



# Assessment of Community Knowledge, Attitude and Practices on Malaria in Rural Area of Central India

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## ABSTRACT

**Introduction:** Correct assessment of community knowledge, attitude and practices can assist reformulation of malaria control strategy and form basis of appropriate health education messages. This study was carried out with the objective to assess knowledge, attitude and practices regarding malaria of people living in rural areas of Central India.

**Methodology:** A cross-sectional study involving 400 households from 8 villages was carried out from August-November 2011. Socio-demographic characteristics, knowledge regarding transmission of disease, symptom of disease, breeding of mosquitoes and control programs, attitude towards seeking treatment and practices; waste disposal, keeping the surroundings clean and use of personal protective measures were assessed by a structured questionnaire.

**Results:** Only 50% believed that malaria is fatal disease, only 33% had closed water drainage system in their houses and 62.50% practiced of throwing garbage in open or in-front of their house. Seepage of water was present in 42.37% houses. 15% households did not use any type of personal protective measure.

**Conclusions:** The study showed high knowledge regarding malaria but the attitude and practices on various aspects of malaria was not proper. There is need to focus on Behaviour Change Communication Strategy and improve the Quality of Life of people living in this rural area.

**Key Words:** Malaria, knowledge, attitude, practice

## INTRODUCTION

Even after centuries, since the aetiology and life-cycle of malaria were elucidated, the disease continues to present a daunting public health challenge. It is still endemic in over 100 countries worldwide. The burden of malaria in the South East Asia (SEA) Region is still high; it is second to Sub-Saharan Africa. In SEA Region, three countries accounted for 94% of confirmed cases; India (66%), Myanmar (18%) and Indonesia (10%).<sup>1</sup> In India, about 1.31 million malaria cases and 753 deaths were reported in the year 2011. In India, about 95% population resides in malaria endemic areas.<sup>2</sup>

The malaria situation varies among countries and within a country according to geography, season, climate, customs and practices of the people. Prevalence, transmission and distribution of the disease and disease causing parasite species are determined by local conditions in the community. Malaria is more common in rural areas as it is closely related to agricultural practices.<sup>3</sup> Socio-economic status and housing condition plays an important role in the epidemiology of the disease. The ill-ventilated and ill-lighted house provide ideal indoor resting places for mosquitoes; the conditions more common in rural areas. Open drainage system and unsafe disposal of waste provide favourable condition for breeding of mosquitoes.<sup>4</sup> Over to

this ignorance, lack of proper knowledge, misbeliefs and improper treatment of the disease also affect and hinder effective implementation of malaria control strategies<sup>5</sup> So, the way to malaria control is not only to provide health care facility to people; which are well provided by government but also to assess knowledge, attitude and practices of people again and again in a particular geographical area so as to bring the desired behavioural changes in them.

## OBJECTIVE

This study was carried out with the objective to assess knowledge, attitude and practices of the people regarding malaria living in rural areas of Nagpur district, Maharashtra, India.

## MATERIAL AND METHOD

A community based cross-sectional study was carried out in the Rural field practice area of the medical college from August-November 2011. From the data of previous three years (2008-2010), clustering of malaria cases was observed in eight villages of Rural field practice area of the medical college. Also, Annual Parasite Incidence (API) was consistently more than one in these villages. Accordingly, these eight villages were selected for the study. The distance of these villages from Rural Health Training centre ranged between 8 km to 25 km. Fifty houses from each village were selected randomly to maintain the uniformity. In every house, the information was collected by a predesigned structured questionnaire and was gathered either from the head of the family or the eldest member present at the time of the visit. The information was considered representative of the household itself. The purpose of the study was very carefully explained to them and their verbal consent was obtained before the questionnaire was administered. It required 25-30 minutes to complete the interview and making other observation. Hence, 8-10 houses were interviewed daily. Thus one village was covered in 5 days.

The questionnaire consisted of the information regarding general demographic characteristics, knowledge regarding - modes of transmission, causes, signs and symptoms, type of mosquitoes, breeding places of mosquitoes, diseases transmitted by mosquitoes, National Vector Borne Disease Control Program (NVBDCP), seasonality and fatality of the disease; their practices like sleeping habits, water storage, cleaning of environment, water and waste disposal, use personal protective measures; and attitude towards illness (health seeking behaviour).

