the individual households and the community could contribute much to the overall reduction of the malaria burden.

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