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Abbreviation

AIDS	Acquired Immune Deficiency Syndrome
BHP	BRAC Health Programme
DGHS	Directorate General of Health Services
EM	Explanatory Model
FGD	Focus Group Discussion
GFATM	The Global Fund to Fight AIDS, Tuberculosis and Malaria
GoB	Government of Bangladesh
HIV	Human Immunodeficiency Virus
ICDDR,B	International Centre for Diarrhoeal Disease Research, Bangladesh
ITN	Insecticide Treated Net
LLIN	Long Lasting Insecticide Net
MDG	Millennium Development Goal
MOHFW	Ministry of Health and Family Welfare
MPDCU	Malaria and Parasitic Disease Control Unit
M&PDC	Malaria and Parasitic Disease Control
RDT	Rapid Diagnosis Test
RMCS	Revised Malaria Control Strategy
NGO	Non-Government Organization
SEA	South-East Asia
TB	Tuberculosis
TNO	*Thana Nirbahi* Officer
UNICEF	United Nations Children's Fund
UNDP	United Nations Development Programme
WHO	World Health Organization

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Executive Summary

Introduction

Malaria is one of the major health burdens in Bangladesh. It is mainly a seasonal disease and concentrated in border areas. Thirteen districts in the north, north-east and south-east are highly malaria endemic. For a long time various activities have been implemented in the malaria endemic areas, especially in the hilly areas, for prevention and control of malaria. People of different ethnic communities with different cultural backgrounds live in the hilly areas of Bangladesh. They possess their own traditional beliefs regarding the causation, transmission, treatment, prevention and control of the disease. But, the practitioners/programme implementers did not try to explore this traditional knowledge or the existing practices of the community regarding malaria. This is important especially to understand the community's beliefs, attitudes, knowledge and behaviours related to malaria so that the malaria prevention and control programme can be contextualised, and a sense of ownership developed which is necessary for programme sustainability.

Objective

This study aims to explore the explanatory model of malarial illness in different communities. Explanatory model is an idea that facilitates health practitioners/ service providers to realize patients' perspectives and understanding of health issues such as diagnosis, treatment and/or recommendations. The practitioners/ programme implementers and patients then work together to agree on a course of action that is acceptable to both.

Methods

Applying qualitative methods, this study was conducted among three major communities living in the Dighinala *upazila* of the Khagrachhari district. The *upazila* is having the second highest prevalence of malaria (22%). Free listings, in-depth interviews and focus group discussions (FGD) were used to collect information on different aspects of malaria (i.e., explanatory model), and existing activities of BRAC in the communities for prevention and control of malaria. Free listings were done in each community for identifying respondents for oral history, in-depth interviews, and FGDs. Thirty-six in-depth interviews were conducted with males and females in each community. They were categorized into different age groups before interview. Twelve FGDs were conducted in each community.

Major findings

Various explanatory models of malaria emerged in different study communities in the endemic *upazila*. Based on different explanatory models, these ethnic communities have different activities for diagnosis, treatment, and prevention of malaria though they live in the same environment and geographical settings. Historically, the study communities were familiar with malaria as a common disease in their locality, but they call it by different names. Most of them regarded malaria as a dangerous, harmful and complex disease. The study found that the knowledge of malaria varies according to ethnicity. The *Chakma* community knows the symptoms of malaria better than the *Bangali* and the *Tripura* communities. Most of them know that mosquito bite is the main cause of the disease and that it is a seasonal disease. Very few possessed in-depth knowledge about the mode of transmission. The perception of malaria including its treatment and prevention has changed over time and this is quite plausible. It is interesting to note that they almost unanimously perceived allopathic treatment as the 'treatment of choice' for curing malaria which makes it much easier for modern malaria prevention and control activities to push ahead. BRAC is also increasingly being perceived as an important and reliable provider due to its assurance of quality diagnosis and treatment, good relationship between community people and the community health workers including its cost-effectiveness. The study respondents have a positive attitude towards prevention of malaria in general, especially preventing mosquito bite by using bed net and seeking prompt treatment for suspected malaria-like fever. The insecticidal bed net is a new entity in this community and as such they are yet to learn its proper use and maintenance as revealed in this study.

Conclusion

The study shows that the three major communities had different explanatory models of malaria. Though they had many differences and similarities, some beliefs and practices of malarial treatment and prevention in the communities were very much remarkable. It is important for the community health workers/ programme practitioners to understand these aspects and then try to model IEC campaigns for prevention and treatment in a way so that the community can relate it to their everyday experiences. Understanding of the community perspective will also be helpful in identifying the barriers to programme implementation, and design appropriate strategies to overcome these. Thus, instead of a top-down affair, the interventions will be well understood and owned by the community and will be sustainable.

Introduction

Malaria situation

Malaria is a mosquito-borne tropical disease characterized by chills and fever, anaemia, and often serious complications. Malaria presents with a wide range of clinical appearances which arise from the destruction of red blood cells and the resultant disruption of metabolism (Banglapedia 2006). Malaria is estimated to be responsible directly for about 3,000 deaths worldwide in a day (Greenwood *et al.* 2005). Malaria is concentrated in the world's poorest countries, with 90% of malaria deaths occurring in the sub-Saharan Africa and 9% in the south-east Asia (WHO 2002). Around 40% of the world's population, mostly those living in the world's poorest countries are at risk of malaria (UNICEF and WHO 2000). People at greatest risk are those who have been exposed to malaria only infrequently and have developed little or no protective immunity. In the Millennium Development Goals (MDG), malaria takes an important place along with the HIV/AIDS and tuberculosis and the requirement is to halt and begin to reverse the incidence of malaria and other major diseases (e.g. TB, HIV/AIDS) by 2015 (UNDP 2000).

Malaria re-emerged as one of the major public health problems in Bangladesh in the 1990s (M&PDC, 1997, Sharma 1996). In Bangladesh, malaria is most likely a seasonal disease and concentrated in border regions. Thirteen districts in the north, north-east and south-east regions are highly malaria endemic. These are Khagrachhari, Rangamati, Bandarban, Cox's Bazar, Chittagong, Sylhet, Sunamganj, Moulvibazar, Hobiganj, Mymensingh, Netrakona, Sherpur and Kurigram. About 98% of the malaria cases are reported from these districts. The ecological situation of all these districts favours transmission of the disease. Three districts namely Khagrachhari, Rangamati and Bandarban located in hilly remote areas of Chittagong Hill Tracts suffer from geographical disadvantage with difficult communication and intense perennial transmissions of malaria (BHP 2008). Currently the number of malaria endemic *upazilas* is 70 and the total population at risk is 10.9 million.

Bangladesh endorsed the World Declaration on the Control of Malaria and the Revised Malaria Control Strategy (RMCS) derived from the Amsterdam Meeting in 1992. A country 'Guideline and Recommendation' was formulated in 1994. The main objective of the programme is to reduce malaria mortality by 50% by the year 2010, to provide early diagnosis and prompt treatment to all malaria cases, to implement vector control measures, including insecticide treated bed nets and indoor residual spraying, and to develop and strengthen the malaria epidemiological surveillance system (M&PDC 1997).