Statistical Analysis: Collected data was compiled on Microsoft Excel Worksheet. Data was analyzed using frequency, mean, proportion & percentages. Chi-square test and Fisher's Exact test were used for comparison. The data was dichotomized and comparison of knowledge, attitude and practices was done between those who educated upto primary level (included illiterate) and secondary level or above. Similar comparison was done between low income group (SES class IV, V) and high income group (class I, II, III).

## RESULTS

A total 400 respondents were interviewed from eight villages. Most of the respondents were males 246 (61.5%) and mean age was  $41.19 \pm 13.92$  yrs. Most of them 276 (69%) were farmers and involved in labour in agriculture activities. About 373 (93.20%) belonged to class-IV and V socio-economic status according to Modified B. G. Prasad Classification and 53 (13.20%) were illiterate. The detailed demographic characteristics of the community have been depicted in Table 1.

**Table 1: Socio-demographic characteristics of community**

Variable	Households (N=400)(%)
<b>Sex</b>	
Male	246 (61.5)
Female	154 (38.5)
<b>Educational status</b>	
Illiterate	53 (13.2)
Primary level	62 (15.5)
Secondary level	184 (46)
Higher secondary	78 (19.5)
Graduate	23 (5.7)
<b>Occupation</b>	
Labourer	146 (36.5)
Farmer	130 (32.5)
Job in company	32 (8)
Unemployed/housewife	58 (14.5)
Others	34 (8.5)
<b>Socio-economic Status*</b>	
Class I	6 (1.5)
Class II	7 (1.7)
Class III	14 (3.5)
Class IV	74 (18.5)
Class V	299 (74.7)

\*By B.G. Prasad classification

All the respondents had heard about malaria disease and 344 (87.80%) of households knew that the mosquito transmit the disease but still around 38 (10%) said that malaria was transmitted by housefly and coughing/sneezing of infected person while 18 (2.40%) respondents were completely unaware of any modes of transmission of the disease.

**Table 2: Knowledge regarding malaria (N=400)**

Knowledge Domain	Respondent (%)
<b>Mode of transmission</b>	
Mosquito bite	344 (87.8)
Housefly/other insect bite	27 (7.3)
Infected food	4 (0.4)
Coughing/sneezing	7 (2)
Don't know	18 (2.4)
<b>Symptoms</b>	
Fever	24 (4.4)
Fever with chills	170 (46.7)
Fever with chills, headache, vomit	193 (45.5)
Don't know	13 (3.2)
<b>Name of mosquito</b>	
Anopheles	41 (10.25)
Culex	23 (5.75)
Aedes	16 (4)
Don't know	320 (80)
<b>Breeding places of malaria mosquitoes</b>	
Clean stagnant water	137 (43.25)
Dirty polluted water	202 (50.5)
Animal sheds	40 (10)
Don't know	21 (5.25)
<b>Seasonal</b>	
Yes	209 (52.25)
No	191 (47.75)
<b>Fatal</b>	
Yes	198 (49.5)
No	202 (50.5)

Most respondents 363 (92.2%) told correct symptoms of malaria and 339 (93.75%) respondents also knew that stagnant water and water in drainage are the major breeding places of mosquitoes but only half of the households believed that malaria is fatal disease and only 37% heard about NVBDCP. High proportion of respondents i.e. 320 (80%) had no knowledge of different species of mosquitoes and also the one that caused malaria. (Table 2)

Maximum respondents 378 (94.50%) preferred indoor sleeping. But this habit also varied according to season. The construction of most of the houses in the area was of kutcha type. Natural light was inadequate and ventilation was improper. Seepage of water was also present in 169 (42.37%) houses which was a source of continuous presence of dampness in the house. Most of the respondents knew the ill effects of water collection in and around the house and practiced regular cleaning but in 267 (66.75%) houses water drainage system was open and waste water drained in front of the house. About 249 (62.50%) household threw garbage in open or in front of the house. Around 61 (15.25%) of respondents did not use any type of protective measure whereas use of bed nets was only 7.5%. Cow dung smoke with neem leaves practice was observed in 129 (32.25%) households. Quite a good proportion of population (08%) believed in myths and superstitions and did not utilize the health care facilities. (Table 3)

