

Current Prevalence of Malaria Knowledge and Practices among Residents of a Rural Community in South India

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Abstract

Introduction: Malaria is a major public health problem in India. The prevention of Malaria is mainly dependent on knowledge and beliefs of people. The National Framework for Malaria Elimination (NFME) 2016-2030 in India insists to eliminate malaria in India and for this to achieve the current malaria awareness on causes and protection in the region where malaria was a major problem about 7 years back is very important. In this background this study was undertaken to know the current Knowledge of Malaria in this area.

Objectives: To know the knowledge and practices of Malaria which was problem in the area about 7 years back.

Methodology: It is a Cross-sectional study conducted in a rural community. Since the proportions of knowledge and practices regarding malaria transmission in this setting was unknown, a 50% proportion was assumed to ensure the maximum sample size. The total number of houses visited was 110 to achieve the sample size of 384. The information of malaria with respect to Socio-demographic, knowledge and practices has been collected from the adult respondent (aged >18 years) of the households in the villages of field practice area of the medical college. Data was collected by semistructured questionnaire method. Frequencies, proportions and chi-square test are the test of significance.

Results: Among the 384 subjects interviewed 73% (i.e. 280) knew about malaria and were assessed for Knowledge and practices regarding malaria. About 32.8% (i.e. 126) said that malaria is a communicable disease, Majority 74.7% (i.e. 287) said that malaria is transmitted from mosquito bite. About 19% (i.e. 72) were not aware regarding mode of transmission of malaria. About 74.7% (i.e. 287) respondents informed that mosquito nets were used in the night to protect from mosquito bites.

Conclusions: The study revealed that knowledge and practices about malaria was satisfactory and there was varied perception about causes, spread of disease, symptoms and protection from mosquitoes. Health personnel and medical students were the major source of knowledge in this the population. Since the malaria is not a problem from the past 5 years, but still the overall awareness regarding malaria was good in this area.

Key-words: Malaria, awareness, transmission, mosquitoes, Knowledge

Introduction

The South East Asia Region is the second largest contributor to the global malaria burden and estimated

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cases were 11.3 million in 2017 according to World Malaria Report 2018. India accounted for 68% reported cases and 65% of malaria deaths. India also recorded its incidence rate fall, recording the largest decline globally when compared to other countries where incidence remained same or little increase noticed.¹The National Vector Borne Disease Control Programme reported 0.84 million cases and 194 deaths due to Malaria in 2017. In the meantime, the API (Annual Parasite Incidence)

in the so called high burden states namely were about 91% of malaria cases and 99% of deaths due to malaria are reported from high disease burden states namely Northeastern (NE) States, Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and West Bengal. The API rates have declined from 168 to 0.65 from 2005 to 2017. ²Malaria is a unique disease and has roots deep within human communities.³Beliefs and practices of malaria are often related to culture which can influence the effectiveness of control strategies.⁴Thus, local knowledge and practices related to the disease are key to implementation of culturally appropriate, sustainable, and effective interventions.⁵Community perception, beliefs, and attitude about malaria control, symptom identification, treatment, and prevention influence efforts to address malaria and are often overlooked in control efforts.⁶ It will also vary from country to country and individual to individual.

To achieve the targets of reducing malaria prevalence and preventing malaria epidemic, it is imperative to have active community participation which in turn depends on people's knowledge and attitude towards the disease. The major public health problems are the contaminated water supply which leads to the unhealthy surroundings paving way for vector breeding and other communicable diseases in these rural and tribal regions. In fact human behavior as a major contributing factor has been largely neglected in research all over the globe on vector borne diseases in part because of the long-standing separation of the behavioral disorder from the physical and biomedical disciplines. ⁷

Malaria is an endemic disease in our rural field practice area of Department of Community Medicine covering 20 villages with Annual Parasite Incidence (API) of 2.9 for the year 2012. Hence this area is categorized as high risk area. This area has reported malaria cases every year and has become a point of discussion in state and district level meets. The cases has reduced significantly by sustained efforts by health workers, medical students and nursing students of the medical college. Due to its high incidence in this area the awareness with respect to malaria was good on aspects of malaria transmission, signs and symptoms of malaria.⁸ However zero cases of malaria has been reported in this area since 2017. The National Framework for Malaria

Elimination (NFME) 2016-2030 in India has been initiated to eliminate malaria as major public health problem.

