

Awareness and Treatment Seeking Behaviour of People Affected With Malaria in Coastal South India

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Abstract

Background: Malaria is a serious global health challenge. Mangalore, Karnataka, India is an endemic area for malaria and there has not been much research on this area. Thus it has been felt that this study will provide an insight into efficacy of the current malaria control programs and identifying targets for future educational campaigns and provide guidance for existing programs.

Methods: The study was community based descriptive study and the data were collected by interviewing the subjects who had malaria infections in the last 12 months. The study duration was 24 months.

Results: Two hundred and five individuals ≥ 15 years of age and who had at least 1 episode of malaria in the past 12 months were interviewed. Within the study population, 80.5% of the subjects correctly identified mosquitoes as the source of malaria. Seventy one percent of the interviewed subject completed the full course of medicine prescribed to them. Eighty one percent of the respondent said that no health education was given to them regarding prevention of malaria majority of the respondents spent between \$10 to \$30 for treatment of malaria.

Conclusions: The malaria awareness campaign should be intensified as not all the people are aware to the cause of malaria and compliance to the treatment has to be increased by sensitizing the patients.

Keywords: *Malaria, Knowledge, Compliance, Treatment, India*

Introduction

In century ago, malaria was one of the biggest scourges affecting mankind and owing to the concerted global action under the leadership of the World Health Organization; there was a perceptible decrease in the incidence of malaria in most parts of the world. But now malaria has made a dramatic come back and all the countries of the world are at the risk of importing malaria. The re-emergence of malaria is blamed on various factors like human complacency, technical failure, emergence of drug resistance in parasites and insecticidal resistance in the mosquitoes, administrative shortcomings and environmental fact like global warming, urbanization, movement of human population etc. Pattern of malaria transmission and disease vary markedly between regions and even within individual countries. This diversity is a result of variation between malarial

parasite and mosquito vectors, ecological conditions affecting malaria transmission as well as socio economic factors, such as poverty and access to effective health care and preventive services (1).

This study aimed to i) find out the knowledge of etiology of malaria in the population, ii) find out the treatment seeking pattern of the study population with respect to malaria infection, iii) find out the economic impact of malaria on the affected individual.

Materials and Methods

A community based descriptive study was conducted in the Mangalore City Corporation limits. Mangalore is a picturesque city in Southern India on the shores of Arabian Sea. The study was conducted among the people aged 15 yr and above and who had at least 1 episode of malaria infection in the past 12 month. Individuals

who have suffered from malaria prior to 1 yr were excluded so as to eliminate the memory related bias. Data was collected by interviewing the subjects in prominent market places by using pre tested proforma. The individuals were approached sequentially as they passed through the centre of the market. Informed consent was obtained and the individuals who had been infected in the last 12 month were asked a series of open ended and multiple choice questions. The questionnaire was divided into following sections: (i) demographic characteristics, (ii) knowledge of malaria, (iii) prevention of malaria, (iv) treatment of most recent malaria infection. A total of 1540 sub-

jects were interviewed. Four hundred and twelve subjects said that they had malaria infections in the past. Two hundred and seventeen subjects said that they had malaria infections in the last one year. Twelve subjects refused to take part in the interview. So the interview was conducted among 205 subjects (Fig. 1).

The study was approved by the Institutional Ethics Committee of Kasturba Medical College, Mangalore. The data were analyzed using SPSS Version 11. Statistical test Chi Square for association was used and $P < 0.05$ was considered as statistically significant.

