Disease Occurrence and Utilization of Preventive Measures in Self-Perceived Cases of Malaria
Indranil Acharya* and Jayanti P Acharya
Associate Professor Community Medicine, Bhaskar Medical College, Moinabad, Hyderabad, India

Abstract

Aim: To study the utilization of preventive anti-malarial services by fever cases who perceived that the same was due to Malaria, in a community in the fringe area of a cantonment in a city in India, so as to render some relevant pointers towards existing lacunae in the public health system.

Methods: Two hundred and ten cases of self-perceived malaria were identified and interviewed over a period of 9 months, to find out as to what proportion amongst them were actually slide positive (confirmed) cases and to obtain utilization rates of anti-malarial preventive measures/services.

Results: Though only 2 cases were confirmed by blood smear exam (0.95%, Slide Positivity Rate 0.0137/1000) it was found out that the majority of cases had availed of some health facility to confirm their illness as malaria or otherwise, taken some form of drug treatment prescribed by health personnel / medical officers and adopted routine preventive measures against mosquitoes. Reasons for non-utilization of such measures/services were ascertained amongst the few who did not do so.

Conclusion: Based on the observations certain recommendations, like (a) intensifying Malaria awareness activities and integrated vector-control measures by the responsible health authorities esp. before the Malaria months, and (b) the communities’ whole-hearted participation in various anti-Malaria programs, were made.

Keywords: Self-Perceived malaria; Blood slide examination; Slide positivity rate; Anti-Malaria services

Introduction

Malaria has had devastating ramifications since antiquity. In 2010, about 3.3 billion people - almost half of the world’s population - were at risk of malaria. Every year, this leads to about 216 million malaria cases and an estimated 655,000 deaths [1]. People living in the poorest countries are the most vulnerable.

In India, in spite of a comprehensive National Malaria Control Programme, since as early as 1953, incidence has not come down as expected [2]. Eighty-nine percent of India’s population is still at risk of which 22% are in High transmission areas, and 67% in Low transmission areas [1]. Poor knowledge about malaria, inadequate control measures and poor utilization of available anti-malarial services are the important reasons [3,4]. Since 1999 the Government of India has renamed the programme as National Anti-Malaria Programme. Presently, National Vector Borne Disease Control Programme (NVBDCP) has been implemented in the States/Union Territories (UTs) under which Disease Management, Integrated Vector Management and some important supportive interventions are being stressed upon (National Institute of Malaria Research- NIMR). Still around 1.5 million confirmed cases are reported annually by the NVBDCP, of which about 50% are due to Plasmodium falciparum.

Fringe areas of cantonments are supposed to be benefited due to availability and optimum utilisation of almost all the anti-malaria services within the cantonments. Necessary treatment facilities exist in their service hospitals and health centres. The incidence of malaria is therefore expected to be less in this ‘fringe’ community and utilisation rates of anti-malaria measures/services on the higher side.

Studies on utilisation of preventive anti-Malaria services in the community may render valuable pointers towards existing lacunae in the public health system which need to be filled up with effort and finances. Outlay in Malaria control have yielded remarkable results in many countries and led to reduction in mortality and morbidity due to the disease. In Africa, Malaria deaths have been cut by one third within the last decade; outside of Africa, 35 out of the 53 countries, affected by Malaria, have reduced cases by 50% in the same time period. In countries where access to Malaria control interventions has improved most significantly, overall child mortality rates have fallen by approximately 20% [1].

Sustained Malaria control efforts therefore are an investment in development of any country. The present study was taken up with an aim to study the utilization of preventive anti-Malaria services by fever cases who perceived that the same was due to Malaria, in a ‘fringe’ community, so as to pinpoint reasons of any non-utilization albeit by a minority and suggest protracted means to improve the same.

Material and Methods

The Ahmedabad cantonment is in the North-eastern side of the Ahmedabad city spread over almost 6 sq Km area of level terrain. The present study was carried out in few localities - Sardar Nagar, Sadar Bazar, Meghani Nagar - around this cantonment, over a period of 9 months. These areas are congested and busy. Though drainage facilities are adequate there are areas of some water logging during rains.

The population consists mostly of businessmen, factory workers, office workers and few service personnel residing with their families. Many have come from outside the city in search of jobs and businesses. Some are staying single or without their full family. The medical facilities existing in these localities are in the form of Malaria clinics...
in the Medical College, Community health centers, a Cantonment board clinic and private practitioners. The Municipal Corporation is responsible for carrying out anti-larval and anti-adult drives against the mosquito.

