



THE ASSESSMENT OF COMMUNITY KNOWLEDGE AND PREVENTIVE PRACTICES AGAINST MALARIA IN A LOW ENDEMIC ZONE OF TRIPURA: A CROSS SECTIONAL STUDY

Community Medicine

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ABSTRACT

Background: Tripura, one of the Northeastern State, known as endemic zone of malaria. However, recently malaria resurgence in a non-endemic zone, made a concern to assess the community level knowledge about Malaria and practices against malaria transmission in Tulabagan area which is a low endemic zone of West Tripura District. **Methods:** A cross-sectional study was conducted in the month June 2023 using an interview schedule among the members of the households of Tulabagan catering the area around 1.5 km radius from first case reported of malaria *plasmodium falciparum*. Data were analyzed using SPSS 21.0 and expressed using descriptive statistics like mean, standard deviation, frequency and percentage. **Results:** Mean age of participant was 44.4 ± 12.41 years. The knowledge among the community was adequate (81%) on malaria even though the place is a low endemic zone. Majority (79%) knows its transmission and common season of occurrence (71%). Majority aware about time of vector bite (60%), its breeding habit (89%), and common symptoms (74%). Majority of respondents gathered knowledge from health workers (73%). But only 58% are occasional user of bed nets and occasionally only 53% uses full sleeves clothes in outdoor works. **Conclusion:** The study revealed that the level of knowledge on malaria among the community of low endemic area was adequate but control and practices were inadequate indicating the needs of comprehensive sensitization among the community people.

KEYWORDS

Malaria, low endemic area, community knowledge, control, prevention etc.

INTRODUCTION

As on 2020 globally, approximately half of the world's population was at risk of malaria and there are 87 malaria endemic countries and COVID19 pandemic associated disruption of health services contributed 12% rise in death due to malaria.¹ Among malaria cases and deaths South East Asia region shares 2% global burden and among South East Asia region India alone contributes 83% cases.¹ In India, Malaria is a major public health problem because 95% of population resides in Malaria prone area. Tribal area, hilly area, hard to reach geography area comprises home of 20% population contributes approximately 80% malaria cases.² To achieve target on scheduled timeframe many broad strategies has been committed like- (1) both active and passive case detection, early diagnosis using blood slide examination and bivalent Rapid Diagnostic Test (RDT) kit (2) prompt and radical complete treatment (3) strong and quality surveillance (4) quality Rapid Response Team (RRT) action (5) Integrated Vector Management (IVM) using Indoor Residual Spray (IRS), Long Lasting Insecticidal Net (LLIN), Larval Source Management (LSM) (6) epidemic preparedness (7) Behavior Change Communication (BCC) (8) adequate drugs and consumables supply chain management (9) advocacy, intersectoral coordination and partnerships.³ Clinically malaria shows chill sensation with shivering, rigor and cold skin, then followed by high grade fever and malaise, associated with headache, vertigo, nausea, vomiting and finally fever subsides with profuse sweating and patient feel relieved and falls asleep but in actual scenario it can vary from asymptomatic to hepatic to renal to cerebral sign and symptoms.

Even gastrointestinal symptoms like diarrhea also reported.⁴ Among *plasmodium* species *Plasmodium falciparum* is the major contributing protozoa (80-90%) followed by *plasmodium vivax* contributing (10-20%) cases of malaria in Tripura. May to October is the prevalent season.⁵ As per vector entomological epidemiology study *anopheles minimus*, *anopheles dirus* and *anopheles baimai* are the major vector in Tripura.⁶ These mosquitoes are zoophilic, bites at night specially during dusk and dawn period. Almost all of them likes to breeds in

stagnant water bodies, rainwater collection sites, slow streams. Most of them has indoor resting habit in dark damp locations.⁷ In national Malaria conclave 2023, Govt of Tripura also given commitment to become malaria free by 2027 as per Sustainable Development Goal (SDG) 2030 commitment by Govt of India.⁸ In Tripura there are many high endemic areas (endemic pockets) mostly inhabited by hard core Juma families of indigenous communities over the districts of Dhalai, Gomati, South, Khowai, Unakoti and North.⁹ In the last five years there has been no major Malaria outbreak but actually decreasing prevalence pattern.⁵ West and Sepahijala district of Tripura officially considered low endemic area/zone as they show Annual Parasite Index (API) < 1 as per epidemiological report from State Malaria NVBDCP cell.⁵ In June 2023 foci malaria case have been registered from Tula Bagan Gram Panchayet Mohanpur Municipal area under West Tripura district (source: hospital register). One female child with history of fever, headache, loss of appetite, weakness for 3-4 days and has been reported to the nearest Mohanpur Community Health Centre (CHC). Subsequently, Rapid diagnostic kit testing done which shows *plasmodium falciparum* positive and managed as per malaria treatment protocol. As per M4 report for malaria, in the present calendar year no malaria cases were reported from this part of west district of Tripura until June when two cases of malaria suddenly appeared. Key to implement culturally appropriate, sustainable and effective interventions for Malaria is related to community knowledge about the disease. Community perception, beliefs, attitude towards malaria control measures, symptoms, treatment and prevention influences effectivity of related programs. And all these knowledge attitude and practices towards malaria vary country wise, state wise area wise and even households wise.⁹⁻¹² Sudden appearance of foci case of malaria in June 2023 in a village belongs to low endemic zone is matter of concern indicating inter district transmission, poor community knowledge and attitude on malaria, and lack of awareness regarding preventive practices or control actions due to zero cases of Malaria in that area for long period of time and people almost not practicing them. It can be due to weak surveillance and weak behavior change communication by assigned health staffs of that jurisdiction.

