



Index Copernicus
IC 5.09

NAAS Rating
1.3

Received on:
6th Feb. 2013

Accepted on:
8th Feb. 2013

Revised on:
25th Mar. 2013

Published on:
1st May 2013

Volume No.
Online & Print
5(2013)

Page No.
72 to 80

Life Sciences Leaflets is an international open access print & e journal, peer reviewed, worldwide abstract listed, published every month with ISSN, RNI Free-membership, downloads and access.

STUDY ON MALARIA PATIENTS AT RAJKOT, GUJARAT, INDIA

POONAM BHADJA* AND ASHOKKUMAR VAGHELA

H. & H. B. KOTAK INSTITUTE OF SCIENCE

SAURASHTRA UNIVERSITY, RAJKOT - 360005.

GUJARAT, INDIA.

poonambhadja2@gmail.com

ABSTRACT:

The present report deals with the gender and age wise distribution of malaria cases and clinical presentation of the patients, the treatment modality used in some Government and Private Hospitals in Rajkot city, Gujarat, India. A survey of 100 malaria patients using a standard two pages questionnaire was carried out in contain hospitals, from August 2011 to July 2012. The main purpose was to record the profile and outcome of the typical patient with malaria who seeks treatment at hospital. The presenting complaints of all the patients were also carefully noted. Particular attention was directed at whether there were a chills or sweats, headache, vomiting and any other symptoms. Only 71% patients approached medical centers after four days of symptoms. Unawareness on various aspects of malaria like preventive measures, symptoms, vector and transmission was recorded. General awareness through education is important to create awareness of malaria.

KEY WORD: Awareness, Malaria Patients, Rajkot, Survey.

INTRODUCTION:

Malaria is a devastating disease in humans caused by a protozoan, plasmodium species. It accounts for an estimated 2-3 million deaths annually across well over 100 countries ([Mishra et al., 2002](#)). Out of the species of plasmodium parasite, *Plasmodium falciparum*, *P. vivax*, *P. malariae* and *P. ovale* that cause malaria in humans, *P. falciparum* is responsible for most deaths and most of the severe complications although renal involvement is also known to be caused by *Plasmodium malariae* ([Boonpucknaviq and Sitprija, 1979](#); [Sitprija, 1988](#); [Barsoum, 2000](#); [Naqvi et al., 2003](#)). Malaria is

well-known and wide spread disease and has come up as a major challenge to the World. It is a cause of high ratio of deaths and economical loss. Estimation says that 91 countries and 40% of the World's population are at risk of malaria. The worldwide malaria incidence is estimated to be 300-500 clinical cases every year ([Matta et al., 2004](#)). Malaria is one of the foremost public health problems in India. During 1994-96, WHO-SEARO estimated that there were 15 million malaria cases and 19,500 deaths due to malaria in India, and these figures were 6-7 times more than those reported. India is one of the endemic countries. Millions of people die every year due to malaria. The problem is persistent not only amongst the city dwellers but also amongst the rural population. The problem in rural India is that the settlements are difficult to approach, road and transport facilities are minimal and health care facilities are scarce. Therefore, people visit a hospital only if the illness is prolonged and there is no response to the primary line of treatment ([Mishra, 2003](#)).

It was estimated that average 1000 people out of 10,000 suffer with malaria every year in Saurashtra, Gujarat. Present study was carried out at Rajkot (longitude 22°17' latitude 70°49'). Rajkot is developing fast and has population of ten lakhs. The main objective of the study was to assess the knowledge and treatment seeking attitude about malaria among the patients of malaria. Malaria department of Rajkot Municipal Corporation (RMC) has divided the city into four different zones to provide better health services to the people. Since malaria is one of the major disease that hits Rajkot and cause lots of suffering to the people and it is also one of the major economical burdens to the society and Government. RMC runs hospitals and diagnostic centers for the treatment of various diseases including malaria. Private hospitals, private trust hospitals and private diagnostic centers are also playing their role.

MATERIALS AND METHODS:

The present report deals with the gender and age wise distribution of malaria cases and clinical presentation of the patients the treatment modality used in some Government and Private Hospitals in Rajkot city, Gujarat, India (Figure 1) during the study period August 2011 to July 2012.