Malaria control and prevention programme and BRAC

Malaria prevention and control programme of BRAC was initiated in 1998 as an information and education campaign at one *upazila* in the Khagrachhari district. By 2002, the campaign had grown to a comprehensive programme including malaria diagnosis and treatment service and promotion of insecticide treated nets. Now, the programme has expanded to cover all the 25 *upazilas* of the three hill districts and two *upazilas* of Moulvibazar district. Besides, a number of partner organizations under a consortium led by BRAC are also working in the remaining 45 *upazilas* of the endemic districts.

Since initiating the malaria control programme, BRAC has worked in close collaboration with the government of Bangladesh (GoB), World Health Organization (WHO), the Malaria Research Group (MRG) and International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). To strengthen malaria control activities in Bangladesh, the government's Malaria and Parasitic Diseases Control Unit (MPDCU) has established a partnership with a BRAC-led consortium of 20 non-government organizations (NGOs). Through the joint efforts of the government and NGOs, Bangladesh has used a grant from Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM) for malaria control activities. The goal of the programme is to reduce malaria-specific morbidity and mortality in Bangladesh and the objectives of the programme are to raise community awareness on malaria prevention and control, to increase access to malaria diagnosis and treatment, and to reduce the risk of malaria transmission. For this the programme personnel need to know how the community perceive the problem including its solutions. People have their own ways of 'understanding illness, its consequences, and how best to treat it' which is also culture sensitive, and nicknamed 'explanatory model' (Hallenbeck 2000). Anthropologist Arthur Kleinman suggests that by exploring the *explanatory model* of illness (by asking others the *What, Why, How, and Who* questions) we can better understand the context, and make 'sense out of nonsense' (Kleinman 1978). Thus, it is imperative that we understand their perception regarding malaria for development of an effective programme in these areas.

Explanatory model of illness

Explanatory model is an idea that facilitates health practitioners/service providers to realize patients' perspectives and understanding of health issues such as diagnosis, treatment and/or recommendations. The practitioners and patients then works together to agree on a course of action that is acceptable to both. Kleinman (1978) suggests that by exploring the explanatory model of illness, there is a scope to understand better the patients' and family's views about any disease or illness.

Explanatory models have been explored to encourage deeper understanding of many health issues spanning from malaria to home-based family care to HIV infection (Hodgson 2000). This approach is especially useful in cross-cultural settings, where misunderstandings and miscommunications are a common barrier to high-quality care. Patel explored the diversity of beliefs regarding mental illness

in sub–Saharan Africa in 1995 using explanatory model (Patel 1995). Okkelo and Neema explored explanatory models in patients admitted for depression in the Mulago hospital of Uganda to find out how the primary care providers can better recognize and help people properly in the existing settings (Okkelo and Neema 2007). Dzator and Asafu-Adjaye (2004) found that costs in terms of treatment and time were the major limiting factors for choice malaria treatment options in Ghana. In 2002, Nuwaha explored the community people's perception on malaria in Mbrara of Ghana. There he found the causations, preventions, treatments of malaria and bed net use of the community people. He also provided some recommendations to improve the malaria control programme in these areas. Such as, the programme could work together with usual and private health care providers to raise endorsement of insecticide bed nets (Nuwaha 2002).

Rationale

Malaria control and prevention programme of BRAC is a community based programme. Community people are directly involved in the activities and they are the main beneficiaries of the programme. They need to have a sense of ownership in the programme for its effective implementation. If the activities of the Programme are not culture-sensitive and they cannot relate it to their perceptions and everyday experiences, the community may lag behind to access and use, and may fail to comply with, the services provided. Thus, it is imperative to understand the community people's perceptions and experiences regarding malaria and its prevention and treatment. There is lack of knowledge in this field in Bangladesh. This study, by exploring their explanatory model of malarial illness, sought to fill in this knowledge gap.

Objective

This study aims to explore the explanatory models of malaria in the communities of Dighinala *upazila* in Khagrachhari district of Bangladesh.

The specific objectives were:

- To investigate the community perception on malaria and its causation.
- To study their perception and existing practices for treatment and prevention of malaria.
- To study the historical aspects of malaria-related activities in the area.
- To study the community perception of BRAC's malaria control and prevention programme including perception on recently distributed Long Lasting Insecticide Net (LLINs)/Insecticide Treated Net (ITNs) by BRAC Health Programme (BHP) as a tool for prevention and control of malaria and compliance with its proper use and maintenance.

Methods

Information on different aspects of malaria (explanatory model) and activities BRAC for malaria prevention and control were collected using qualitative methods. In depth interviews and focus group discussions (FGD) were conducted at individual and community level respectively to know about their knowledge, beliefs and perception regarding malaria and recently distributed LLINs/ITNs by BRAC Health Programme. Efforts were also made to know the causes, treatment-seeking behaviour and the existing practices for control and prevention of malaria in the study area. We conducted some oral history interviews with the elderly people to know about the historical perspectives of control and prevention of malaria by the government of Bangladesh or other organizations in Dighinala *upazila.* Data were collected during May-June 2009.

Study area

The study was conducted among the three major communities (*Bangali, Chakma* and *Tripura*) living in Dighinala *upazila* in Khagrachhari district. Dighinala *upazila* is having the second highest prevalence of malaria (22%) (Ahmed *et al.* 2008). The *upazila* has 694.12 square km area, 18,672 households, and 92,743 people. The literacy rate is 47.5 (Bangladesh Bureau of statistics 2001). BRAC malaria control and prevention programme identified 3,036 identified malaria patients up to February 2009, the highest in all of Bangladesh during this period (BRAC Malaria Control Programme Report, February 2009). Considering these, Dhighinala *upazila* was selected for the study. The study population consists of the beneficiaries of BRAC malaria control and prevention programme in those selected communities, current and former malaria patients, community leaders, and local elites.

Sample

Free listings (n=360) were done in each community for identifying respondents for oral history, in-depth interviews and participants for FGDs. Thirty-six in-depth interviews were conducted with both male and female in each community. They were categorized into three age groups (12-20, 21-40, 40+) and then interviewed. Twelve FGDs were also conducted in each community. Table 1 shows the sample size for the study.

Table 1. Techniques, covered issues and sample size

Techniques and covered issues	Chakma (N)	Tripura (N)	Bangali (N)	Total (N)
Free listing with community people for identifying key informants and respondents of in-depth interviews and FGDs. Also knowing a general community perception about malaria.	120	120	120	360
Focus group discussion (FGDs) with community people by age and sex groups for understanding their views, treatment-seeking practices, prevention strategies and existing activities on malaria.	12	12	12	36
Oral history interviews with especially older persons for understanding the historical perspective of malaria and its prevention and control activities in the area.	5	5	5	15
In-depth interviews with the key informants for knowing their views, experiences, treatment-seeking practices, prevention strategies and existing activities on malaria.	36	36	36	108

Tools and techniques

A written checklist/guideline was followed for both in-depth interviews and FGDs. Pen and paper was used for collecting data from the oral history[1], in-depth interviews and FGDs. A semi-structured questionnaire was also used for free listing before doing in-depth interview and FGD in the communities. Research assistants took field notes during in-depth interviews, oral history interviews and FGDs. Later they refreshed the collected field notes and all field notes were transcribed on the same day of data collection.

