



## Knowledge, Attitude and Practices: A Perception on Malaria Among The Khamti Community of Piyong and Nampong Village in the District of Namsai, Arunachal Pradesh

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**Abstract:** Though malaria is a disease which is preventable and treatable, it remains a major health problem among mass population. Like any other community the Khamtis have different perceptions on the cause and recognition of malaria. These perceptions vary depending on the cultural, educational and economic factors within the community which may have direct consequence for both preventive and treatment behaviour. The study aims to understand and generate a general picture on the perceptions, knowledge, attitude and practices related to malaria disease. The study was carried out in the villages known as Piyong and Nampong under Namsai district of Arunachal Pradesh. A survey schedule was administered to 100 randomly selected households. Only one person from each household was interviewed. The head of the household or any responsible resident above fifteen years of age was preferred for interviewing. The study reveals that the people of this community refer *Khai-naaw-Mee* as malaria, where *Khai* can be used interchangeably for other common sicknesses also. They perceived malaria to be caused by other factors such as the consumption of contaminated food and water, consumption of excess meats and bamboo shoots and some other activities like exposure to scorching heat and rain regardless of the real cause of biting of mosquitoes. Majority of the respondents (64%) have little to no knowledge on the process of malaria transmission. Acceptance of bed nets and indoor residual

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sprays (IRS) had been found to be satisfactory. Even though there is a higher rate of using mosquito bed nets there is a gap of knowledge in relation to malaria transmission within the community. Local ignorant perspective on the disease etiology, prevention and cure, needs to be corrected only then can a malaria free goal be achieved.

**Keywords:** Malaria, Socio-cultural, Khamti, Arunachal Pradesh, Control strategies, Knowledge and Perceptions.

## Introduction

The discovery of plasmodium parasite as the specific cause of malaria and the role of the human host is one of the outstanding discoveries so far made in the history of malaria. Malaria is a parasitic life-threatening blood disease that is transmitted from one person to another through the bite of the Anopheles mosquito (Lam 2018).

Malaria is a public health problem in more than ninety countries worldwide though it is both a preventable and treatable disease (Sharma *et al.* 2015). As per the WHO annual estimates, about 2.14 million cases of malaria occurred globally and the disease led to 438,000 deaths. About 80% of the total malaria cases were reported from African region followed by 13% in South-East Asia Region (SEAR) and 6% in the eastern Mediterranean region. The report also stated that 90% of deaths were from African region, 7% in South-East Asia region and 3% were in the eastern Mediterranean region (WHO 2015).

India, one of the most populous countries where malaria is a common health problem reported about 52% of the total number of cases (WHO 2013). About 91% of cases and 99% of deaths due to malaria were reported from high disease burden states like North-Eastern states, Andhra Pradesh, Maharashtra, Orissa, Rajasthan and West Bengal (NVBDCP 2015). The North-Eastern states of India, such as Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura have been victimised by the disease that is reported to have deterred the socio-economic development of the region. These states accounted for 10% of total malaria cases reported (Mutheneni *et al.* 2014). Persistence of malaria in this region has been reported to be caused by lack of awareness, lack of proper knowledge about transmission, difficult terrain to reach health centre, lack of proper healthcare services and ideal climatic conditions for mosquito breeding (Dash *et al.* 2008).

Since people with different thoughts, ideas and values live together in a society, it is undeniable that the level of knowledge, beliefs and perceptions

regarding the disease causation among the people may vary from one another. Numerous instances have been found around the globe that associate malaria with people's level of malaria related knowledge, perceptions, attitude and practices (Aikins *et al.* 1994; Keating *et al.* 2008) but no such study has been carried out in the Namsai district of Arunachal Pradesh, India where Khamti population resides. Only one such study has been recently carried out among the Idu Mishmi population of Lower Dibang Valley district from the state through which the authors try to disseminate the importance of traditional knowledge and perceptions related to the disease (Umpo and Asghar 2018).

Although, with continuous investments in health sectors such as the use of impregnated-bed nets (ITN), indoor residual sprays (IRS) in high risk areas and mass collection of blood slides, National Health Department has been able to decrease the rate of the disease infection to a certain extent in the state (Chaturvedi *et al.* 2009; WMR 2020) but incorrect beliefs, perceptions and the practices including bed net use on the transmission and control of disease can interfere with the effectiveness of control strategies (Deressa *et al.* 2004; Agyepong *et al.* 1999). Therefore, proper recognition and understanding of people's perceptions and behaviour regarding the transmission and control of malaria becomes crucial for improvising applicable and effective control strategies for the disease (Ahorlu *et al.* 1997). This understanding on the people's ways of seeking health care facilities, their knowledge and the perceptions of the disease, and the overall socio-cultural setting can facilitate a greater understanding on the general perspective of the disease and consequently may provide a fruitful way for implanting effective strategies against malaria.