More than 8000 families in the above-mentioned localities, were interviewed in a house to house survey, after informed consent. Those houses which were found locked were not visited again. Individuals who had raised body temperature (more than 99°F) with or without other symptoms for a minimum duration of 48 hrs, were asked about their perception of the cause of fever. Every case of fever, who perceived the cause of same to be Malaria, was then interviewed further about his/her utilization of anti-Malaria services, by using a pre-tested proforma. In case the individual was less than 15 yrs of age his/her parents or relative were queried. A blood smear from the finger tips of all these fever cases included in the study, was also collected and sent to a nearby reliable laboratory for Malaria microscopy. The collected data was compiled and statistically analyzed.

Results

Disease occurrence in the community

The study covered 8146 residential families including 2570 family units and 2605 single member units i.e. a representative sub population of 14573 amongst almost 4-5 lakhs inhabiting the fringe areas of the Ahmedabad cantonment.

Two-hundred and sixty-two fever cases existed at the time of interview of whom 210 (80.15%) were categorized as self–perceived cases of Malaria. Incidence of such self-perceived cases was therefore 14.41/1000 population. These 210 cases belonged to 191 families implying that there were 1.09 cases of self perceived malaria per 'affected' family. There were subsequently only 2 cases which were confirmed as malaria by our blood smear examinations. This implied that 0.95% of all the cases could be confirmed as malaria. The rest could be cases of fever clinically simulating Malaria or of pyrexia due to 'other' causes. Thus, the incidence of confirmed cases of malaria was 0.137 per 1000 population.

Utilization of anti-Malaria services

All the self-perceived cases were assessed for their utilization of available anti-Malaria services nearby in the community or otherwise. Informant was either the case (128 cases or 60.9%) or any older responsible person like a friend/relative (82 cases or 39.1%).

The assessment was in relation to confirmation and treatment of the illness and preventive services utilized either at a personal level or from those available to the community.

Confirmation of illness as Malaria

One hundred fifty-five cases (73.8%) of the 210, had already been to a health facility for confirmation of their disease as malaria or otherwise at the time of interview and the rest 55 (26.2%) had not resorted to any such confirmation.

A doctor, in a Government or private set-up, was consulted for confirmation (and treatment) in most cases (139 or 89.7%) and blood smear taken most probably for the presence of the malarial parasites in 113 (72.9%) of them. Paramedical personnel were consulted by the rest few who did not go to a doctor. Other modalities were also resorted to for confirmation of disease say by asking relatives/friends and relying on patients'/informants' past experiences. The data is enumerated in table 1.

Treatment taken

Majority i.e.199 cases (94.8%), had already taken some drug treatment for their illness while 11 cases (5.2%) had not taken any. This corroborates with the finding in para (a) above. One hundred and fifty five (77.9%) amongst the former group took Out-Patient treatment in a Government or private hospital. The rest 44 (22%) most probably resorted to self-medication. They either bought medicines over-the-counter from local drug stores (21 or 47.7%) or used the some from their left-over house-hold stock (23 or 52.3%).

The patients were prescribed/took various types of anti-malarial or other drugs as was deciphered from the prescription slips they retained or from wrappers of drugs they produced in some cases or from what they could recall from their memory. The summarized information is shown in table 2.

Prevention of Malaria

Available preventive measures/services against Malaria were utilized by 202 (96.2%) cases while 8 (3.8%) did not do so.

All the cases in the former group (202 or 100.0%) used some form of personal protection against the mosquito. Almost all the cases (201 or 99.5%) informed about 'residual' spraying in their houses and fogging activities in their localities as carried out by the Corporation health workers esp. prior to and during the monsoon period. Many also stated that any stagnant drains and water collections in the surrounding areas were sprayed with chemicals by the health workers though after a few days of such collection. Table 3 gives the elaborate data on utilization of anti-Malaria measures.

Non-utilization of anti-Malaria services

The reasons were similarly assessed in relation to the aspects of confirmation, treatment and prevention.

Non-confirmation of illness as Malaria

Fifty-five cases did not resort to any means for confirmation of the disease. There were some who believed that the illness generally had a short duration and hence did not warrant confirmation (19 or 34.5%).