Staff recruitment and training

Four social science graduates in anthropology (two males and two females) were hired as research assistants for data collection including one male and one female from *Chakma* community and two interpreters from *Tripura* community to address language barrier during interviews and FGDs. A Five days training was organized for the research assistants on taking oral history, interviewing and managing FGDs, and field-testing of checklist/guidelines. Field activities were conducted under the supervision of a resident researcher to ensure quality of data. A senior researcher supervised overall activities of the study.

[1] Oral history is a method of gathering and preserving historical information through recorded interviews of people about past events and ways of life (Oral History Association, www.42explorer2.com).

Data collection

Data were collected through free listings, in-depth interviews, FGDs and oral history interviews.

Free listings

Research assistants did 120 free listings for identifying key informants from each community where all types of people (e.g. males and females of different ages) were involved. Through free listing, the key informants for the study such as former patients of malaria and local service providers of malaria disease were identified. A semi structured questionnaire was used for understanding the general perception of malaria in each community. Local *Shasthya Kormi* (SK) or *Shasthya Shebika* (SS) of BRAC who knew the community would help the research teams in doing this exercise. The team also got an opportunity to build rapport with the community people, and to select participants for the in-depth interviews and FGDs.

FGDs

Thirty-six FGDs were conducted with people of different sex and age from the three communities who were knowledgeable about malaria, its diagnosis and treatment (12 FGDs from each community). Research assistants worked hard to reach the respondents and arrange FGDs in a time of rough weather without suitable transports in the hilly places. But, it was possible because of the concentration and helpful attitudes of the community people. The FGDs were conducted smoothly. The moderator of the FGD sessions was helped by a note taker who also finalized the transcript in the same day. Through FGDs, perspectives on malaria with respect to different age, sex and ethnicity were explored.

In-depth interviews

In-depth interviews were conducted with the community people and leaders, service providers, and former patients from each community. They were selected through the free listing exercises who were supposedly better informed because they had experiences of suffering from malaria and its management and treatment. A total of 108 in-depth interviews were conducted. The in-depth interviews show detailed information on the respondents' perceptions and experiences regarding the prevention and treatment of malaria.

Oral history

Oral history is a method of gathering and preserving historical information through recorded interviews of people about past events and ways of life (Oral History Association, www.42explorer2.com). We conducted oral history interviews with people aged over 55 years to know about the historical perspectives of malarial illness, its prevention and treatment. People aged over 55 years including local

elites, leaders, and educated persons were selected because they have knowledge about the changing scenario of malaria over time in these areas.

Data analysis

All the detailed transcripts were checked for consistency. The data were stored and compiled. The data were coded into sub-category, category, sub-theme, board theme, and finally some summary were made according research objective. Content analysis procedure was followed for analyzing the qualitative data. The outcome of data by using content analysis technique and the outline of theme, sub-theme and category are briefly shown in Table 2.

Table 2. The outline of theme, sub-theme and category

Theme	Sub-theme	Category
Perception about malaria	Diseases perception	What is malaria Local name of malaria How it identify
	Causation	Causation of malaria Seasonal effect
	Risk groups	Spreading process Risk group
	Symptoms	Causes of risks Visual symptoms
	Perception about severity	Non-visual symptoms Physical severity Economical severity
Historical perspective	1947-1970 1971-1990 1990- present	Taken steps in the periods Present activities
Perception about treatment	Types of treatment (Hospital, BRAC, doctor's chamber, pharmacy, homeopathy, ayurvedic, faith healing, self treatment)	Nature of treatments
	Decision-making for seeking treatment	Decision-making process Cost of treatment Obstacles for treatments
Prevention of malaria	Perception on prevention	Necessity of prevention Prevention strategy Steps to prevention Obstacles for prevention
BRAC's programme implementation	Role of BRAC	Types of activities Evaluation of activities Recommendations
Perception about LLINs/ITNs	Perception of LLINs/ITNs	Norms/Sources of knowledge of use Causes of non-use Differences between LLINs/ITNs

Findings

Community perception on malaria

Disease perception

What is malaria?

Most of the respondents of the three communities regarded malaria as a dangerous disease. They used terms like harmful, complex, and bad when describing malaria. A few respondents called it typhoid sickness. They called it as a dangerous disease because they were worried about the possible long-term consequences of malaria and that it may turn into another disease like typhoid, jaundice, anaemia, etc. They thought that it could not be fully cured, and finally people could die. *Bangali* people explained the severity of malaria by using the term *A+, B+, 1+ 4+, PFT+ (50+).* In these communities, some people also thought malaria as a disease of virus or bacteria. Some regarded it as infectious disease because they thought that if anybody got in close contact with a malaria patient, took food together, or slept together they might get malaria. The *Bangali* people divided it in three types severe, not severe and normal. But the *Chakma* community mentioned the type of malaria as *vivax, falciparum.* One respondent mentioned '*Malatman malaria*' meaning a dangerous type of malaria.

Local name of malaria

In these three communities, the common term 'malaria' was used to refer malarial illnesses. In the *Bangali* and *Chakma* communities they used to call it as *Kala ajar* because some people opined that the malaria patient became short of hearing, few other people opined that the skin of malaria patient turned black. In both the communities, people used to call it *Hati jar* to refer to malaria because of its mammoth harmfulness.

In terms of duration and physical harm and costs, the *Bangali* community used to call it as *Moron jar* or *Pocha jar* because of its long duration and incurability. In *Chakma* community people regard it as *Bhanga jar* because of the rapid emaciation of the body. In *Tripura* community they have a single name for it the *Miaung Kulung* based on its symptoms.

Perception about causation of malaria

Causes: direct, indirect and supernatural

The mosquito bite is regarded as the first and foremost causal agent of malaria by almost all the respondents. One in every five respondents could tell that malaria

could be caused by the bite of 'female anopheles mosquito'. According to them the reasons for increasing mosquitoes were neighbouring bush, dumping rubbish, still water, open toilet, and self un-cleanliness. Besides, they also attributed a number of other factors which might be directly or indirectly associated with it. These included food habit like eating mutton chop, jackfruit, dirty food, *puti* fish, leftovers, rotten foods, etc. Some respondents also mentioned that sun, rain, heat, weather, physical weakness, and hard labour were the causes of malaria. Few respondents of the *Chakma* and *Bangali* community mentioned that breathing polluted air and becoming unconscious were also responsible for getting malaria. Respondents from the *Chakma* and *Tripura* community mentioned about physical settings and bite of mosquito in particular time of the day (6:00 p.m.-9:00 p.m.) as causal factors. Bite of dog and frequent bathing were also mentioned as causes by the *Bangali* community. One respondent of *Tripura* community told that huge *Shegun* forest, blood transfusion, and low disease protective capacity were the causes of malaria.

Besides, a few respondents mentioned supernatural reasons. They thought that if *Devota/God* wants then anybody can get malaria. That idea is widely prevalent among the people of *Tripura,* than those of the other two communities.

