Original Research

Treatment-seeking behaviour and community perceptions regarding malaria in Surat city

Anjali Modi, Sukesha Gamit, Sankalp Raj Choudhary, Rohit Parmar, Prakash Goghara, Abhay Kavishvar

Department of Community Medicine, Government Medical College, Surat, Gujarat, India.
Correspondence to: Anjali Modi [dranjalimodi@gmail.com]

Received May 21, 2016. Accepted August 30, 2016

Abstract

Background: Mosquito-borne diseases (MBDs) are a public health challenge in India. Rapid industrialisation and urbanisation leading to rural-urban migration have led to a surge in cases of malaria. Intense surveillance and vector control strategies are also essential for its control**.** Surat city being inhabited by migrants is endemic for malaria.

Objectives: This study was conducted to find out knowledge about mosquito-borne diseases, treatment seeking behaviour and community perceptions about malaria in Surat city.

Materials and Methods: A cross-sectional survey was conducted in all the seven zones of Surat city namely Central, West, North, West, South East, South West and East zones in the last quarter of the year 2010 with data collection in the month of October 2010. Data was collected in a pre-tested semi-structured open-ended questionnaire, containing questions on socio-demographic profile, knowledge about MBDs, protection from MBDs, public surveillance activities carried out by Government for MBDs and treatment seeking behaviour

Results: About 38.4 % people utilised public sector services for peripheral blood smear examination. The majority (95.4%) of the fever cases took treatment for malaria. Only 59 cases received radical treatment out of 78 Plasmodium vivax cases. About 70% and 55 % of the respondents had correct knowledge about diseases transmitted by mosquitoes and mosquito breeding habits respectively. Around 81% fever cases reported that health workers come to their area for taking peripheral blood smears.

Conclusions: The MBD control efforts need to be directed more to health education regarding complete treatment of malaria including the radical treatment. More endeavours for information about mosquitoes and their breeding habits are required.

Keywords: Malaria, Treatment seeking, Knowledge.

Introduction

In recent years, vector-borne diseases have emerged as a serious public health problem in many developing countries including India.[1] Mosquito-borne diseases (MBDs), a type of vector-borne disease occurs due to the interaction of various biological, ecological and socio-economic factors resulting in avoidable ill health and death which also has been emphasized in National Health Policy[2] and Millennium Development Goals (MDGs).[3] National Vector Borne Disease Control Programme (NVBDCP)[4] under the aegis of National Rural Health Mission (NRHM)[5] is one of the most comprehensive and multifaceted public health activity in India including prevention and control of mosquito-borne diseases.

Malaria is a growing urban health problem because of unplanned urbanization, industrialization, and excessive population growth coupled with rural to urban migration. In order to develop a suitable and effective health education strategy, it is important to understand the level of knowledge of the community and practices regarding mosquito-borne diseases.[6]

Malaria control requires an integrated approach, comprising prevention and treatment with effective antimalarial agents. The provision of prompt and effective treatment is the cornerstone of malaria case management and in reducing severe morbidity and mortality from the disease.[7]

In India in spite of mass communication and educational approaches arranged by Government and Non-Government

Access this article online	
Website: http://www.ijmsph.com	Quick Response Code:
DOI: 10.5455/ijmsph.2017.21052016620	

Organizations (NGOs) community participation is far below expectation. Community participation, in turn, depends on people's awareness and knowledge towards the disease[8] which can help in the formation of the design of Behaviour Change Communication (BCC) campaigns to influence acceptance and use of any control measures against mosquitoes.

With this background, the present study was carried out in order to understand the level of knowledge of the community people regarding mosquito-borne diseases and mosquitoes in the urban localities of Surat city and their treatment seeking behaviour. The study results may be helpful in designing evidence-based effective mosquito control strategies in the Surat city.

Aims & Objectives:

1) To document the treatment seeking behaviour of cases of febrile illness.
2) To assess their knowledge on mosquitoes and mosquito-borne diseases.