Hence, it is imperative to assess the community level knowledge about malaria and its control or preventive practices to fight against malaria. The study aimed to assess community level knowledge about Malaria among adult member of families of Tula Bagan which is a low endemic zone of West Tripura District and to assess the state of existing preventive practices or control measures against malaria of that area.

METHODOLOGY:

A descriptive cross-sectional survey was conducted among the residents of Tula Bagan village (ward 13 & 14) under Mohanpur Municipal Council covering a population of 2,101 where majority peoples are belongs to Bengali community for a period of 7 (seven) days on June 2023. The study area was approx. 1.5 km radius inhabitant around foci case of malaria. A structured questionnaire prepared and used by scheduled interview targeted to assess socio-demographic status, community level knowledge and attitude about malaria and preventive practices against the disease. One adult member (male or female) from each family or household are chosen as respondent and preferably head of the family (if present) selected for study convenience. Total 100 (one hundred) respondents have been interviewed after acquiring verbal consent within study area surrounding spot cases without any exclusion except cases of locked houses or houses where adult members were absent during visit time. Statistical analysis was done using SPSS 21.0 software and were expressed in mean, standard deviation, frequency and proportion.

RESULTS:

An interview was done among 100 respondents under Tula Bagan area where adult members from each household were interviewed using interview schedule who are randomly chosen if more than one adult member is present. Mean age of them was 44.4 ± 12.41 years and majority of respondents were female (55%), belongs to SC (63%), all are Hindu (100%), family income around 10,000 rupees (47%), up to X- XII schooling (43%), non-priority house hold (71%), consist of 3-4 member per family (63%). The study finding shows that respondents' knowledge about malaria and all of them (100%) heard about it, majority (79%) knows its transmission, common season of occurrence (71%). Majority aware about time of vector bite (60%), its breeding habit (89%), also practices some vector control measures (91%). And regarding Malarial clinical features, majority respondent aware about common symptoms (74%) but majority has poor knowledge regarding its treatment and cure (55%), diagnosis (65%) and its possible severe complications (72%) [Table 1].

Table 1: Knowledge statement among the respondent(N=100)

Knowledge statements on malaria	Response	
	Correct (%)	Incorrect (%)
Have you ever heard or aware about malaria?	100.0	0.0
How is malaria transmitted?	79.0	21.0
In which season/period of the year malaria may occur?	71.0	29.0
At what time of the day mosquito bites more?	60.0	40.0
Where does mosquito breed usually?	89.0	11.0
What can you do to control/prevent mosquito bites or malaria?	91.0	9.0
Is malaria treatment available? Is it curable?	45.0	55.0
What are the common symptoms of malaria can be?	74.0	26.0
How malaria is diagnosed or confirmed?	35.0	65.0
Is malaria, can lead to serious illness even death?	28.0	72.0

Majority of respondents gathered knowledge about Malaria from health workers (73%) followed by friends/ neighbors/ public meetings (39%) [Table 2].

Table 2: Sources of information related to malaria (N=100)

Sources of information related to malaria	Response (%)
Television	23.0
Newspapers	11.0
Mobile phones/You tube	32.0
Friends/Neighbors/public meetings	39.0
Hospitals/Health workers	73.0

Regarding attitude towards malaria and its prevention majority agreed that, malaria transmitted through mosquito bites (94%), water collection bodies around the house are mosquito breeding site (87%), dirt unhygienic surroundings can lead to malaria (81%), use of bed net can control malaria fever (85%), malaria is curable and medicine available (66%) but around 42% disagree that malaria can be asymptomatic, 53% disagree that mosquito usually bites at night. And, regarding response about malaria diagnosis and treatment at nearest health sub center responses are inconclusive (43%) also only near half (53%) responded that regular awareness program useful for malaria control [Table 3].