This study has been conducted to see the current malaria awareness on causes and protection in the region where malaria was a major problem about 7 years back.

Methodology

It's a Cross-sectional study conducted in a rural community of Devarayasamudra Village in Kolar District. Since the proportions of knowledge, attitudes and practices regarding malaria transmission in this setting was unknown, a 50% proportion was assumed to ensure the maximum sample size. A sample size of $n = 384$ was calculated using Open epi 3.01 version. ⁹The information of malaria with respect to Socio-demographic, knowledge and practices has been collected from the adult respondent (aged >18 years) of the households in the villages of field practice area of the medical college. The total number of houses visited was 110 to achieve the sample size of 384.

Statistical Methods: The data was compiled in Microsoft excel and Open EPI info 3.01 software was used to analyze the data. Descriptive statistics like proportions and confidence intervals was computed. Chi-square test is the test of significance for qualitative data and a p value of <0.05 was considered significant.

Results

Among the 384 subjects interviewed 73% (i.e. 280) knew about malaria and were assessed for Knowledge and practices regarding malaria. About 32.8% (i.e. 126) said that malaria is a communicable disease, Majority 74.7% (i.e. 287) said that malaria is transmitted from mosquito bite. About 19% (i.e. 72) were not aware regarding mode of transmission of malaria. Head ache and chills 31.5% (I.e. 121) was the main symptoms of malaria. About 50.7% of the respondents said that during the night mosquito bite is common. There was a significant difference between males and females with respect to malaria transmission. (Table 1)

About 74.7% (i.e. 287) respondents informed that mosquito nets were used in the night to protect from mosquito bites. 15 % (i.e.57) of respondents were not using any methods to protect from mosquito bites.

25%(i.e. 96) of the individuals had habit of sleeping outdoors. 50.7% (i.e. 195) of the respondents informed that they had slept inside the mosquito net in the last night. Blood smear was done among 77% (i.e.7) of the individuals who had fever in the past fortnight.(Table 2)

Majority 50%(i.e.55) of the house hold income belonged to class 1 income group were using bed nets in the night. (Table 3)

* Modified BG Prasad Socio-economic Classification, Update – 2019.¹⁰

Tables 1: Knowledge about Malaria

Characteristics		Female n=183	Male N=201	Total	P-Value
Know about Malaria	Yes	135	145	280	0.71
	No	48	56	104	
Malaria communicability	Yes	62	64	126	0.67
	No	121	137	258	
Malaria transmission	Mosquito bite	130	157	287	0.0008
	House fly	4	10	14	
	Don't Know	47	25	72	
	More than one source	2	9	11	
Symptoms of Malaria	Fever	33	41	74	0.78
	Chills & Head ache	58	63	121	
	More than one symptom	54	53	107	
	Don't Know	38	44	82	
Time of Mosquito bite	Night	89	106	195	0.42
	During dusk	53	52	105	
	More than one time	41	43	84	

Table 2: Practices and health care deliver about Malaria

Characteristics		Female n=183	Male N=201	Total	P-Value
Protection from Mosquito bites	Mosquito Net	106	109	217	0.52
	Mosquito mat/ Coil/ Agarbatti	16	20	72	
	Fan/ Covering body	37	39	11	
	Not using any method	24	33	57	
Sleeping Habits	Inside house	141	145	286	0.34
	Outside house(Roof top/cattle shed)	42	54	96	
Sleeping with bed net – last night or last one week	Yes	108	124	195	0.59
	No	75	77	105	
Blood smear performed for fever case in the last fortnight	Yes	3	4	7
	No	1	1	0	