Materials and Methods

Study design: Cross-sectional study

Study setting: A rapid operational survey was conducted in all the 7 zones of Surat city namely Central, West, North, West, South East, South West and East zones.

Study duration: The study was conducted in the last quarter of the year 2010 with data collection in the month of October 2010.

Sample size: Based on the positive cases of malaria in 2009, 10% of fever cases in last three months were taken. Assuming a 10% non-response rate, 50 cases per zone (irrespective of sex and age) were included in the study for quantitative data collection. Hence a total of 350 cases were needed to reach sample size calculated.

Methods: A household survey was done of the family to screen out fever cases in last 15 days. The families with fever cases were interviewed in detail about study variables.

Data Collection tools: Data was collected in a pre-tested semi-structured open-ended questionnaire, containing questions on the socio-demographic profile, knowledge about MBDs, protection from MBDs, public surveillance activities carried out by Government for MBDs and treatment seeking behaviour.

Data analysis and interpretation: The data was de-identified and analysed. Epi Info was used for data analysis and data interpretation.

Results

Total 841 households were interviewed to find out 350 fever cases in all seven zones of Surat city [50 cases in each zone]. A total population of 4964 was covered. The density of fever cases was highest in the south zone. Males were 55.8% of the total population as shown in Table 1.

In this study, a majority of fever cases were seen in the age group between 20-45 years. Males were more commonly affected than females. Mean and median age of the total participants was found to be 27.4 ± 18.8 SD and 24 years respectively.

About 38.4 % people utilised the public sector services while the remaining 23.7% of patients consulted private pathology laboratory for peripheral smear examination.

Out of the 95% patients who took treatment for fever, 70% got well with a treatment at home. Around 64% patients had to take oral drugs, while rest had to take intravenous drug therapy.

Out of 78 P. vivax cases, only 59 cases received radical treatment and among 50 P. falciparum cases, only 28 cases received radical treatment. Among 41 patients who didn't know their PSMP result, 12 took radical treatment on history.

About 70% of the respondents mentioned malaria as MBD. Dengue, Chikungunya, and Filariasis was mentioned as MBDs by 29.7%, 4%, and 5.1% respondents respectively. The majority of people said that mosquitoes breed in dirty water. Approximately 19% fever cases identified other sources than water as breeding places for mosquitoes. Sixty-four percent houses had potential breeding places within their

Table 1: Zone-wise distribution of population (*n* = 4964)

Zone	Total number of households	Male *n* (%)	Female *n* (%)	Total *n* (%)
Central	113 (13.4)	375 (7.5)	367 (7.4)	742
West	137 (16.3)	402 (8.0)	367 (7.4)	769
South west	180 (21.4)	555 (11.2)	489 (9.8)	1044
South	84 (9.9)	317 (6.4)	164 (3.3)	481
South east	105 (12.5)	383 (7.7)	340 (6.8)	723
North	127 (13.9)	382 (7.7)	320 (6.4)	702
East	95 (11.3)	356 (7.1)	147 (2.9)	503
Total	**841 (100)**	**2770 (55.8)**	**2194 (44.2)**	**4964 (100)**

Table 2: Age and Sex wise distribution of fever cases in study population (*n* = 350)

Age group (in years)	Male	Female	TOTAL *n* (%)
0-5	22	18	40 (11.4)
5-10	24	16	40 (11.4)
10-20	41	29	70 (20.0)
20-45	82	65	147 (42.0)
45-100	25	28	53 (15.1)
TOTAL (%)	**194 (55.4)**	**156 (44.6)**	**350 (100)**
Mean age	**26.3**	**28.9**	**27.4**
Median age	**22**	**26**	**24**
SD	**18.3**	**19.3**	**18.8**

Table 3: Place of peripheral smear for malarial parasite (PSMP)