Seasonal effects

Almost all the respondents of the three communities told that malaria epidemic increased in rainy and summer seasons. According to them, in rainy season it rains heavily and drains are filled with water which favours the breeding of mosquitoes, and thus malaria occurs from increased frequency of mosquito bites. In summer, people used stay outside at night and sleep in bare body and expose themselves to mosquito bite and get malaria. Other respondents thought that malaria could take place at any time. Few respondents of *Bangali* and *Tripura* communities thought that the prevalence of malaria increase in-between summer and winter. A respondent from *Bangali* community said*, "Those people who do not drink water in summer get malaria."*

Spreading process

Causation and transmission of malaria were used interchangeably by the respondents. Most of them could not talk about the transmission of malaria though they knew the cause of malaria. Some respondents knew that female anopheles mosquito is the cause of malaria, but they mentioned that any kind of mosquito could cause its transmission. Some respondents told that if any kind of mosquito bites a malaria patient and then bites another man then he will get malaria. A few respondents of the three communities regarded it as an infectious disease which spreads through sharing food and bed, and getting close contact with patients. One respondent of the *Bangali* community told that it was spread through polluted air. Another respondent of the *Chakma* community told that malaria was spread from the place of laying eggs by mosquitoes.

Risk groups for malaria

The different categories of the respondents were asked (in FGDs and in-depth interviews) about the groups who were at risk of malaria. According to them babies, pregnant women and elderly persons were particularly at risk of malaria. They also said that everybody could get contract malaria, especially those who were poor and worked in the forest, who lived near pond and river (mosquito prone area), and who were unconscious and unclean.

Most of the respondents thought that the babies were at highest risk of malaria as they move or play at all times everywhere as they like, they did not have knowledge of mosquito and malaria, and they could not express their sickness, low prevention capacity, and lack of awareness of parents. Few people opined that malaria could be passed on from pregnant mother to baby.

Some people said that pregnant women were also vulnerable because of lack of their movement, lack of nutrition and disease prevention capacity, insufficient food, and lack of blood. A female respondent of the *Bangali* community said,

> *"But this is not that everybody will get malaria if mosquitoes bite. Such as those who have* 'Bat jar' *their body can fight back the malaria germs."*

Recognition and interpretation of malaria symptoms

Tangible symptoms

Each community had different terms and expression to describe and interpret malaria symptoms. The symptoms can be categorized into two groups based on information received from the respondents. These are tangible and intangible symptoms. The combination of these symptoms reflects the experience of illness by the patients.

Most of the respondents knew the common symptoms of malaria like fever, fever with shivering, intermittent fever, vomiting, and to some extent, emaciation. Other less frequently mentioned symptoms include anaemia, convulsion, simple fever, and sweating. One respondent from the *Bangali* community said, *"Fever attacks and removes like an earthquake."*

A few respondents from the *Chakma* community mentioned about visible boils and distress but the *Bangali* respondents talked only about distress. Data revel that in the three communities, every respondent could mention more than one tangible symptoms.

Intangible symptoms

The intangible symptoms mentioned were loss of appetite, weakness, frequent feelings of cold and warmth, and physical pain. In every community, a few

respondents mentioned physical inability, insomnia and feeling of distress. Some respondents of the *Tripura* and *Bangali* communities mentioned thirstiness during malaria. Some of the *Bangali* community mentioned about a little cough and cold. One respondent of the *Tripura* community mentioned about bad smell.

Perceived severity and complications of malaria

Physical severity

Most of the respondents considered malaria as a severe disease. The causes of severity can be divided in two ways. One is physical and other is economic aspect. From the point of physical aspect this is severe because if malaria patients are not treated properly they may die. One-third of the respondents regarded it as severe, because according to them, from malaria it may turn into other diseases like typhoid, jaundice, brain diseases, anaemia, and pneumonia. Others regarded it severe because of loss of body weight, weakness, loss of hearing, becoming lame, numbness of legs and hands, damage of eye, brain and bone, etc.

Besides, in the *Chakma* and *Tripura* communities there were two reasons for perceiving it to be severe. Firstly, when the temperature rose up to 104^0C or 105^0C then the patient become senseless and started talking nonsense. One patient said, *"When I get malaria I scream/shout; I sang song."* Secondly, a man can get malaria at any time and may face physical and economic loss. According to three respondents from the *Bangali* community, this disease was so severe that even the hair of the patient may wither away.

Economical or other severity

A number of respondents from all the three communities told that malaria was a severe disease because malaria patient cannot move properly and lose the effectiveness of his body. Few respondents told that the medicine to treat malaria have harmful effects. Again it takes long time to come back to normal after taking malaria medicine. That was a cause of economic loss as well. But it should also be noted that according to some respondents in the *Bangali* and *Chakma* communities, malaria is not a severe diseases because many kinds of treatments are available at present unlike past. According to two respondents in the *Chakma* community, now malaria is not severe at all, because even if treatment is not taken or without treatment, it becomes cured.

Historical perspective of malaria

We used oral history to have an understanding about the evolvement of knowledge on prevention and treatment as well as prevention and control activities in a historical perspective. The study time was divided into three parts and the different aspects are shown in a tabular form below.

Theme: Conception of malaria

1947-1970

The conception of malaria was not known to them. They did not know malaria by name. They used to call it by local name of fever such as *kala ajar, Hati jar.* These above mentioned diseases were very common among them due to uncleanness, huge forest, and mosquito. It was also thought by them that these can occur by the evil eye of deity resulting from *Jhum* cultivation practiced by the people.

1971-1990

Due to awareness raising programme, microscopic examination and identification, and invention of medicine of malaria people came to know about it. Gradually they realized that many people died of malaria due to the presence of huge forest, mosquitoes and absence of natural immunity. In this stage people from other parts of the country, mostly the *Bangali*, started settling down here by cleaning the forests.

1991-present

People are becoming more knowledgeable about malaria. They thought it as a serious disease, but they also knew that this could be cured if proper treatment was given. Their after the emergence of modern facilities and treatment the death rate from malaria reduced to a great extent.

Theme: Causes of malaria and its management

1947-1970

They used to worship lamenting, "Oh God what would be the way to escape!"*(vogoban horikrishno ki upai hobe!)*. They used to sacrifice goat, bore, chicken, and duck at *Chara* (thin streams of water from the hills) by reciting the sermons spreading the burnt salt, sometimes dumping it under the soil. *Budda* or *Oshai* used to treat the patient by using the calendar. If the patient was cured they would say that he was saved by deity *(Debota)*, if died they would say that he was eaten by the deity (*Debota)*.

1971-1990

A kind of compromise and conflict was found between the previous practices of healing and the modern practices of treatment. The practice of worship is still there, but much more subdued compared to the past. In this stage, another indigenous practice was added which consisted of reciting sermons with *Marfer* (a kind of seeds) and fallen deer '*Shing'* to treat patients.

1991-present

Very few people believe in worship in case of affection and prevention of malaria but it varies from one community to another. During the study time, the practice of worship was prevalent among the people *of Tripura* community.

Theme: Treatment facilities

1947-1970

Doctor was not available. There was no arrangement of blood test. Even the doctor could not identify malaria. Only *Nimaquin* was thought to be the healer of malaria. Besides, there was another medicine known as *Kalmegh* brought from India. The practice of self medication was prevalent. For example, using oil in body and head, watering on head, and bathing the patient after feeding stale rice with hilly chillies.