All the hospitals were approached for the malaria patients every week in each month. A total 100 admitted patients of malaria were interviewed. The main purpose was to record the profile and outcome of the typical patient with malaria who seeks treatment at hospital. All the patients with malaria confirmed by medical analysed were included into the present study. Details information of patient's socio-demographic profile, physical signs, duration of fever and initial taken steps for that was documented into a standard two pages survey questionnaire. The presenting complaints of all the patients were also carefully noted. Particular attention was directed at whether there were a chills or sweats, headache, vomiting and any other symptoms.

RESULTS:

Age and gender wise distribution of study group and malaria positive patients are shown in Table 1 and Figure 1.

The interviewed malaria patients included 58 % males and 42 % females. Overall maximum 63 % patients were in age group of 15-45 years, among that 55.5 % male and 44.5 % female. There were 12 % patients were recorded in case of less than 15 years old, among that 83.3 % males and 16.7 % of females patients. In case of age group of 40 - 60 years 16 % patients of infected by malaria, among that 37.5 % male patient and 62.5 female patients. There were 77.8 % males and 22.2 % female patients analyzed in case of more than 60 years age. Profile of all the patients surveyed during the study is given in Table 3. Among those patients, 34 % patients were illiterate, 58 % patients had primary level education and only 8 % had higher education. Among all patients, 69 % patients had lower economic condition (1000-5000 ₹ income per month) (Table 3).

About 71 % and 18 % patients suffered from fever from more than four days and 3 days respectively. When asked about the initial steps taken in case of fever, all the patients went to a medical practitioner (Table 4). In Rajkot population it has been seen that in malaria, fever and chills are most common symptoms follows by body ache, headache and in some cases vomiting. Only about 42% patients were aware that the disease is spread by mosquito bite but only about 25% correctly knew about the breeding of mosquitoes. When asked about the diseases transmitted by the mosquitoes, about 66% patients did not know about that disease. Patients of the malaria was known that the only nets and fans prevent them from the mosquitoes, they have not any knowledge about proper clothing, avoid open water collection container etc. For the self-protection 20% patients used mats, 39% patients used coils, 10% patients used bed nets, 8% patients used fans and 22% patients used any other methods. Unfortunately most of the people used some singular preventing measures instead of combination (Table 5).

DISCUSSION:

The gender ratio is higher in case of males. Males are more exposed to the risk of acquiring malaria because of the outdoor life they lead. Secondly, females in India are usually better clothed than males. The obtained results are supported by the earlier studies (Mishra, 2003). It can be concluded that in Rajkot district there is prevalence of both *P. vivax* and *P. falciparum* infections. Adults are more vulnerable to disease in this area and the working group (15-45 years) is more affected due to malaria. In India, about 70% of the infections are reported to be due to *P. vivax*, 25–30% due to *P. falciparum*, 4–8% due to mixed infection and 1% due to *P. malariae* (Park, 2002). Contrary to this in the present study high number of male patients was reported. In a study at a secondary level hospital in northern India noted that of the 41 cases 35 were positive for *P. vivax* and six were positive for *P. falciparum* ([Anand et al., 1999](#)).

In a retrospective study conducted ([Sidhu, 1991](#)) in Malaysia, a total of 64 cases were recorded, 50% of which were due to *P. falciparum*, 40.6% were due to *P. vivax*, 6.2% due to *P. malariae* and 3.1% due to mixed infection of *P. falciparum* and *P. vivax*. While studying awareness aspects among patients of malaria, all possible economic and social aspects were covered. It was found that this disease is prevalent among 15-45 years of age group and it was also recorded that the majority of the patients were males. While asking the patients it was recorded that women routinely wear full body clothes and it is not frequently observed in males during sleeping hours. Thus, the reason for the clothing of male and female looks simple but is very important. Most of the patients were found illiterate or had primary level of schooling, which leads to unawareness about general aspects of malaria and its vector. Illiteracy results in to lack of awareness, which again results into carelessness and cause suffering of the people with malaria. Poor economic condition was also found one of the major factors because it was found effecting education and facilities in the house. Thus, all the factors discussed above were found most important from the present study. Knowledge about malaria and its vector is very poor in patients. Communication and personal interaction activities should be carried out to create awareness and about serious aspects of malaria among the people. The environment of Gujarat, western region is conducive to mosquito proliferation, survival and longevity; all these prerequisites lends to active transmission of the malaria pathogen; undermining the health and welfare of women and families, endangering the survival of their children and straining both countries and people's scarce resources ([Talsania and Vani, 2010](#)).