Place of PSMP (*n*=350)	Frequency	%
Private lab	83	23.7
New civil hospital	5	1.4
SMIMER*/ UHCs**	112	32.0
Health worker	19	5.4
Not done	116	33.1
Do not know	15	4.3

* Surat Municipal Institute of Medical Education & Research
** Urban Health Centres

Table 4: Details of treatment taken by fever cases

	Frequency	%
Treatment taken (*n*=350)		
Yes	334	95.4
No	16	4.6
Place of treatment (*n*=334)		
Home	235	70.3
Hospital	99	29.7
Route of administration of anti-malarial (*n*=334)		
Oral	214	64.1
Intravenous	15	4.5
Mix (oral + intravenous)	105	31.4

vicinity. More than 88% houses did not have active breeding sites whereas around 12% houses had active breeding sites.

More than 81% fever cases reported that health workers come to their area for taking peripheral blood smear. Surveillance activity for fever and breeding places was present according to 75% people. Out of the people who reported positive anti-malaria activity, approximately 85% activity was regular for fever detection, taking peripheral blood smear and finding out breeding places.

Discussion

About 350 fever cases in all seven zones of Surat city were surveyed to document their treatment seeking behaviour, knowledge about MBDs and activities carried out by SMC officials with regard to mosquito control.

In this study, about 55.4% of the fever cases were seen in males and 44.6% cases in females. Similar findings were noted in a study conducted among malaria suspected cases in Southeast Ethiopia.[7] In two studies conducted in Myanmar and North-East India, similar findings were found with males being affected more, but the proportion was slightly higher.[9,10] This finding is slightly different in a study conducted in Nigeria and Tanzania with females being the majority.[11,12] In the present study, a majority of fever cases were seen in the age group between 20-45 years. Similar findings with people in productive age group being affected were found in studies conducted in Myanmar and Orissa in India.[9,13] In some other studies, it was seen that children and youth were more affected.[7,14]

Findings from the present study reveal that 66.7% got their peripheral blood smear done. Very few patients i.e. 1.4% visited the Civil hospital, Surat for the smear. Nearly one third i.e. 32% of patients got the smear from SMIMER/UHCs. Health worker of the corporation had collected smear of only 5.4% patients which indicates poor surveillance activity and house to house collection of the blood smear.

In a study in Ethiopia, a higher proportion (95%) of people had got it done.[7] Quite contradictory findings were found in studies conducted in Myanmar and Nigeria with very few getting a lab test done for confirmation i.e. 28% and 8.9% respectively.[9,11] In the present study, about 95.4% received treatment for malaria

Table 5: Peripheral blood smear report and radical treatment

PSMP report (*n*=205)	Radical treatment		
	Yes	No	TOTAL
Plasmodium vivax	59	19	78 (38.04%)
Plasmodium falciparum	28	22	50 (24.39%)
Mixed	2	5	7 (3.41%)
Do not know	12	29	41 (20%)
Negative	1	28	29 (14.14%)
TOTAL	**102 (49.75%)**	**103 (50.25%)**	**205 (100%)**

Table 6: Frequency distribution of knowledge in respondents about diseases transmitted by mosquitoes and awareness regarding breeding places of mosquitoes

	Correct knowledge		Incorrect knowledge	
	Frequency	%	Frequency	%
Diseases transmitted by mosquitoes (*n*=350)*				
Malaria	241	68.9	109	31.1
Dengue	104	29.7	246	70.3
Chikungunya	14	4	336	96
Filariasis	18	5.1	332	94.9
Breeding places (*n*=350)*				
Dirty water	192	54.9	158	45.1
Clean water	22	6.3	328	93.7
Artificial collection of water	72	20.6	278	79.4

*multiple responses

Table7: Surveillance activity and its frequency carried out by Surat Municipal Corporation (SMC) according to interviewees