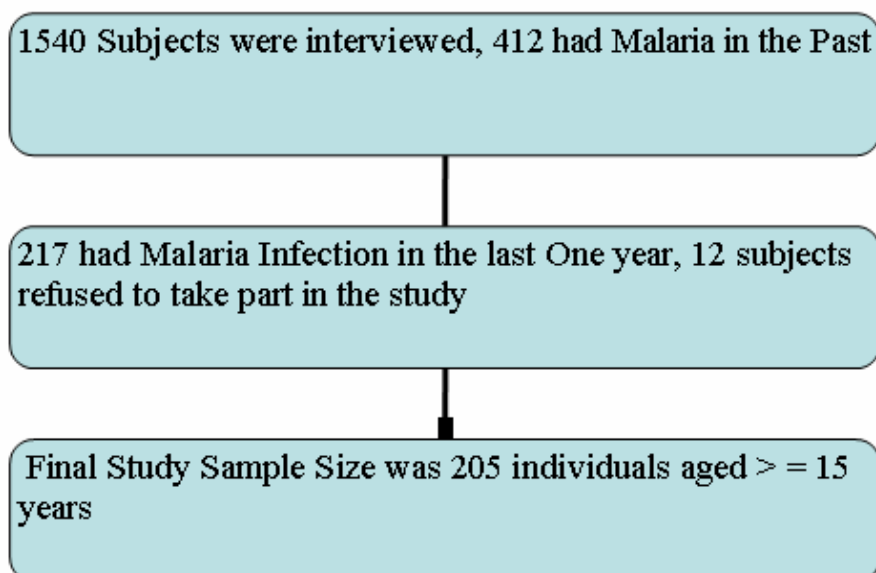


Fig. 1: Data collection algorithm

Results

The study population included 74% males and 26% females. All the respondents were literates with 41% having completed their senior secondary level of education. 11.1% completed only their primary schooling. 60.5% of the respondents were married and 38% were singles, the mean age of the respondents was 34.6 yr (Table 1). About 80.5% of the respondents correctly identified mosquitoes as the source of malaria. This was not found to vary significantly with gender, occupation or the number of past infections. Around 19.5% of the respondents incorrectly

believed in the other source of malaria like by coughing and sneezing, food, houseflies and drinking dirty water.

Approximately 85.7% of the respondents, who completed their senior secondary level of education, believed that mosquitoes were a source of malaria. About 39.1% of the respondents who completed only primary level of schooling, believed in the mosquitoes as the source of malaria. This is important as it shows the relation between level of education and knowledge about the source of malaria, which was statistically significant ($P < 0.05$) (Table 2).

Eighty one percent of the respondents took some form of preventive measures against the mosquitoes with the majority using mosquito repellents (45.8%) and only (6.2%) using mosquito net. Thirty three percent (33%) of the respondents did self medication with analgesics, antipyretics and antimalarials when they first developed the symptoms. Twenty four percent of the respondents went to the government hospital and PHC (Primary Health Centre). Twenty seven percent went to the private practitioner/private hospital for the treatment. Eight percent of the respondents used homeopathy and traditional medicine (Table 3).

Seventy one percent of the respondent said that they finished the course of tablets prescribed to them. Twenty nine percent did not finish the course of tablets prescribed to them. The most common reason given for not finishing the course of tablet was disappearance of the symptoms. Fifty four percent of the subject reported that the total number of employment days lost due to symptoms of malaria and weakness after that

was average of two weeks. Majority of the respondents (48%) spent between \$10 to \$30 for the diagnostic test, towards traveling and treatment of malaria (Table 4).

Table 1: Socio- Demographic Profile of Study Subjects (N= 205)

Profile		n	%
Gender	Male	152	74%
	Female	53	26%
Age in years	Study Population	34.6	(Sd= 12.2)
	Males	33.5	(Sd= 12.3)
	Females	37.7	(Sd= 10.9)
Educational	Primary	23	11.1%
	Secondary	36	17.6%
	Senior Secondary	85	41.5%
	Above Senior Secondary	61	29.8%
Marital	Married	124	60.5%
	Single	78	38.0%
	Divorced	2	1.0%
	Separated	1	0.5%

Table 2: Awareness regarding causation of malaria vs. educational status of the respondents

Cause	Primary	%	Secondary & Above	%	Chi square
Mosquitoes	9	39.2	156	85.7	$P < 0.001$
Drinking dirty water	7	30.5	14	7.69	$P < 0.05$
Food	2	8.6	7	3.84	$P > 0.05$
Houseflies	3	13.1	4	2.19	$P < 0.05$
Sneezing/coughing	2	8.6	1	0.58	$P < 0.05$
Total	23	100	182	100	

Table 3: Treatment of most recent malaria infection amongst the respondents

Treatment	n	Percentage
Self medication	67	32.6%
Govt. Hospital /PHC	49	23.4%
General Physician	36	18%
Pvt. Hospital	18	9%
Ayurveda	18	9%
Homeopathy and others	17	8%
Total	205	100%