1971-1990

Modern treatment emerged. Local village doctors started practicing. Government took initiatives like blood test in hospital, spraying insecticides for mosquitoes (DDT powder, the government stopped it for some side effects like gastric, diarrhoea), and raising awareness, arranging treatment in both hospital and local cantonment. But the facilities were not sufficient.

1991-present

Doctors are available, modern treatment has become popular. People have an access to all modern facilities. Some NGOs have their intervention in this area. Various types of medicine are available now.

Theme: Treatment materials

1947-1970

Kabiraj or local health service provider used to treat the patient by using bush medicine named *Tita (sour) plants, Doskasundori lata, Dosmuk pata, Bashok pata, Bak pata, Anaroshr kochi pata, Amra chal, Kancha holud, Paner rosh* (local name of medicinal plants), and honey and salt. They used these medicinal plants to cure malaria and to recover energy. They held the opinion that before it was possible to cure these diseases from root but at present it is not possible by modern medicine.

1971-1990

Coming to this stage some medicinal plants and elements have been dropped out; some others continued like *Suvunsindur* medicine. They also used these medicinal plants to cure malaria and to recover energy.

1991-present

The uses of herbal medicine or medicinal plants were on the verge of extinction. Most people did not trust on the curative effectiveness of medicinal plants/some of them had negative idea that these were not useful for treatment of malaria.

Perception on treatment/care-seeking practices

An emerging pattern on care-seeking practices was noted. Sequences of care-seeking in order of priority are: hospital/government health facilities, doctor's chamber, private practitioners, BRAC, pharmacy/drug store.

Hospital

In the three communities, hospitals are considered as the first resort for treatment of malaria. Being mostly poor, the people in the study area used to visit hospitals for seeking treatment of malaria. Also, at hospitals, treatment is only given after confirmation by blood test and according to severity of malaria. Thus, if a patient (while undergoing treatment in other places) gets worse, he/she is taken to a hospital. Criticisms about poor and inadequate services (such as unavailability of medicines, doctors and beds) are also common. In terms of seeking treatment at hospitals, the *Chakma* and *Tripura* communities are a little behind the *Bangali* community.

BRAC

The respondents were found aware about BRAC activities for prevention and control of malaria. One of the main activities of the intervention is to identify cases and give treatment free of cost. Apparently, the *Chakma* community is in an advantageous situation than the other two communities in terms of getting services from BRAC. The reasons cited for seeking treatment from BRAC are their developed facilities, provision of free blood test and medicine, rapid cure, and follow-up by the health workers. They also complained about improper treatment, lack of technician and MBBS doctors, delay in getting services, racial discrimination, side effects of medicine, treatment cost (Tk. 10-30), etc. On Fridays and in the afternoon, the BRAC health centre is closed. In the FGDs of *Bangali* community, a respondent stated,

> *"If we go to BRAC with malaria they take blood and tell us to come after 3/4 days, then what would happen to our disease? It will take an acute turn.*"

Some respondents said that they had to pay Tk. 10 for test (sometimes Tk. 30) whether malaria is identified or not. Racial discrimination was repeatedly mentioned by the *Bangali* respondents. According to them, most of the BRAC staff were hilly people. So, they did not always behave well with the *Bangali* people. The *Bangali* community thought that they were not given proper treatment. That is why the *Bangali* people rarely go to BRAC service centres for treatment.

Private clinic

A large section of patients prefer to visit costly private clinics/doctor's chamber rather than the free government or non-governmental health facilities. This is because the services from these private clinics/private chambers are always available, easily approachable, and the mothers believe that the treatment is more effective there. Mushrooming of private clinics/doctor's chambers also make them more accessible. Most of the communities have one or two popular and accessible practitioners. They are much preferred by the respondents as against the government health facilities or even BRAC.

Drug store

Treatment for malaria is also given from the local drug stores. According to them, most of the drug stores are run by people who had only few days' training for obtaining the license. Nevertheless, people visit these drug stores as they could relate easily with the owners who are familiar with local terms and expressions and spend more time with patients and discuss about their problems. They even provided services and medicines on credit. Also, a number of respondents mentioned that people sought service of the drug sellers when diseases are still unidentified or at the primary stage of the diseases. Some people disliked seeking treatment from them because they gave medicine without doing any test. They also complained that the medicines given at the pharmacy are costly.

Homeopathy

Seeking homeopathic treatment for malaria is rarely found among the *Bangali* community. According to them they preferred it for children, for whom it is difficult to take allopathic medicine. They also thought that homeopathic medicine cure malaria quickly in case of children, but not adults.

Home remedy

In general, people usually visit a provider or health facility for care-seeking unless the problem is serious. For uncomplicated illnesses, they prefer self medication at home. Most of the respondents believed that the severity of malaria can be controlled with home remedy. Home remedies involving use were found to be common. Some of the commonly used home remedies mentioned by the respondents are listed below:

- Watering on head to decrease fever
- Frequent bathing to reduce the heat of body and pain
- Providing boiled water to remove the poison of the disease
- Body massage with warm mustard oil
- Application of oil on head

- Cover the body by wet cloth
- Drink juice of *Nim* leaves, lemon juice, glucose (cold food), and green cocoanut.

If home remedies failed to cure fever and symptoms of malaria, then they used to seek medicine according to doctor's advice after diagnosis is confirmed. A respondent from the *Tripura* community said,

> *"Malaria must be cured by local treatment, if this treatment is taken, it can wipe out the disease from the root. If modern treatment is received, it may come back again."*

Faith healing/traditional healers

People from the *Tripura* and *Chakma* communities were fond of visiting traditional healers. This is related to their belief that the evil spirit and/or angry deities such as the *Jhum Debota* or *Boro Debota* are responsible for the disease and therefore, no other treatment would be effective until these are appeased. For adoration they sacrificed both objects and animals such as goats, bores, chickens, ducks and some goods like candle and new cloths. It is believed that only traditional healers could ward off evil spirits and appease angry deities.

The *Kabiraj/Maulvi/Huzur* are the traditional healers for the *Bangali* community while the *Asai/Osai/Braman* for the *Tripura* community and the *Boddua/Osai* for the *Chakma* community. The traditional healers use sanctified words or verses from religious books *(Jhar phuk)* to ward off evil spirits and appease deities. Ayurvedic system mainly treated patients with medicinal plants, but in addition adoration and sacrifices were also found.

Thus, the community practices traditional healing and modern medicine simultaneously. Historically, for curing disease people were absolutely dependent on traditional treatment as modern treatment was not available. Sometimes people were cured may be naturally and sometimes not. But the practices still exist as it is related with social norms, beliefs, religious feelings, etc. with variations among the communities. Besides, traditional healing is resorted to when there are side effects of modern treatment, financial insolvency, and availability of traditional healer nearly. Name of some self-prescribed/bought and left-over medicine found at homes were Malaside, Napa, Paracitamol, Amoxicilin, Ciprofloxacin, Jasiquin, Fimaquin, Abloquin, etc.

Decision-making for seeking treatment/treatment-seeking behaviour

People's decisions about illness and treatment-seeking are certainly influenced by their explanatory models of the ailments, but also affected by other factors including social and economic costs and availability of relevant services.