**Table 3: Practices and attitude related to malaria (N=400)**

Practice domain	Respondent (%)
<b>Sleeping place</b>	
Indoor	378 (94.5)
Outdoor	20 (5)
Cattle shed	2 (0.5)
<b>Sleeping near fan</b>	
Yes	359 (89.75)
No	41 (10.25)
<b>Cleaning water appliances regularly</b>	
Yes	389 (97.25)
No	11 (2.75)
<b>Cleaning of animal shed and surrounding regularly</b>	
Yes	350 (87.5)
No	50 (12.5)
<b>Cleaning of bathroom and toilet regularly</b>	
Yes	374 (93.5)
No	26 (6.5)
<b>Throwing of garbage</b>	
In open	249 (62.5)
Safe disposal	151 (37.75)
<b>Drainage system</b>	
Open	267 (66.75)
Closed	133 (33.25)
<b>Preventive measures</b>	
Mosquito nets	31 (7.75)
Mosquito repellants (coils, goodnight)	179 (44.75)
Smoke with neem leaves	129 (32.25)
None	61 (15.25)
<b>Attitude domain</b>	
<b>Treatment in illness</b>	
From Doctor	369 (92.25)
From Quacks/local herbal treatment/self	31 (7.75)

We found that those with secondary level or above had better awareness regarding mode of transmission, symptoms, type of mosquito causing malaria, fatality of the disease and occurrence of disease as compared to illiterate or educated upto primary level. Similarly, practice of using personal protective measures was significantly more among those with secondary level or above. (Table 4) There was no significant difference in the knowledge about breeding of vector mosquitoes and treatment seeking attitude between these two groups.

There was no much difference in knowledge regarding malaria in various studied domains among high income and low income group. All the high income families were using protective measures against mosquitoes and also had closed drainage system. (Table 5)

Among the respondents 81% prefer to take treatment from qualified medical practitioners while 10% prefer to visit quacks and local help for treatment. Around 9% prefer self care in case of illness.

**Table 4: Analysis according to literacy status**

Domain	Low educated (n=115) (%)	Higher educated (n=285) (%)	P-value
<b>KNOWLEDGE</b>			
<b>Mode of transmission</b>			
By mosquitoes	87 (75.65)	257 (90.18)	<b>0.0002</b>
Others	28 (24.35)	28 (9.82)	
<b>Symptoms</b>			
Correct	98 (85.22)	262 (91.93)	0.0428
Incorrect	17 (14.78)	23 (8.07)	
<b>Type of mosquito</b>			
Anopheles	4 (3.48)	37 (12.98)	<b>0.0046</b>
Other	11 (9.57)	248 (87.02)	
<b>Breeding places</b>			
Correct	69 (60)	174 (61.05)	0.8453
Incorrect	46 (40)	111 (38.95)	
<b>Fatal</b>			
Yes	33 (28.7)	165 (57.89)	<b>0</b>
No	82 (71.3)	120 (42.11)	
<b>Occurrence of disease</b>			
Seasonal	68 (59.13)	141 (49.47)	<b>0.0129</b>
Perennial	47 (40.87)	144 (50.53)	
<b>PRACTICE</b>			
<b>Protective Measure</b>			
Yes	85 (73.91)	254 (89.12)	<b>0.0001</b>
No	30 (26.09)	31 (10.88)	
<b>Regular Cleaning of surrounding</b>			
Yes	102 (88.7)	248 (87.02)	0.646
No	13 (11.3)	37 (12.98)	
<b>ATTITUDE</b>			
<b>Treatment in illness</b>			
From Doctor	102 (88.7)	267 (93.68)	0.0913
Other/self	13 (11.3)	18 (6.32)	

**Table 5: Analysis according to income status**

Domain	Low income Group (373)	High income Group (27)	P-value
<b>KNOWLEDGE</b>			
<b>Mode of transmission</b>			
By mosquitoes	319 (85.52)	25 (92.59)	0.3066
Others	54 (14.48)	2 (7.41)	
<b>Symptoms</b>			
Correct	337 (90.35)	26 (96.3)	0.3030
Incorrect	36 (9.65)	1 (3.7)	
<b>Type of mosquito</b>			
Anopheles	38 (10.19)	6 (22.22)	0.0536
Other	335 (89.81)	21 (77.78)	
<b>Breeding places</b>			
Correct	231 (61.93)	11 (40.74)	<b>0.0296</b>
Incorrect	142 (38.07)	16 (59.26)	
<b>Fatal</b>			
Yes	180 (48.26)	18 (66.67)	0.0647
No	193 (51.74)	9 (33.33)	
<b>Occurrence of disease</b>			
Seasonal	191 (51.21)	13 (48.15)	0.7589
Perennial	182 (48.79)	14 (51.85)	
<b>PRACTICE</b>			
<b>Protective Measure</b>			
Yes	312 (83.65)	27 (100)	
No	61 (16.35)	0 (0)	
<b>Regular Cleaning of surrounding</b>			
Yes	326 (87.4)	24 (88.89)	0.8212
No	47 (12.6)	3 (11.11)	
<b>ATTITUDE</b>			
<b>Treatment in illness</b>			
From Doctor	343 (91.96)	25 (92.59)	0.9064
Other/self	30 (8.04)	2 (7.41)	