CONCLUSIONS:

The impact of socio-economic conditions cannot be denied in spreading of diseases. Education regarding mosquito borne diseases through various campaigns should be carried out. House to house awareness based programmes should be conducted. People should be guided for the available facilities for detection of various mosquito borne diseases. Thus, proper level of health education, awareness and improvement in economic condition may show considerable impact in irradiation of mosquitos and mosquito borne diseases.

REFERENCES:

- Anand, K., Kant, S., Kumar, G. 1999. Clinical case definition of malaria at a secondary level hospital in northern India. Southeast Asian J Trop Med Pub Hlth. 30(2): 243-5.
- Barsoum, R. S. 2000. Malarial acute renal failure. Journal of American Society of Nephrology. 11:2147-2154.
- Boonpucknaviq, V. and Sitprija, V. 1979. Renal disease in acute Plasmodium falciparum infection in man. Kidney International. 6:44-54.

- Matta, S., Khokhar, A. and Sachdev, T. R. 2004. Assessment of knowledge about malaria among patients reported with fever: a hospital based study. *Journal of Vector Borne Disease*. 41: 27-31.
- Mishra, G. 2003. Hospital based study of malaria in Ratnagiri district, Maharashtra. *Journal of Vector Borne Disease*. 40:109-111.
- Mishra, S. K., Mohapatra, S., Mohanty, S., Patel N. C, Mohapatra D. N. 2002. Acute renal failure in falciparum malaria. *Journal Indian Academy of Clinical Medicine*. 3(2):141-147.
- Naqvi, R., Ahmad, E., Akhtar, F., Naqvi, A., Rizvi, A. 2003. Outcome in severe acute renal failure associated with malaria. *Nephrology Dialysis Transplant*. 18:1820-1823.
- Park, K. 2002. Text book of preventive and social medicine. XVII ed (Nov) p. 193.
- Sidhu, P. S. 1991. NgSC : A retrospective study on malaria cases admitted to the University Hospital, Kuala Lumpur, 1984-1988. *Med J Malaysia*. 46(2):177-82.
- Sitprija, V. 1988. Nephropathy in falciparum malaria. *Kidney International*. 34: 867-877.
- Talsania, N. J. and Vani, S. N. 2010. A Study of Malaria – related paediatric morbidity and mortality in Ahmedabad, Gujarat state, India. *National Journal of Community Medicine*. 1(2):135-138.

Table 1. Details of the hospitals visited at Rajkot, Gujarat, India.

Hospital	Managed by	Location
Civil	Government	Hospital chowk
N.M. Gondhiya	Trust	Klawad road
H.J. Doshi	Trust	Gondal road
Dasha Shrimali	Trust	Kothariya naka
Jainath	Private	Near Geeta Mandir
Dhakan	Private	Kuvadava Road
Samarpan	Private	Bhutkhana Chowk

Table 2. Analysis of the interviewed patients (n=100). (Percentage in parenthesis)

Age	No. of Patients		Total
	Males	Females	
Less than 15 years	10 (83.3)	2 (16.7)	12 (12.0)
15-45 years	35 (55.5)	28 (44.5)	63 (63.0)
46-60 years	6 (37.5)	10 (62.5)	16 (16.0)
More than 60 years	7 (77.8)	2 (22.2)	9 (9.0)
Total	58 (58.0)	42 (42.0)	100 (100.0)

Table 3. Profile of the interviewed patients (n=100). (Percentage in parenthesis)