Surveillance activity as reported by the Interviewee (*n*=350)	Yes		No		Total
	Number	Percent	Number	Percent	
Fever	274	78.3	76	21.7	350 (100)
Breeding places	267	76.3	83	23.7	350 (100)
Taking peripheral blood smear	286	81.7	64	18.3	350 (100)

which indicates good access to the health care delivery system. This could also be due to good surveillance activity, increased awareness due to increased IEC activity and increased community participation. About 70% took treatment at their home after consulting doctors and 30% were admitted to hospitals. This increased awareness among people is a good finding as compared to findings in other studies conducted abroad as well as in India where a considerable number of people went to traditional healers or took self-medication though many of them went to health workers or doctors' too.[7, 9-14]

The majority of patients in this present study (64.1%) took oral anti-malarial drugs, which is the preferred route under national malaria drug policy. In the present study, 60% completed radical treatment and 15% did not complete it. Incomplete treatment could lead to relapse and recrudescence. Radical treatment is the administration of primaquine to all confirmed cases of malaria. In P. vivax malaria, 2 weeks' therapy with primaquine completely cures the infection in the host by its tissue schizonticidal activity and thereby prevents relapses. In *P.falciparum* malaria, a single dose of primaquine destroys the gametocytes, thereby prevents the spread of the infection into the mosquito.[15] The approach of radical treatment with primaquine will provide a complete solution to the problem of relapse in zones of malaria endemicity.[16]

In the study in Wa ethnic group in Myanmar, the majority of the patients sought treatment from the retail sector and hence the higher probability of taking injectable medicines.[9] It was noted in a study in Orissa that, more than half (55.8%) received drugs from providers designated by NVBDCP for the treatment of malaria.[13] In the study conducted in West Bengal, almost all the malaria cases reported that they were prescribed oral anti-malarial drugs immediately after blood collection and half of them got it in the hospitals itself.[14]

When asked about knowledge regarding MBDs, 70% of the respondents had the correct knowledge and mentioned malaria (68.9%), dengue (29.7%), chikungunya (4%) and filariasis (5.1%) as diseases caused by mosquitoes. In a study by Elizabeth et al, it was found that 90% respondents knew malaria was transmitted by mosquito bite.[12]

In the present study, 64% houses had potential breeding places within the vicinity and 11% houses had an active breeding site. This is an important finding as it indicates the danger of acquiring MBDs due to water collection and logging sites in houses and their surroundings. In a study conducted in Delhi, 56% houses had potential mosquito breeding sites and mosquito larvae were seen in 36% houses.[17]

About 80% respondents in the study mentioned that health workers from SMC came to their area regularly for taking peripheral blood smear and also undertake surveillance activities for breeding places. This is appreciable as municipal authorities are working vigilantly towards prevention and early detection of cases.

Conclusion

The majority of the fever cases had got a peripheral smear done. But only 38.4% utilised public health facilities for the same, which indicates that IEC should be increased to increase utilisation of public health facilities. Effective education of the patients should ensure completion of treatment in all cases without fail. Only 6.3% respondents knew that clean water also could be a breeding place for mosquito. Though the majority of them had knowledge about breeding sites of mosquitoes, 64%, and 12% had potential and active breeding sites in their vicinity respectively. This gap between knowledge and practice must be addressed by behaviour change communication strategies.

Acknowledgment

We are thankful to faculties and residents of Department of Community Medicine, Government Medical College, Surat for help in data collection for the study. We acknowledge the support received by Surat Municipal Corporation during the various stages of the study.