Table 4: Economic impact of malaria infection amongst the respondents

Money spent in Dollars*	n. of respondents	Percentage
<10	33	16
10 – 19	53	26
20 – 29	45	22
30 – 39	29	14
40 – 49	27	13
>=50	18	9.0
Total	205	100

(*1 American Dollar is Equivalent to 40.07 Indian Rupee)

Discussion

The study area of Mangalore is endemic for malaria and around 30% of malaria cases are due

to *P. Falciparum* infection Malaria cases reported in Mangalore during 1999-2006 (2).

Year	<i>P. vivax</i>		<i>P. falciparum</i>		Total
	Number of cases	%	Number of cases	%	
1999	3146	92.1	269	7.9	3415
2000	1712	95.2	86	4.8	1798
2001	2965	89.6	344	10.4	3309
2002	2962	79.2	777	20.8	3739
2003	7189	78.6	1949	21.4	9138
2004	12110	74.2	4211	25.8	16321
2005	14016	69.7	6067	30.3	20083
2006(Nov)	9797	68.9	4403	31.1	14200

In the present study, 80.5% of the respondents correctly identified mosquitoes as the source of malaria. A similar study in Zimbabwe showed only 55% of the individuals responded correctly and identified mosquito as the source of malaria (3). A similar study in Thar Desert area of India in which only 27% of the respondent correctly identified mosquito as the source of malaria (4). This difference can be attributed to the high literacy rate among the respondents in the present study. In this study 19.5% incorrectly believed in the other sources of malaria like by coughing and sneezing, food, houseflies, and drinking contaminated water. Also the Study in Thar Desert showed that 73% of the respondents incorrectly believed in other sources of malaria like by coughing and sneezing, food, houseflies, and drinking contaminated water (4). In our study 24% of the individuals had their window netted, 21% used vaporizers, 18.5% used coils, 6% used mosquito nets and 18.5% used nothing. Where as in the study done in Thar Desert, 7.8% of the respondents used mosquito net, 2.3% used vaporizers, 19.1% used smoke and 39.1% used nothing for prevention of malaria (4). The difference between the use of vaporizers in the present study and study in Thar Desert may be due to high literacy rate, aware-

ness and socio economic status of the study population. In the present study, 33% of the study population did self-medication with analgesics, antipyretics and antimalarials. In the study in Thar Desert area 26% of the individuals resorted to paracetamol as an instant antipyretic to get rid of malaria (4).

Self-treatment with antimalarial is rampant in malaria endemic countries. Foster estimated that more than half of the world's antimalarials are consumed outside the public health sector (5). Studies in Guatemala, Ethiopia and Kenya found that more than 60% of the individuals self treated usually with antimalarials and did not seek medical attention (6-8). In the present study 81% of the respondent said that the treating physician gave no health education to them regarding prevention of malaria. In a similar study in Zimbabwe, 69% of the respondent said that they did not receive any health education from, doctors, nurses etc (3). In our study 71% completed the course of antimalarials & 29% did not. In the study done in Thar desert 74% of the respondent took the full course of the tablets during illness (4). In the study in Zimbabwe 73% of the respondent completed the course (3). Rate of completion of antimalarials treatment regimens is known to be poor throughout the malaria endemic regions of

the world. Numerous study have found compliance rate to be low particularly in the regimens involving quinine (9, 10). Non compliance with antimalarials has been found to be related to four factors: i) adverse effects, ii) early resolution of the symptoms, iii) saving of tablets for future use, iv) inadequate dosing instructions (10). There have been reports where the compliance has been upwards of 70% (11). In this study the mean duration of symptom and loss of work was approximately about 2 weeks. Similar results were obtained in a study carried out in Guyana (12).

In short, in the study population there is a scope for future education about prevention of malaria and the advantages of early treatment. The treating doctors and physicians should be encouraged to give health education to the patient about the preventive measures, which the patient can afford. So the patient can achieve post convalescent primary prevention. For this special guidelines should be given to the doctors, which they should adhere to in while treating the patients.

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