	Males	Females	Total
Education of respondents			
Illiterate	12 (35.3)	22 (64.7)	34 (34.0)
Primary school	38 (65.5)	20 (34.5)	58 (58.0)
Higher secondary	5 (100.0)	0 (0.0)	5 (5.0)
Graduate and above	3 (100.0)	0 (0.0)	3 (3.0)
Income (in Rs. P.M.)			
Less than 1000	9 (42.8)	12 (57.1)	21 (21.0)
1000-5000	43 (62.3)	26 (37.7)	69 (69.0)
5000-10000	4 (57.1)	3 (42.8)	7 (7.0)
10000-15000	0 (0.0)	0 (0.0)	0 (0.0)
More than 15000	2 (66.7)	1 (33.3)	3 (3.0)

Table 4. Duration of fever and Initial steps taken in case of fever by patients (n=100). (Percentage in parenthesis)

	Male	Female	Total
Duration of fever			
1 day	0 (0.0)	3 (100.0)	3 (3.0)
2 days	4 (50.0)	4 (50.0)	8 (8.0)
3 days	9 (50.0)	9 (50.0)	18 (18.0)
More than 4 days	45 (63.4)	26 (36.6)	71 (71.0)
Initial steps taken in case of fever			
Home remedy	0 (0.0)	0 (0.0)	0 (0.0)
Self-medication	0 (0.0)	0 (0.0)	0 (0.0)
Approach to a medical practitioners	58 (58.0)	42 (42.0)	100 (100.0)
Approach chemist for medication	0 (0.0)	0 (0.0)	0 (0.0)
Approach to quacks	0 (0.0)	0 (0.0)	0 (0.0)
Others	0 (0.0)	0 (0.0)	0 (0.0)

Table 5. Analysis of interviewed patients (n=100) (Percentage in parenthesis) for the knowledge and prevention about malaria.

	Male	Female	Total
Knowledge about symptoms of malaria			
Fever + chills	9 (75.0)	3 (25.0)	12 (12.0)
Fever + chills + body ache	19 (65.5)	10 (34.5)	29 (29.0)
Fever + chills + body ache + headache	8 (57.1)	6 (42.5)	14 (14.0)
All above symptoms + vomiting	4 (26.7)	11 (73.3)	15 (15.5)
No idea	18 (60.0)	12 (40.0)	30 (30.0)
Knowledge of malaria transmission			
Mosquito bite	30 (69.8)	12 (28.5)	42 (42.0)
By flies	1 (100.0)	0 (0.0)	1 (1.0)
Contaminated water	0 (0.0)	0 (0.0)	0 (0.0)
Contaminated food	0 (0.0)	0 (0.0)	0 (0.0)
Others	0 (0.0)	0 (0.0)	0 (0.0)
No idea	28 (49.1)	29 (50.9)	57 (57.0)
Knowledge about the breeding place of mosquito			
Water collection	17 (73.9)	6 (26.1)	23 (23.0)
Garbage	35 (61.4)	22 (38.7)	57 (57.0)
Water collection + garbage	8 (66.7)	4 (33.3)	12 (12.0)
Flower pots	0 (0.0)	0 (0.0)	0 (0.0)
Coolers	0 (0.0)	0 (0.0)	0 (0.0)
No idea	2 (25.0)	6 (75.0)	8 (8.0)
Knowledge about diseases transmitted by mosquitoes			
Dengue	8 (72.7)	3 (27.3)	11 (11.0)
Malaria	13 (68.4)	6 (31.6)	19 (15.7)
Filarial	1 (100.0)	0 (0.0)	1 (0.8)
Chikun gunia	5 (50.0)	5 (50.0)	10 (8.3)
Diarrhea	0 (0.0)	0 (0.0)	0 (0.0)
Typhoid	0 (0.0)	0 (0.0)	0 (0.0)
No idea	50 (62.5)	30 (37.5)	80 (66.1)
Knowledge about prevention measure from mosquito bite			
Nets	23 (65.7)	12 (34.3)	35 (35.0)
Nets/fans	18 (64.3)	10 (35.7)	28 (28.0)
Nets/fans/proper clothing	1 (50.0)	1 (50.0)	2 (2.0)
All above/avoid water collection	0 (0.0)	0 (0.0)	0 (0.0)
All above/check coolers	0 (0.0)	0 (0.0)	0 (0.0)
All above/ check flower pots, tires	0 (0.0)	0 (0.0)	0 (0.0)
Others	18 (78.3)	5 (21.7)	23 ()
No idea	0 (0.0)	12 (100.0)	12 (12.0)
Self-protection from mosquito bite			
Mats	14 (70.0)	6 (30.0)	20 (18.3)
Coils	24 (61.5)	15 (38.5)	39 (35.8)
Bed nets	4 (40.0)	6 (60.0)	10 (9.2)
Fans	3 (37.5)	5 (62.5)	8 (7.3)
Others	17 (77.3)	5 (22.7)	22 (20.2)
No idea	0 (0.0)	10 (100.0)	10 (9.2)