Some could not afford the charges asked for by laboratories for such confirmation (17 or 30.9%) and others stated they had more
Methods of Prevention | No. of cases (n=202) | %
--- | --- | ---
Anti-larval methods |  | 
(a) Environmental | 0 | 0
(b) Chemical | 157 | 100.0
(c) Biological | 0 | 0
Anti-adult methods | 201 | 99.5
(a) Residual spray | 196 | 97.5
(b) Fogging | 201 | 100.0
Protection against bites | 202 | 100.0
(a) Bednets | 202 | 100.0
(b) Screens / meshes | 130 | 64.4
(a) Repellents | 128 | 63.4

Table 3: Utilization of anti-Malaria services.

important household jobs to attend to (12 or 21.8%). There were few of the view that the illness could not be confirmed by any means (3 or 5.5%).

Treatment not taken
Among the group of 11 cases who did not take any treatment reasons cited were that they had more important household or family commitments, inability to afford treatment (9 each or 81.8%), lack of knowledge about specific medical treatment for malaria and the feeling that their fever would come down on its own (2 or 18.2%).

Preventive measures not adopted
Eight cases did not utilize any preventive services/measures as either they were ignorant about the appropriate methods (5 or 62.5%), had aesthetic reasons for not allowing spraying of chemicals in the household, did not prefer bed nets as they felt claustrophobic or found repellents, etc. to be expensive (3 or 37.5%). None of the cases however felt that the health authorities were not providing adequate preventive services to them.

Discussion
Malaria is a major public health problem in India, accounting for sizeable morbidity, mortality and economic loss (NIMR). Apart from preventive measures, early diagnosis and complete treatment are the important modalities that have to be adopted to contain the disease. Hence, febrile illness suspected to be malaria requires rapid recognition and institution of immediate and appropriate treatment, regardless of whether the patients choose to treat themselves or seek attention at a health facility.

In the present study of 210 self perceived cases of Malaria, incidence is 14.41 per 1000 population. In comparison to various studies carried out in India [3,5,6] and African countries [7,8], this incidence is lower. This could be attributed to the fact that the population in the ‘fringe area’ of a cantonment is benefitted, as it is well-known that anti-Malaria precautions are practiced in a better and more customary fashion in cantonments as compared to other areas. However more such comparative studies should be undertaken from time to time.

Since only 2 cases were confirmed by blood slide examination in this study, Slide Positivity Rate is 0.0137 per 1000, which compares contrastingly with Jotkar’s study in Ratnagiri, Maharashtra [5] where Slide Positivity rate or SPR ranged from 0.20 to 0.785. Nearness of the ‘fringe’ population to the cantonment where all anti-malaria services are available, can be an important factor to explain this fact. The large number of fever cases which are not correctly diagnosed or go undiagnosed should be an area of concern. The general belief that all fevers are due to malaria is also not true. Awareness about malaria therefore has to be disseminated constantly to the community esp. where prevalence is high.

Utilization of available anti-malaria services by the community has been quite satisfactory, in the present study. Three out of every 4 of the self-perceived cases wanted to confirm their illness of whom almost 90% consulted a doctor and 73% had their blood smear taken. Some also depended on their past experiences and relatives/friends to make doubly sure their that the fever was malaria. In a study in New Guinea, Dabis [9] too observed that 98% respondents took their sick children to a health facilities mostly hospitals, to confirm their illness. In contrast, in Togo, Deming [10] found out that only 20% of children with fever or malaria were taken to health centres for confirmation.

Approximately 95% of the self perceived cases took treatment of whom 78% attended medical clinics/hospitals and the rest self medicated themselves with drugs available at home or purchased ‘over the counter. In a study conducted in Ethiopia by Yeneneh [11], 45.1% respondents bought medicines from drug shops ‘on their own’, 34% from govt. clinics and 6.5% from mission clinics. Ruebush [7] observed that 14.8 to 25.9% of his cases in western Kenya visited health centers and preferred medicines purchased from shops or those left over in the house. Gardiner [12] observed a very high 87 to 94% of his cases preferring self medication in southern Ghana.

Mostly Chloroquine (84.5%) and Paracetamol (100.0%) were given to patients who attended hospital/clinic. Primaquine was given to 2 cases. Ruebush [7] observed that 58.3% cases were given anti-malarials by the doctors and Gardiner noted that Chloroquine and antipyretic-analgesics were the most commonly used drugs. Vundule and Mharakurwa [13] observed that in rural Zimbabwe, 44% respondents took Chloroquine, 10% Sulphadoxin-pyrimethamine and only 2% used Paracetamol.