Decision-making process

If we found individuals with symptoms of malaria while implementing the study, we asked them about the time of taking treatment, types of treatment sought, and reasons for choosing such treatment. The respondents said different answers regarding the time of taking treatment. Most of the respondents opined that they should be taken to doctors as soon as the symptoms were visible, otherwise it would go beyond their control and may harm physically or cause death. On the other hand, some respondents thought that they should seek treatment after one or two days to see how the disease progressed. Likewise, some respondents wanted to continue self medication up to two or three days; if not cured within this time, then they would seek treatment from outside. Another opined that one should go to the doctor before taking any medicine when symptoms are visible, became malaria could not be identified if tested after taking medicine. They considered some special factors before taking a decision about where to seek treatment and what kind of treatment to be sought. They put priority on quick curing, effectiveness of the treatment, and their belief. The type of treatment and the place of treatment depended on the economic condition and education level. Besides, other factors like relation with the providers, report of blood test, instrumental facilities and expenditures also matter.

In all the study areas, the decision is usually made by the head of the family. Decisions are also made by those who are considered knowledgeable. Among the hilly people, neighbours and relatives are given importance during decision-making, while in the *Bangali* community decisions are taken by husband and wife, and male members of the family. A respondent from *Bangali* community said,

> *"Mother of the child said to me that the son was suffering from fever. If the child can walk then it is all right. But if the fever increases, then take him to doctor who gives treatment after manual examination. If it does not cure then again go to doctor."*

Cost of treatment

Cost of treatment is an important determinant of the type of treatment sought. The respondents mentioned that modern treatment was more expensive than treatment by *'Puja'* adoration and traditional healing. On the other hand, some respondents opined that traditional healing was more expensive if they were to sacrifice goat, bore, hen, etc. Sometimes, 'Buddas' were given money for the treatment.

Barriers to treatment

In almost all communities financial insolvency was found to be the main obstacle for receiving treatment, followed by absence of doctors and health facilities. Besides, lack of health services, lack of education, over crowdedness of patients, side effect of medicines, treatment process, and lack of male persons at home to talk on behalf of patients at treatment centre were also found as barriers.

The *Tripura* community trusted on 'Buddha' treatment processes. According to few respondents of the *Chakma* community, language problem was also a barrier for them. One respondent regarded load-shedding of electricity as one of the problems since blood test could not be done during load-shedding.

Perception on prevention of malaria

One of the main purposes of this study was to know the perceptions of local people regarding prevention of malaria. So, probing was done about prevention, preventive measures, and obstacles for prevention of the disease and related issues.

Necessity of prevention

The necessity of prevention of malaria could be viewed in two ways. The first was physical loss and secondly economic loss. A respondent of the *Tripura* community said,

> *"If malaria occurs the patient should undergo treatment, if not the patient would die, so prevention is better than the cure."*

Prevention

For preventing malaria, the respondents mentioned importance of cleanliness, using mosquito net, destroying the source of mosquitoes (e.g., dirty drains, still water and toilet). In three communities, few respondents talked about treatment before or after malaria. Some of them put emphasis on taking the patients quickly to facility after malaria is identified, and on completing the full course of medicine. Also, some respondents talked in favor of taking *Malaside* or *Abloquin* for preventing malaria. Still others emphasized about being alert against mosquito bites. A religious leader of *Tripura* community opined that malaria can be prevented through leading vegetarian and sacred life. In *Bangali* community people thought that malaria could be prevented by drinking *Nim pata* and *Korla pata* juice, eating nutritious food, green cocoanut and living in *Pacca* building (brick built building). In the *Chakma* and *Tripura* communities, people thought that malaria could be prevented by eating hilly vegetables, chillies, *Naffy* (mud of rotten fish), drinking wine, etc.

Barriers to prevention

The respondents mentioned about some barriers to prevention which included lack of awareness and education, geographical barriers, lack of treatment facilities, and poverty. One respondent from the *Chakma* community said,

> *"Those who are educated like prevention, those who are uneducated like cure."*

Some respondents from every community opined that lack of awareness was one of the main reasons for which they did not know about the prevention and treatment of malaria. When asked about where to put priority, on treatment or prevention, they answered,

> *"First comes disease, then treatment. If there is no disease how treatment would come? I do not understand prevention, what I know is to take treatment if I get malaria."*

Some respondents blamed the topography of the region (plenty of forests and drains) for easy breeding of mosquitoes and the difficulties in preventive activities. Others blamed poverty for which they could not take treatment. According to some respondents, for the hilly people, language is also a barrier in treating and preventing malaria. People living in hilly areas could not explain their sickness properly in Bangali language. So, sometimes *Bangali* doctors give them treatment without understanding the needs.

Role of BRAC in the control and prevention of malaria

To reduce malaria-specific morbidity and mortality in Bangladesh, BRAC has been implementing malaria control and prevention programme in that area because the area is high endemic for malaria. The programme activities which were mentioned by the local people are:

- LLINs were distributed to the people; ordinary bed nets were treated with insecticide and educated people on how to use these bed nets;
- Blood test and treatment services were given to the community people;
- Provided free medicine to malaria patient after diagnosis; and
- Health workers took initiative for awareness building of the local community.

Evaluation of activities

The above-mentioned activities were done by BRAC. But there are some criticisms also. People had doubts about blood tests due to technical problems. Besides, sometimes they paid Tk.10-30 or more as treatment cost. *'Shsathya shebika'* and health workers were not well known to most of the people in those areas. Health workers were seen once in a while after two or three months.

To evaluate the health worker a respondent said,

> *"Health worker works three days in a month, the day before getting salary, the day when salary is given, and after the day of getting salary."*

Half of the respondents heard about the agenda of raising awareness. Some irregularities were also reported about the distribution of mosquito nets. One female respondent said,

> *"Initially there was a corruption when BRAC first distributed mosquito nets, because they distributed 25,000 nets instead of 37,000 nets, I have heard it from my husband who heard it from the TNO."*

Everyone was unanimous about the effectiveness of the insecticidal bed nets. According to them, leaving criticisms aside, it played a good role in driving away the mosquitoes and other insects to reduce malaria.

Perception on distributed insecticidal bed nets (LLINs/ ITNs)

Efforts have been made in the study to know about the perceptions of the community regarding the LLINs/ITNs distributed by BRAC, norms of its use, and reasons for not using LLINs/ITNs. The respondents were very positive about the insecticidal bed nets. They said that even if any mosquito touched the net, it dies. Some women respondents mentioned its beneficial effects on killing head lice.

Norms/sources of knowledge of use

Mixed reactions were observed regarding the use of insecticidal bed nets. Nobody could explicitly explain how to use and maintain the nets. One in every four respondents had ideas that the nets should be kept open from 30 minutes to two weeks before using it. Again some of them kept it open under the sun and some of them under the shadow. Likewise, there were also different opinions with regard to everyday use of mosquito curtain. In *Bangali* and *Tripura* community, very few respondents were in favour of using it before or after sunset; again in *Tripura* and *Chakma* communities, few respondents were in favour of hanging it all day long. There were also various kinds of opinions regarding how to wash the nets. Some were in favour of washing it once or four times a year. One respondent in *Bangali* community said that it should not be washed, otherwise the influence of its medicine will be washed out. But they had a good knowledge about where and how to wash it. Few respondents said that it should be dried in sunshine while others preferred shadow.