The study being a pioneering work on this population aims at understanding the knowledge on the cause and transmission, attitude and practices in regard to malaria infection among the Khamti tribe of Arunachal Pradesh.

## **Materials and Methods**

Realising higher rate of actively-detected malaria cases, two villages of Piyong and Nampong under Piyong administrative circle of Namsai district in the state of Arunachal Pradesh (Manchey 2017) were selected purposively to carry out the study. Actively-detected cases refer to individuals who have a recent history of illness indicative of malaria but never went to any health care facility or got themselves tested. Since the people living in these two villages belong to Khamti tribe having no physical demarcation of its boundary, the Nampong village had also been selected for the survey.

The study sites selected for this study lie in the latitude of 27.5597° N and longitude of 95.9627° E. These villages exist adjacent to each other about ten kilometres far from the district headquarter of Namsai and can be easily accessed by road through buses, tempos, and other public and private transports. The area is home to typical Khamti population whose primary mode of subsistence is purely rice farming. People in these areas grow rice extensively other than different crops to meet the subsistent needs of the family. Since they belong to the same tribe and have demarcated themselves by only the village nomenclature, the socio-cultural life and the mode of living are undoubtedly the same.

This study was a pioneering work on understanding the knowledge, attitude and practices related to malaria in this area. Since the study was a descriptive cross-sectional survey, a survey schedule was designed and accordingly administered among the people. The schedule included the questions on community disease recognition system, knowledge of its cause and transmission, perceptions, attitude and practices related to the disease. Other related information such as the use of various kinds of healthcare services for the treatment, awareness level, the prevention and control of the disease as well as demographic characteristics have also been included in the schedule.

A total of hundred survey schedule had been administered to randomly selected households from the villages. Data collection had been done by visiting house-to-house and only one person was interviewed from each of these households. The preferred interviewees were the heads of the households but in case of their absence, a usual responsible individual who was above fifteen years of age were accordingly interviewed.

The data collected were thus transcribed and interpreted accordingly. The quantitative data gathered on acceptance of bed nets, people's knowledge on the cause and transmission, types of treatment received and the means to ward off mosquitoes had been analysed using simple statistical tools to generate a general picture that has been prevailing on the ground.

### **Ethical Consideration**

The study has been approved by Department of Anthropology Rajiv Gandhi (Central) University, Arunachal Pradesh. Permission was also sought from the head and elders of the study area. The procedure and the objective of the study had been clearly explained to them before administering the interview. The entire household interview had been administered only after prompt verbal consent from each individual of each household was sought. Personal

information such as the names collected throughout the study have been kept confidential and can be accessed by the researcher only.

## Results and Discussion

### *Perception of Cause and Recognition of Malaria*

People in different societies hold a variety of perceptions about the cause and transmission of malaria that vary depending on the cultural, educational, and economic factors within a community which consequently have direct consequences for both preventive and treatment-seeking behaviour (Heggenhougen *et al.* 2003). The disease has its history rooted among the Khamti community for the last several decades but to their dismay it was not known that the disease is caused by the biting of parasitic anopheles mosquito. It was only on the basis of their community-based knowledge and shared experiences that they termed any of the diseases.

People of this community like in any other society often term diseases on the basis of their symptoms. Malaria among the Khamti group of population is termed locally as "*Khai-Naaw-Mee*". "*Khai*" basically refers to some common symptoms of sickness like headache, nausea, loose motion, stomach ache, gastric flu, dizziness, etc. while "*Naaw*" refers to cold and shivering and "*Mee*" means a bear. Altogether, it is a disease known to the people in which a person does experience fever with cold and shivering just like the bears shiver when they fall ill. Various sign and symptoms are used by the people to recognise "*Khai-Naaw-Mee*" such as fever with headache, joint pain, body pain, yellow eyes, hot body (locally known as *Tohn knout*), cold and shivering, vomiting, yawning, excessive drinking of water, loss of appetite, dullness, bitterness in the mouth, sleepiness, etc. Though, not all the sign and symptoms that have stated here need to be included to describe as "*Khai-Naaw-Mee*" but there are certain symptoms like headache, body pain, hot body, loss of appetite, cold and shivering which are perceived as an important sign suggestive of malaria. Similar local perception has been reported from southern Ghana where fever and malaria are known locally as "*Asra*" or "*Atridi*". The belief is that there are two kinds of fever, the common fever and the high fever locally known as the "*Asraku*", a term used to denote malaria due to its shared similar signs and symptoms (Ahorlu *et al.* 1997). Similar perceptions do occur in various societies of the world like in the Khamti society and therefore they seem to be well informed through their traditional knowledge base or through their experience about the signs and symptoms that generally correspond with the clinical manifestation of malaria.