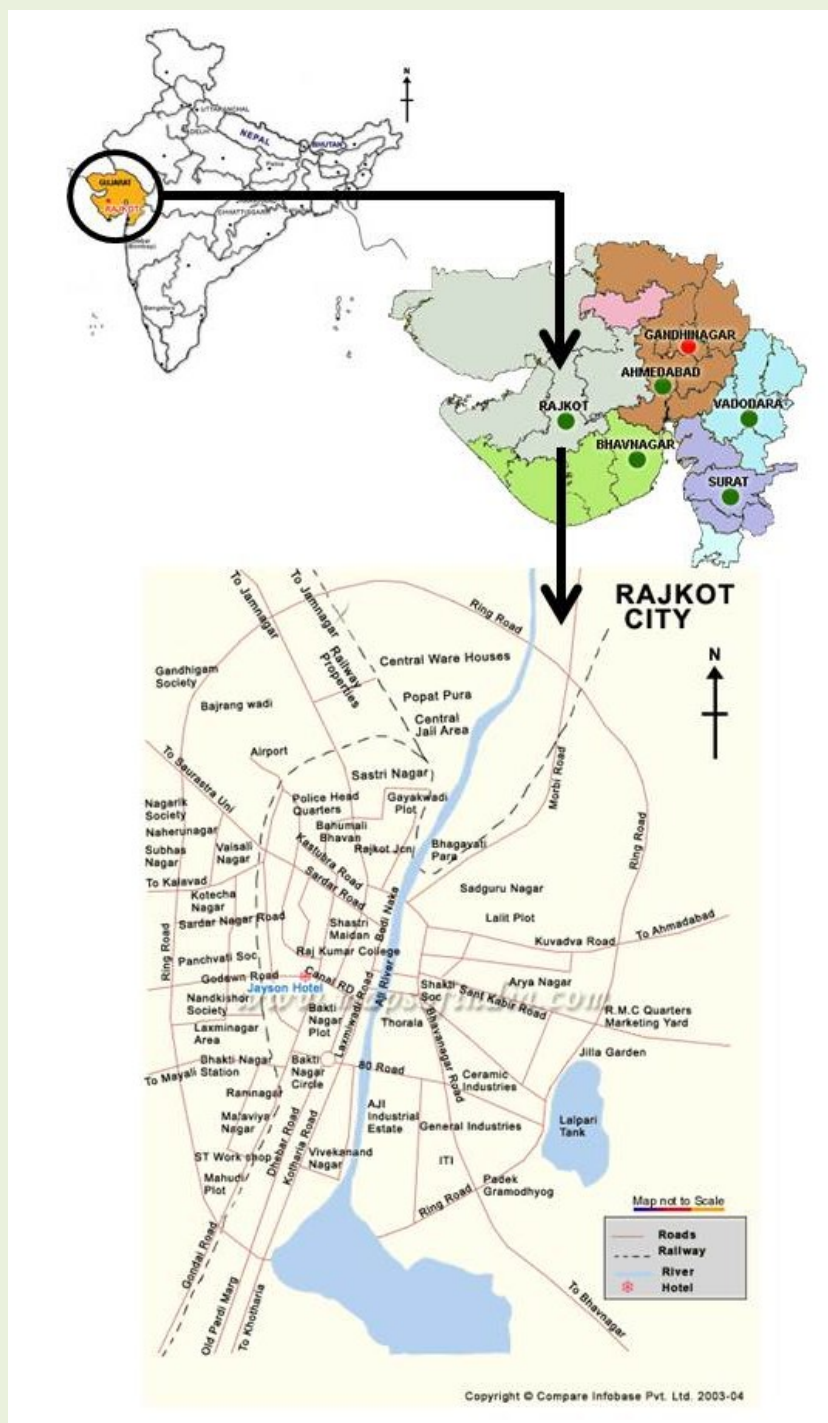


Fig.1: Map of study area

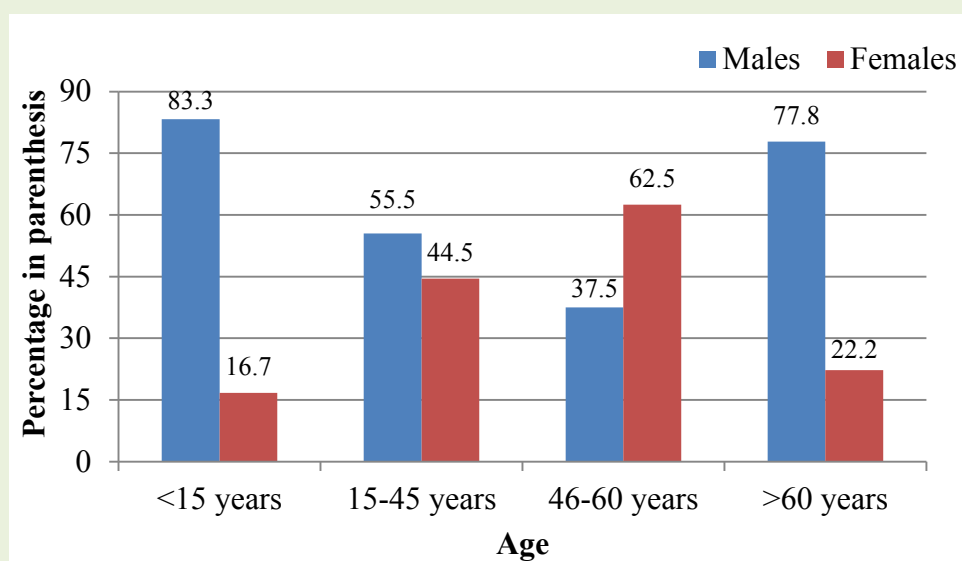


Figure 2. Age wise distribution of malaria patients