Reasons for not using insecticidal bed nets

There were many reasons for not using the insecticidal bed nets. The net itself had problems with size: not more than one could sleep. As the pores of the net are larger, insects *Kuki* or even mosquitoes could enter into the net. The children cannot tolerate it. They got headache. Some respondents told that the mosquito net was rough when it touched their body and started itching. One respondent from *Bangali* community said,

> *"People are afraid to hang it, because it seems current net to them."*

Some said that they felt hot inside the net and that is why they did not use it. Some were reluctant to use it since it could not be washed anywhere e.g., ponds or canals. To some people, it appeared as a burden to hang it every day routinely. Lack of consciousness was also responsible for not using the net. Some respondents thought that it was not a problem to them if mosquitoes bite them. Superstition was another reason why some people were reluctant to use the nets. To quote a *Bangali* muslim man,

> "*If anybody dies under this net, he will be going to hell as this net has been given by Christians."*

There were some other interesting reasons for not using the net poor people sold these for want of money while the rich believed that it is meant for the poor people. Alternative uses of the nets included using it as a net for catching fish, grounding field, covering lichi trees, etc. Among the hill people there is an idea that the medicine used in the net may harm their children. A *Chakma* from Dulachori said,

> "*There is a fear with this mosquito net. My nephew kept biscuits in it and ate later. As a result he got stomachache and got admitted into Khagrachhari hospital. That is why, they do not use it."*

Discussion

According to Arther Kleinman, explanatory model of illness of patients or community people is important to understand because it can focus the socio-cultural features of sickness from patients' perspective and may help the service providers to manage the disease efficiently (Kleinman 1978). In this study we observed that there were different types of explanatory model of malaria in different communities residing in the Dighinala *upazila* of Khagrachhari district. Based on different explanatory models, these ethnic communities have different activities for diagnosis, treatment, and prevention of malaria, though they live in the same environment and geographical setting.

Historically, the study communities were very much familiar with malaria as a common disease in their locality and they called it by different names. Most of them regarded malaria as a dangerous, harmful and complex disease. This phenomenon of calling malaria by different local names as found in this study is not uncommon. Kayondo *et al.* (1994) found that the local name of malaria among rural women in Uganda is *'omusujja'* which means an important health problem with various causes including poor diet, environmental conditions, and the bites of mosquitoes. In Ethiopia, malaria in children under five is called as "*busaa"* by women (Deressa and Ali 2009). However, people may recognize the term 'malaria' but may have limited biomedical knowledge of the disease, including its aetiology, the role of the vector, and host response (Adongo *et al.* 2005), as was also observed in this study.

In our study, we found that the knowledge of malaria varies according to ethnicity. In the communities, *Chakma* people knew the symptoms of malaria much better than *Bangali* and the *Tripura* communities. Most of them knew that mosquito bite was the main cause of malaria and that it was a seasonal disease. Very few possessed in-depth knowledge about the mode of transmission e.g., the fact that malaria is transmitted by the bite of a female anopheles mosquito which has fed blood from a malaria patient. However, they were quite knowledgeable about the consequences of malaria on human health and well-being, especially among children and pregnant women.

Historically, the perception on malaria including its treatment and prevention has changed over time and this is quite plausible. Findings reveal that, in the Pakistan regime (1947-1971), there was lack of healthcare providers as well as facilities for diagnosis and treatment. During this time, belief in *Debota* and offering *Puja* to console them including use of various plants were the mainstay of treatment and prevention in these communities. In the early Bangladesh period (1971-1990) the situation improved while in post nineties, there are facilities and providers available, but many cannot access these due to financial incapacity, poor road communications, and other problems.

It is interesting to note that they perceived allopathic treatment as the 'treatment of choice' for malaria almost unanimously which makes it much easier for modern malaria prevention and control activities to push ahead. They prefer to use allopathic medicine for treatment and would visit local health facilities (hospitals, clinics, NGO facilities, etc.) for care. This is consistent with findings elsewhere where majority of the respondents preferred to use synthetic anti-malaria medicine and visit hospitals first when there is an attack of malaria (Erhunw *et al.* 2005). BRAC is also increasingly being perceived as an important and reliable provider due to its assurance of quality diagnosis and treatment, good relationship between community people and the community health workers of BRAC including its cost-effectiveness of its treatment.

People categorized the diseases and sought different healers based on their own views. The case of malaria is not exceptional. Based on their beliefs and practices, the researchers found the following model to explain and categorize the illness, degree of severity and management practices of *Bangali* and two other ethnic communities. The explanatory models of malaria of the three communities are shown in Table 3, 4, and 5.

Table 3. Explanatory model of *Bangali* community

Disease	Local terms	Severity and complications	Symptoms	Causes	Treatment
Malaria	• ***Kala ajar*** • ***Hati jar*** • ***Moron jar*** called black fever/death fever • ***Posa jar*** (stay inside long time)	• Possible death • Possible diseases and defect of physical parts • Emaction of body • Weakness and loss working ability • Hair fall • Money losses	• *Kapuni jar* (fever with shivering) • *Bomi bomi vab* (vomiting) • *Mukha ruchi thakana* (loss of appetite) • *Mukh tita* (biter mouth) • *Durbol laga* (Weakness) • *Shorir o matha batha* (body and headache) • *Shorir sukea jaoa* (emaction of body) • *Obosh o rong paltai* (numbness of physical parts andturn skin and eye color) • *Shorir ghama* (sweating) • *Pani pipasa* (water thirsty) • *Lom khara hoi* (fur stand) • *Gondho laga* (feel bad smell)	• Mosquito • Rubbish • Self uncleanness • Steel & polluted water • Bad air/weather • Some types of food • Staying near somebody with malaria • Physical weakness and hard labour • Virus • Frequently bathing	• Hospital • BRAC • Doctors' chamber, private clinic • Pharmacy, drug store • Homeopathic • Self medication • Self treatment

Table 4. Explanatory model of *Chakma* community

Disease	Local terms	Severity and complications	Symptoms	Causes	Treatment
Malaria	• ***Banga jar*** • ***Lomba jar*** (perennial fever) • ***Boro malaria*** (long time)	• Possible death • Possible diseases and defect of physical parts • Emaction of body • Weakness and loss working ability • Fever up to 102ºC, 103 ºC, 104ºC, 105 º C+, 106 ºC, senseless (talk unconsciously) • Any time infected • Cannot fully remove/cure • Money losses	• *Kape kape jar uda* (fiver with severing) • *Madha chin chinai,madha tagod tagod* (headache) • *Had pa jura jai* (cool hand and leg) • *Agolana agolana ajong ajong* (vomiting tendency) • *Khana noha ruja* (loss of appetite) • *Kea mojra* (body ache) • *Kea gang mojra,kea harong shulan* (pain into bone) • *Muon tidia* (biter of mouth) • *Keagan hafi hafi udea* (body severing) • *Sondobash mada* (talk like mad) • *Kea suga jana* (body emection) • *Rokto koma jana* (anemia) • *Kea gahama* (sweating) • *Kea durbol* (weakness)	• Mosquito • Rubbish • Self uncleanness • Steel and polluted water • Bad air/weather • Some types of food • Staying near somebody with malaria • Physical weakness and hard labour • Geographical setting • From others diseases and operation • Open toilet	• Hospital • BRAC • Doctors' chamber, private clinic • Pharmacy, drug store • Self medication • Self treatment • Traditional healers • Faith healer