References:

1. World Health Organization, Vector-Borne Diseases in India: Report of a Brainstorming Session [Internet]. 9 November2006. (Available at http: //www.searo.who.int/LinkFiles/CDS_vector-borne_diseases_in_India.pdf.).
2. Govt. of India (2002). National Health Policy - 2002 [Internet]. Department of Health, Ministry of Health and Family Welfare. New Delhi; 2002. p. 1–36. Available from: http://mohfw.nic.in/WriteReadData/l892s/18048892912105179110National Health policy-2002.pdf
3. United Nations Development Programme. Millennium development goals. Available from: http://www.undp.org/mdg/goal6.shtmlMDGs. Accessed on April 22, 2016.
4. Govt. of India (2016). Director Messages [Internet]. National Vector Borne Disease Control Programme, DGHS, Ministry of Health and Family Welfare. New Delhi. Available from: http://nvbdcp.gov.in/director-message.html.
5. National Rural Health Mission. Mission document (2005–12). Available from: http://mohfw.nic.in/NRHM/Documents/Mission_Document.pdf. Accessed on April 22, 2016.
6. Patel AB, Rathod H, Shah P et al. Perceptions regarding mosquito-borne diseases in an urban area of Rajkot city. Natl J Med Res. 2011;1(2):45–7.
7. Dida N, Darega B and Abebe A. Treatment Seeking Behavior and Associated Factors Among Malaria Suspected Patients in Bale Zone, Southeast Ethiopia: Institution-Based Cross-sectional Study. J Fam Med. 2015;2(1):5.
8. Sharma AK, Bhasin S, Chaturvedi S. Predictors of knowledge about malaria in India. J Vector Borne Dis 2007; 44: 189-97.
9. XuJ-W,XuQ-Z,LiuH,ZengY-R.Malariatreatment-seekingbehaviour and related factors of Wa ethnic minority in Myanmar: a cross-sectional study. Malar J [Internet]. Malaria Journal; 2012;11(1):417. Availablefrom: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=3529692&tool=pmcentrez&rendertype=abstract.
10. Chaturvedi HK, Mahanta J and Pandey A. Treatment-seeking for febrile illness in north-east India: an epidemiological study in the malaria endemic zone. Malar J. 2009;8:301.
11. Uzochukwu BSC and Onwujekwe OE. Socio-economic differences and health seeking behaviour for the diagnosis and treatment of malaria: a case study of four local government areas operating the Bamako initiative programme in south-east Nigeria. Int J Equity Health [Internet]. 2004;3(1):6. Availablefrom: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=544024&tool=pmcentrez&rendertype=abstract
12. Shayo EH, Rumisha SF, Mlozi MRS, Bwana VM, Mayala BK, Malima RC, et al. Social determinants of malaria and health care-seeking patterns among rice farming and pastoral communities in Kilosa District in central Tanzania. Acta Trop [Internet]. Elsevier B.V.; 2015;144:41–9. Available from: http://dx.doi.org/10.1016/j.actatropica.2015.01.003
13. Das A, Ravindran TS. Factors affecting treatment-seeking for febrile illness in a malaria endemic block in Boudh district, Orissa, India: policy implications for malaria control. Malar J [Internet]. 2010;9(1):377. Available from: http://www.malaria-journal.com/content/9/1/377.
14. MazumdarS.Prevalence,riskfactorsandtreatment-seekingbehaviour for malaria: the results of a case study from the Terai region of West Bengal, India. Ann Trop Med Parasitol [Internet]. 2011;105(3):197–208.Availablefrom: http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=4090793&tool=pmcentrez&rendertype=abstract.
15. WatchJ,PolicyW.TreatmentofMalaria[Internet].2015. Availablefrom: http://www.malariasite.com/treatment-of-malaria/
16. Baird JK. Radical Cure: The Case for Anti-Relapse Therapy Against All Malaria. Clin Infect Dis. 2011;52(5):621–3.
17. Anand T, Kumar R, Saini V et al. Knowledge and use of personal protective measures against mosquito-borne diseases in a resettlement colony of Delhi. Ann Med Heal Sci Res. 2014;4(2):227–32.

How to cite this article: Modi A, Gamit S, Choudhary SR, Parmar R, Goghara P, Kavishvar A. Treatment-seeking behaviour and community perceptions regarding malaria in Surat city. Int J Med Sci Public Health 2017;6:345-349

Source of Support: Nil, **Conflict of Interest:** None declared.