Table 3: Attitude statement related to malaria and its prevention (N=100)

Attitude statement related to malaria and its prevention	Agree N (%)	May be / don't know	Disagree N (%)
Malaria usually transmitted through mosquito bites	94%	4%	2%
Malaria can be asymptomatic case	29%	29%	42%
Malaria can transmit by person-to-person contact	12%	11%	77%
Malaria can be diagnosed and treated at your nearest health sub-center	36%	43%	21%
Our dirt unhygienic surroundings can lead to malaria fever	81%	10%	9%
Water collection bodies around the house are mosquito breeding site	87%	11%	2%
Use of bed nets can control from mosquito bites or malaria fever	85%	12%	3%
Regular awareness program is useful for malaria control	48%	37%	15%
Malaria is curable and medicine also available for it	66%	32%	4%
Any fever illness has to be tested immediately for malaria	30%	45%	25%
Mosquito usually bites at night times	8%	39%	53%

Regarding information about preventive practices against Malaria among respondents, per family on average has 2 nos. mosquito bed net, majority occasionally uses them (58%), children are majority user (58%), regarding practices of cleaning of house surroundings community follows no significant pattern, occasionally uses full sleeves clothes outdoor (53%).

Respondents also responded that in case of fever either they prefer over the counter drug first (35%) or visit health center (29%) or contact local ASHA (21%). Also, 67% seeks medical help within 24hrs. Regarding mosquito control methods popular among respondents are cleaning surroundings (70%), window mesh (63%), use mosquito coil and liquid repellent (59%) [Table 4].

Table 4: Practices related to malaria / mosquito control and prevention (N=100)

Practice question related to malaria / mosquito control and prevention		N (%)
Bed nets use: (average bed net found in the houses) – 2 Nos.	Daily	31%
	Not frequent / occasionally	58%
	No use	11%
Member uses bed nets at night while sleeping:	All member	14%
	Childrens only	58%
	Elderly only	28%
Cleanings of house surroundings:	Weekly	17%
	Monthly	16%
	Every 3 days	31%
	Daily	19%
	Not regular or depends	17%
Prefer long sleeves cloths during outdoor work:	Do not use	24%
	Sometimes	53%
	Regular	23%

First action when any fever illness in the family:	Contact local ASHA	21%
	Prefer over the counter drug first	35%
	Visit health center	29%
	Use any home remedy	12%
	Wait and watch	3%
Time taken to seek medical help after fever illness:	On the same day	36%
	Immediately	31%
	>24 hour	30%
	Wait and watch	3%
*Mosquito control methods:	Use of bed nets	30%
	Window mesh use	63%
	Burn leaves to produce fogging	2%
	Use coil / liquid	59%
	Cleans surroundings	70%

*Multiple responses allowed

DISCUSSION:

State of Tripura historically has high malaria endemic zones with seasonal outbreaks and variable distribution geographically and under continuous NVBDCP activities to contain it, hence can be predicted community knowledge will be preferably good even in low endemic area.^{13,14} Our study shows, study population of Tula Bagan despite being in low endemic zone has relatively very good knowledge about malaria and its control measures. Various recent studies in other states also had similar findings like Kumar S et al¹⁵, Gupta RK et al¹⁶, Rajvanshi H et al¹⁷. However, there is also few studies that differs in findings with our studies regarding treatment, vector factors and host factors like Sáenz FE et al¹⁸, Tairou F et al¹⁹, Abate A et al.²⁰ In our study, respondent's inaccurate response to vector bite time, testing fever cases for malaria and regarding asymptomatic malaria is not as per prediction. It is good alarming information for action for corrective measures to achieve NMEP 2027 goal. There are few studies has relative findings to our study like Alobuia WM et al²¹, DePina AJ²². There are also studies differs our study findings like Jumbam DT et al²³. Response regarding practices to prevent malaria among study respondents is somewhat concerning as 31% uses bed net daily, only 50% cleaning surroundings at least every 3 days, and 23% using long sleeve thick clothes while working outdoor are not at all satisfactory in spite of majority correctly aware about preventive measures personal protection and control of vectors. Regarding health seeking in case of fever is also not so positive as though 97% of respondents willing to seek consultation within 24 hours only 50% seeks contact with ASHA or health professionals. There are few studies that has better results than the study.²⁴⁻²⁶ Many previous literatures, shown diverse findings of malarial knowledge level at communities specially in endemic areas with adequate knowledge.^{8,11,24,25,21,23,24} But a few studies have demonstrated the knowledge level among the community people which was poor knowledge.^{17-20,25} however, the present study shows adequate knowledge on different aspects of malaria.

This study was conducted in a very small geographical area over a short period of time with very small sample size and does not evaluate some aspects of malaria such as agent factors, host factors, and vectors dynamics.

CONCLUSION:

The study concluded that the overall existing knowledge among peoples of low endemic zone at the community level was adequate but there is concern regarding attitude towards malaria and preventive practices to it. It signifies the importance of intersectoral coordination to improve and encourages regular good preventive activities in the community itself. Regular extensive behavioral change communication is highly recommended especially low prone area of malaria.

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