Table 5. Explanatory model of *Tripura* community

Disease	Local terms	Severity and complications	Symptoms	Causes	Treatment
Malaria	Medicine (bithi) ***Miaung kulung***	• Possible death • Possible diseases and defect of physical parts • Emaction of body • Weakness & loss working ability • Fever up to 102 ºC, 103 º C, 104ºC, 105ºC +, 106 ºC, senseless (talk unconsciously) • Any time infected • Cannot fully remove cure • Money losses	• *Kulum* (fever) • *Kulio* (convulsion) • *Bokkhorak sau* (headache) • *Bokkhorak Kitingo* (round in head) • *Yeak yeathui hing aoung* (cool hand and leg) • *Kului kului lom* (fever with severing) • *Karag* (vomiting) • *Bashack shag* (bodyache) • *Koboh cholao* (talk unconsciously) • *Kantha angoi paikha* (emection of body) • *Bachag thui khoroi* (anemia) • *Thoi khag jago* (water thirsty) • *Lomjakhai kachango, groom brock kiting* (feel cool and hit) • *Bachak fanbio* (weakness) • *Chamaia ruchi kroi* (loss of appetite)	• Mosquito • Rubbish • Self uncleanness • Steel and polluted water • weather • Some types of food • Staying near somebody with malaria • Physical weakness and hard labour • Geographical setting and Shagun forest • From others diseases and blood transmission • Open toilet • Jhum cultivation	• Hospital • BRAC • Doctors' chamber, private clinic • Pharmacy, drug store • Self medication • Self treatment • Traditional healers • Faith healer

The study respondents have a positive attitude towards prevention of malaria in general, especially preventing mosquito bite by using bed net and seeking prompt treatment for suspected malaria-like fever. BRAC's prevention activities in the community such as distribution of LLINs and treating ordinary bed nets with insecticides (ITNs), using Rapid Diagnosis Test (RDT) for quick diagnosis, etc. are appreciated, but concerns remain such as validity of the diagnostic processes, frequency of visits by health workers, etc. They recommended that the follow-up of the malaria patients should be increased under supervision of qualified doctors, and measures should be taken to increase awareness building activities.

The insecticidal bed net is a new entity in the community. As such, they are yet to learn its proper use and maintenance as revealed in the findings. This is also consistent with earlier findings from a quantitative survey on a larger sample (Ahmed and Hossain 2009). Elsewhere, it was found that people might acknowledge a role for ITNs in nuisance reduction, but not malaria prevention (Adongo *et al.* 2005).

Limitation of the study

The study could not include people who live in more remote locations in the Dighinala *upazila*, where there is no transport other than walking and crossing hills. The people usually come once in a week to the *upazila* sadar for selling and buying daily necessities. It was not logistically possible to interview them at home given the constraints in time and resources.

Conclusion

The objective of the study was to explore the explanatory model of malaria in an endemic *upazila* of Bangladesh towards helping the practitioners/programme implementers better understand the context of programme placement and make necessary adjustments. The study shows that the three major communities studied had their own and different explanatory models of malaria. Though they had many differences, they also had many similarities; some beliefs and practices on malarial treatment and prevention in the communities were remarkable. It is important for community health workers/programme implementers/practitioners to understand these aspects and then try to model IEC campaigns for prevention and treatment in a way so that they can relate it to their everyday experiences. Also, understanding of the community perspective will help identify the barriers to programme implementation and design appropriate strategies to overcome these. Thus, instead of a top-down affair, the interventions will be understood and owned by the community and will be sustainable.

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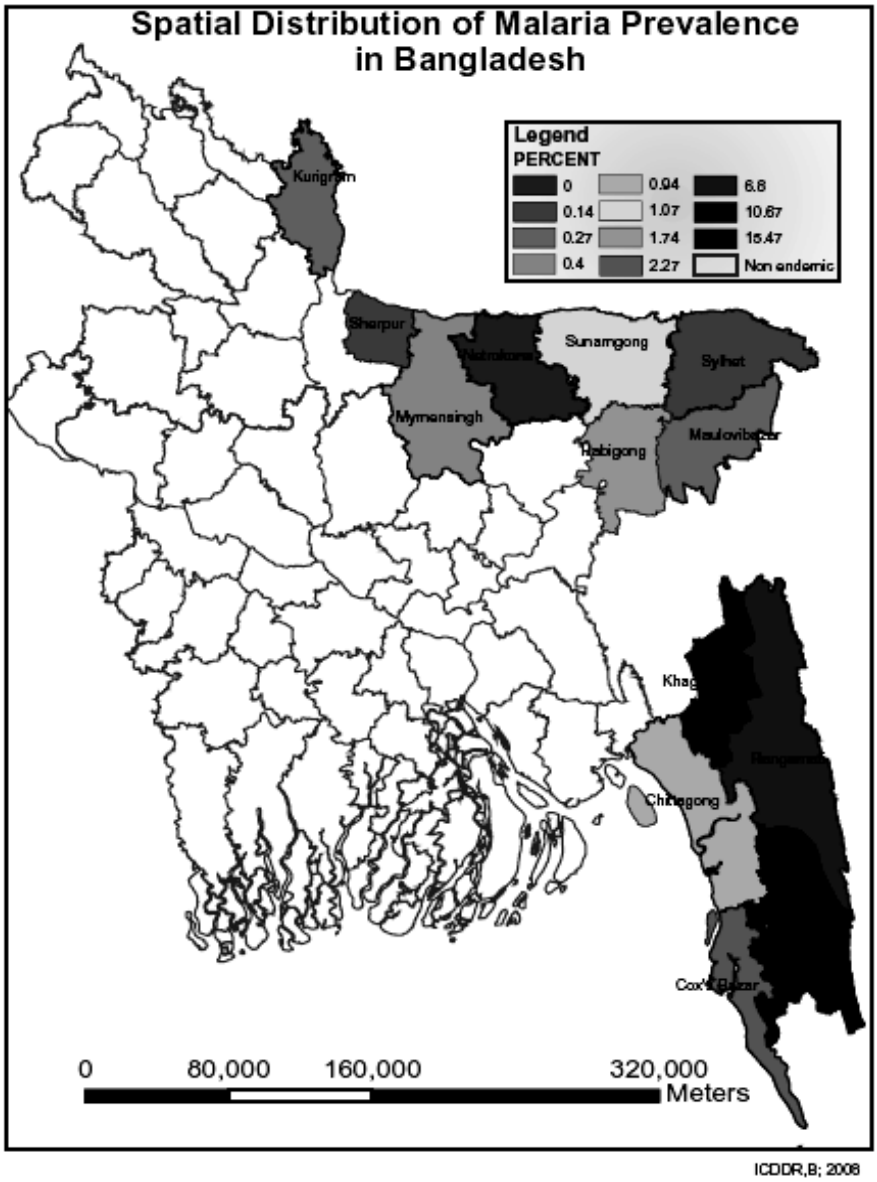
Annex

Distribution of malaria prevalence in Bangladesh



Source: Malaria baseline socioeconomic and prevalence survey 2007.