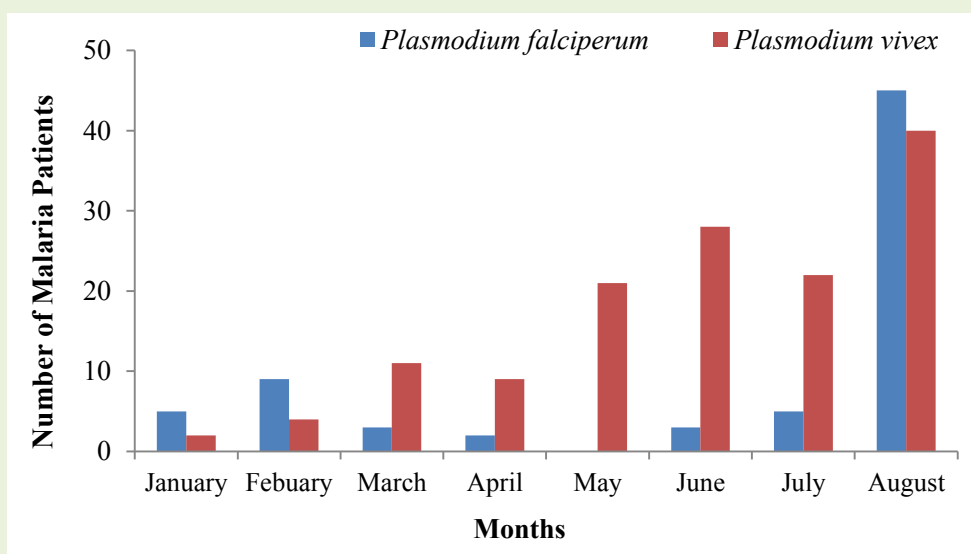


Figure 3. The comparison of malaria Patients infected by *P. vivax* and *P. falciparum* in Rajkot city, Gujarat, India.