Table 3: Bed-net use according to socioeconomic status

Socio-Economic Status*	Bed net use Yes-68	Bed net use N0-39	Total	P-Value
>7008	36	19	55	0.674
3504-7007	22	12	37	
2102-3503	5	5	10	
1051-2101	3	2	5	
<1050	2	1	3	

Discussion

The present study was conducted in malaria endemic area to assess knowledge and practices about the cause, prevention and treatment of malaria and their bearing on the control of the disease. The rural practice area namely Devarayasamudra Village about 8 years back in the year 2012 the Annual Parasite Incidence (API) was more than 3.3. But in the recent years from 2016 onwards there was no malaria has been reported in the area.¹¹ Being endemic area earlier and with the launch of National Framework for Malaria elimination in India,¹² it is necessary to know the current knowledge on Malaria transmission, causes and protection for the National Malaria control Programme where the strength of the study captures the current scenario and future implications with respect to Malaria.

The age of the respondents ranged from 18 to 90 years, with a mean age of 35 years. It was observed that majority were in age group 18 to 35 yrs i.e. 57.5%. 52.4% were males and 47.6 were females. 57% were illiterates, unskilled occupation was found in majority i.e. 63.8%. Interestingly it was found that majority 50% of the families belonged to class 1 socio-economic status according to Modified B G Prasad classification. There was a significant association between males and females with respect to occupation. Gaurav Dhawan et al, in their study observed that the mean was 35 years and ranged from 18 to 80 years and 75% of the respondents belonged to middle and higher class which was similar our study.¹³ Majority 74.7% of respondents had excellent knowledge regarding the mosquito bite as the means of transmission which is very close, where 73% of the respondents knew mosquito bite is the mode of transmission of malaria in a study conducted by Joshi A B et al.¹⁴ About 72.9% of the respondents heard about malaria which is closer to the study R K Gupta et al, the fact might be endemic area and majority of the respondents received health education through health workers, nursing students, medical students and inters about malaria.¹⁵ Majority of the respondents (78.6%) had good knowledge about malaria symptoms namely fever, chills and headache and more than one symptoms and this finding was comparable with Joshi AB et al and Gupta RK et al.^{14,15} Majority 54.6% of the respondents informed that during night and dusk is the time where mosquito bites will take place.

Among the total, 96.7% respondents replied that people could protect from malaria. Regarding the method to protect from malaria, 56.5% replied mosquito net to use as precaution to prevent mosquito bite. 18.7% of the respondents informed that by using mosquito mat or coil can be used for protection and 3 % of the respondents used fans as a measure to protect from mosquito bites in the night. 15% of the respondents are not using any methods to protect themselves from mosquito bite. In a study by Joshi et al, the protection from mosquito bites was 92% and from mosquito coil is 7.4%.¹⁴

About 25% of the respondents opined outdoor sleeping behaviour in the night. R K Sharma et al showed that outdoor sleeping behaviour by 59 % of the population had malaria positive results among 22.9 % of individuals. The odds ratio(1.7) was also high with respect to malaria positive cases among the individual who are sleeping outside compared to sleeping inside the house. This shows that malaria is associated with individual behaviour.

In our study the 77% of the individuals blood smear was taken for fever cases in the fortnight. It indicates that active surveillance for malaria is good. This may be due the high incidence of malaria earlier in this region.

The main reasons for the endemicity in this area earlier was not clearly known but according to health workers were, there are construction sites where in workers tend to migrate from various parts of the country who can act as a reservoir and transmit infection. Their surrounding mountains where the accumulation of water takes place in the shallow gutters which leads to breeding of mosquitoes.