## DISCUSSION

The key to malaria control lies in understanding local malaria with a primary understanding of knowledge, attitude and practices at community level prior to the implementation of the malaria control strategy.

In this study we found that about 80% respondents were unaware of different species of mosquitoes. A noticeable proportion of households (13%) had incorrect information regarding modes of transmission of malaria and only 50% believed that this disease is fatal. So, this showed that the IEC activities were not reaching the whole community. There must be some barriers in streaming and disseminating the correct knowledge in the community which need to be addressed. Similar observations were made by *Singh RK et al*<sup>2</sup> and *S. Kannathasana et al*<sup>6</sup> in their studies.

In the study we found that most of the houses (67.50%) were kutch type and also the natural light was inadequate and ventilation was improper. Seepage of water was also present in 42.37% houses which was a source of continuous presence of dampness in the house.

All these conditions were making domestic environment more favourable for resting of mosquitoes and households susceptible for the disease. *Haque U et al*<sup>7</sup> in his study noticed that 90% of the malaria cases were living in kutch house while *Guthmann JP et al*<sup>8</sup> also found improper ventilation and seepage of water in houses of 76.5% malaria cases. In this study open drainage system was found in 66% of houses and 62% households threw garbage indiscriminately in open space or in front of house. These practices of households were making the peridomestic environment in the community more favourable for breeding of mosquitoes. *Mohite JB et al*<sup>9</sup> and *Soomro FR et al*<sup>10</sup> had mentioned that defaulted sewerage system and improper dumping of garbage were conducive for mosquito breeding and responsible for more number of malaria cases in their studied area. In the present study, 15% of households were not using any type personal protective measure making them victim for mosquito bite. *Soan V et al*<sup>11</sup> and *Anita Acharya et al*<sup>12</sup> found 15.50% and 30% respondents not using any type of preventive measure respectively.

In the study we found that around 20% household take treatment from quacks or take self treatment

when they fall sick. This showed that there still exists some misbeliefs in the community which had directed them towards quacks and forbid them from utilizing the health care facilities for proper treatment. Hlongwana KW *et al*<sup>13</sup> and Yadav SP *et al*<sup>14</sup> found similar respond in about 18% and 22% respondents respectively.

In our study we found that those with higher education had greater knowledge regarding mode of transmission, symptoms, type of mosquito causing malaria, fatality of the disease and occurrence of disease than respondents with low education. Similarly, practice of using protective measures against mosquitoes significantly higher among higher educated one. Parajuli K *et al*<sup>15</sup> found significant relationship between education and knowledge regarding malaria while Singh RK *et al*<sup>2</sup> found practice of using personal protective measures significantly more among higher educated respondents. In our study we found that knowledge regarding malaria did not vary according to economic aspect but practice of using personal protective measure was significantly more among higher economic group. In his article, Sharma VP<sup>16</sup> mentioned that there is positive relationship between poverty and occurrence of malaria. Illiteracy and low income always had a profound influence on people's perception of cause, housing standard, preventive practices and treatment seeking behavior of malaria.

So, this is obvious that if education and standard of living are higher, it will definitely reduce the conditions favourable for communicable diseases like malaria. Secondly, only having knowledge is not sufficient to stop malaria we have to increase the standard of living of the people in rural area also.

## CONCLUSION

Our study indicate good knowledge and awareness but wrong attitude and improper practices on various aspects of malaria and its control which may be one of the important factors responsible for the persistence of malaria in this areas. Only having knowledge is not sufficient, it will ultimately be transformed into action. We need to focuss on Behaviour Change Communication Strategy and improve the Literacy and Standard of Living of people living in rural area.

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