More than 96% of cases took preventive measures against the mosquito and utilized the available anti-Malarial services in this study. While all of them used bed nets during night, almost all of them stated that anti-adult spraying (>99%) and anti-larval precautions mostly in the form of spraying chemicals (77.7%) was a service rendered to them quite regularly by the concerned auth. On the other hand, Vundule and Mharakurwa [13] reports that 64% of his cases were not very satisfied with spraying exercises conducted by the health authorities and hence practiced either environmental anti-larval methods in the form of cleaning drains and rubbish by hand or personal protection measures in the form of nets and repellents. Gardiner observed that in urban areas 82% used coils and sprays but a mere 9% used nets at night time.

The high utilization rates as regards available anti-malaria services in the present study population could be attributed to:

- satisfactory knowledge about of Malaria and it’s prevention and control
- awareness about anti-Malarial services and
- availability of such services (sanitary squads of the Municipal Corporation).

Of the 26% cases who did not confirm their disease, most were either busy in domestic activities or thought that their illness would be of short duration. Some could not afford the cost of laboratory tests. Some 5% of the cases did not take any treatment mainly because of similar reasons. These groups though small could be the focused upon and educated about availability of Government clinics where blood tests and subsequent treatment is given free of any charge. The importance of taking care of ones’ own health has to be stressed.
Reasons for non-utilization of Malaria prevention services by the 5 cases were mainly ignorance about existence of such services or aesthetic. Vundule and Mharakurwa [13] had similar findings in his study and attributed it to the fact that since the disease had already occurred, the affected persons thought that such measures would not be of any use. This again is an area where relevant health education to remove misconceptions could reduce non or under utilization.

The problem of self-perceived malaria is a multi-faceted one and the importance of utilizing the preventive health services as well as adopting personal measures cannot be underrated. There is a need for creating more and more awareness about the community as various aspects of Malaria, it's prevention and available anti-malarial services. In case of occurrence of febrile illness timely confirmation and treatment of the same is of utmost importance. The health workers esp. anti-Malaria workers should be well trained and not hesitate to interact closely with the community. They must also impart knowledge and educate the masses about Malaria and other communicable diseases esp. in rural areas where health facilities and expertise are limited. Community participation is the backbone of any anti-malaria policy. Proper incentives and encouragement should be provided to the volunteers for their participation. All anti-Malarial activities need to be accelerated before and during the Malaria season say during late summer and pre-monsoon months.

Legislation could be imposed for more disciplined efforts to combat Malaria. The quality of anti-Malarial services should be improved upon and more stringent measures in the form of say active case detection if feasible and acceptable, should be implemented.

Similarly, the National and State anti-Malaria strategies need to be revised from time to time to suit local as well as changing conditions. Malaria-endemic countries like ours should ensure that every suspected malaria case is tested, that every confirmed case is treated with a quality-assured anti-Malaria medicine, and that the disease is tracked through timely and accurate surveillance systems to guide policy and operational decisions. Urban Malaria Control measures need to be accelerated, problematic cities and towns identified and kept under surveillance. Last but not the least, more studies and research could be carried out on similar or related fields.

Conclusion

The knowledge, attitude and practice of Malaria- a common communicable disease in India – by self-perceived cases of Malaria, was assessed and results found to be satisfactory in a community close to a cantonment area. This is however, not to be concluded for in all communities as India being a vast nation has diverse levels of awareness, accessibility to health facilities and economics to tackle illnesses like Malaria.

Levels of prevention and control services provided by requisite and responsible health authorities were also found to be adequate. That adequate awareness results in adequate utilization of available services was proved.

Illnesses like fever need to be taken a serious note of and prevention and treatment guaranteed. However, repeated Information, Education and Communication (IEC) activities need to be conducted esp. before the malaria months, to improve the awareness levels in the general population over all. The reasons for better utilization of these anti-Malaria services need to be stressed upon and consolidated, so that more and more people are able to access these. Community participation needs to be emphasized to control this scourge of Malaria, as health workers by themselves, cannot ensure and sustain preventive measures in all places. The citizens too have a responsibility in keeping the sanitation and health standards high, and access available health facilities available for early diagnosis and prompt treatment so as to reduce overall morbidity and spread of the disease. Reasons for non-utilization like lack of awareness and interest need attention. Self-medication is not advisable and over-the-counter sale of prescription drugs need to be checked and stopped. More qualified personnel need to be available for the large population to be able to approach them and get the necessary expert services.

Acknowledgement

The authors are extremely grateful to Dr. CK Purohit, Ex-HOD Dept of PSM and Ex-Director, PG Studies and Medical Research, BJ Medical College, Ahmedabad for his constant guidance and help during the course of the study.

References