Conclusions

The study revealed that knowledge and practices about malaria was satisfactory and there was varied perception about causes, spread of disease, symptoms and protection from mosquitoes. Health personnel and medical students were the major source of knowledge in this the population. Since the malaria is not a problem from the past 5 years, but still the overall awareness regarding malaria was good in this area. The perception and knowledge regarding malaria is very essential as malaria is not a focal or local condition. The current

National Malaria Control Programme always expects a good awareness among the people to malaria for the future elimination of malaria in India. Low education status is one of the major drawbacks for effective control and intervention measures. Though majority of the subjects were practicing one or other protective measures the use of bed nets must be widespread for malaria control.

Ethical Clearance- Taken from Institutional Ethical Committee Sri Devaraj Urs Medical College, Kolar.

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Conflict of Interest - Nil

References

1. World Health Organization. Regional Office for South East Asia. Available at <http://www.searo.who.int/entity/malaria/world-malaria-day/2019/en/>
2. National Vector Borne Disease Control Programme. Directorate General of Health Services. Ministry of Health & Family Welfare. Government of India. Available at <https://www.nvbdc.gov.in/index4.php?lang=1&level=0&linkid=420&lid=3699>.
3. Heggenhougen HK, Hackethal V, Vivek P. The behavioural and social aspects of malaria control: An introduction and annotated bibliography. World Health Organization on behalf of the Special Programme for Research and Training in Tropical Diseases. TDR/STR/SEB/VOL/031. 2003
4. Beliefs and traditional treatment of malaria in Kische settlement area, southwest Ethiopia.. Adera TD Ethiop Med J. 2003 Jan; 41(1):25-34.
5. Knowledge, attitude and practice on malaria: a study in a tribal belt of Orissa state, India with reference to use of long lasting treated mosquito nets. Vijayakumar KN, Gunasekaran K, Sahu SS, Jambulingam P. Acta Trop. 2009 Nov; 112(2):137-42.
6. Knowledge, awareness and practices towards malaria in communities of rural, semi-rural and bordering areas of east Delhi (India). Tyagi P, Roy A, Malhotra MS. J Vector Borne Dis. 2005 Mar; 42(1):30-5.
7. Knowledge, Attitude and Practices of people towards malaria in tribal communities of jawhar, maharashtra, india. Kdam et.al. Int J Cur Res Rev | Vol 7 • Issue 18 • September 2015.
8. Knowledge, Attitude, Practices about Malaria in a Rural Endemic Area of Kolar, India. Mahesh V et.al. International Journal of Health Sciences & Research. Vol.4; Issue: 3; March 2014
9. Pinky N. Manana, Lazarus Kuonza, Alfred Musekiwa, Hluphi D. Mpangane and Lizette L. Koekemoer. Knowledge, attitudes and practices on malaria transmission in Mamfene, KwaZulu-Natal Province, South Africa 2015. BMC Public Health. 2018; 18: 41.
10. Vivek Kumar Pandey, Pradeep Aggarwal , Rakesh Kakkar. Modified BG Prasad Socio-economic Classification, Update – 2019. Indian Journal of Community Health. Jan-March 2019:31; (1).
11. Monthly Reports of PHC. District Surveillance Unit of Kolar District(2017 till 2019). District Health Office. Kolar.
12. Park K. Parks Text Book of Preventive and Social Medicine. Jabalpur; M/S Banarsidas Banot: 2017.
13. Gourav Dhawan et al. Malaria-related knowledge and prevention practices in four neighbourhoods in and around Mumbai, India: a cross-sectional study. Malar J. 2014; 13: 303
14. Joshi AB, Banjara MR. Malaria related knowledge, practices and behaviour of people in Nepal. J Vector Borne Dis. 2008 Mar 1;45(1):44-50.
15. Gupta RK, Raina SK, Shora TN, Jan R, Sharma R, Hussain S. A household survey to assess community knowledge, attitude and practices on malaria in a rural population of Northern India. Journal of family medicine and primary care. 2016 Jan;5(1):101-7
16. R K Sharma et al. Socio-economic & household risk factors of malaria in tribal areas of Madhya Pradesh, central India. Indian J Med Res. 2015 May; 141(5): 567–575.