People who do not share the concept of malaria and also those who are aware that mosquito transmits the disease believe that malaria can be transmitted by other means also. There is a strong belief within the community that malaria infection also occurs due to the consumption of contaminated food and water, consumption of excess bamboo shoots, and consumption of sour fruit and meats. The disease is also reported to be caused by doing certain activities such as the frequent exposure to extreme heat and rain and frequent bathing in a river during hot sunny days. Few people from the community even think that the disease is caused due to inhaling of excess polluted air. These kinds of people's perceptions on the cause of the disease are not restricted to a Khamti society only. A study among the Idu Mishmi had a same idea on the cause of the disease where the authors reported that *ahade* which is a term to denote malaria in their local dialect has nothing to do with mosquito but it is caused by a spirit of water (Umpto and Asghar 2018). The study from a community of Ghana opined that malaria can be acquired through the heat from the scorching sun, eating oily/fatty food, unripe and over-ripe fruits like mangoes and pawpaw, poor eating habits, constipation and drinking too much of alcohol (Ahorlu *et al.* 1997). In parts of Guatemala, it is thought that malaria is caused by "bathing too frequently or by drinking un-boiled water" (Ruebush, Weller, & Klein 1992). There is also another concept on the recurrence of the disease. Consumption of excessive pork meat with bamboo shoots, either fried or boiled together can revive the disease in an individual who had been treated with malaria in the past regardless of the biting of parasitic mosquitoes. Other causes of disease recurrence are not known from the community.

### ***Householder Knowledge on Malaria Transmission***

There is no doubt about the people knowing the existence of the disease but knowing its process of transmission and the factors causing the disease pose a great concern within the community. The knowledge on the transmission of disease here means a complete understanding of the process of infection, cause, treatment and prevention. There is undoubtedly a void of knowledge on the process of transmission and its associated factors among the householders.

People generally know that malaria is caused by the biting of mosquitoes. It is reported that abundance of mosquitoes is generally seen in the rainy season. On a particular day mosquito biting is most frequent during the time of sunset. People usually complete their work before the sunset and make themselves prepared to avoid the biting of mosquitoes. Also, during the day, they have to come across the nuisance of mosquito in their daily activities therefore they cover themselves with full sleeve shirts and long pants while working.



But as winter approaches the abundance of malaria causing mosquitoes also becomes less in and around the house. However, the people, mostly the old aged members of the community are not aware of the process of transmission of the disease. Most of them are not even aware of the breeding grounds of the mosquitoes but some respondent reported that mosquitoes increase their number when there is a fluctuation of climate like from rainy days to sudden sunny days that follow especially in the summer days. There was no respondent who knew that mosquitoes breed in the still water like ponds.

**Table 1: Knowledge on Malaria Transmission**

<i>Knowledge on malaria transmission</i>	<i>n</i>	<i>%</i>
Yes	36	36.00%
No	64	64.00%
<b>Total</b>	<b>100</b>	<b>100.00%</b>

Source: Field work 2016

It was found that 64.00% of the householders do not have exact knowledge on the transmission of malaria and therefore may be accounted for the higher rate of malaria infection in the area. Only 36.00% of the total householders had reported to be aware of the knowledge on malaria transmission.

### **Acceptance of Mosquito Bed Net Use**

Knowledge on the use of mosquito bed nets is found to be conflicting among the population. There are two types of bed nets reported to be used by the community viz. ordinary bed nets usually bought from the market and insecticide treated bed nets (ITN). Ordinary bed nets are characterised by a normal net without treatment of any insecticide in it and are easily available in the market and on the other hand ITNs are characterised by the treatment of insecticide in it and are provided only under the program of National Vector Borne Disease Control Program (NVBDCP) of the Government of India.

**Table 2: Acceptance of Mosquito Bed Nets**

Types	n	%
Ordinary bed nets only	17	17.00%
Insecticide treated bed nets (ITN) only	02	2.00%
Both	81	81.00%
Total	100	100.00%

Source: Field work 2016

The studied population shows the higher frequency of using both types of net with a total percentage of 81.00%. It is to be noted here that though the frequency is very high, it does not mean frequent use of ITN only rather it depends on the availability of it among the family members which means, for example if a family has two ITN, only two to four members of a family have the possibility of using it and the rest of the family members will use ordinary bed nets, so a family using at least one ITN in a house is also included in this group. It is reported that most of the families do not prefer to use ITN believing that the treated insecticide may get into the saliva of a person and cause death and therefore most of the households use less ITN compared to the ordinary ones.

Further, the frequency of a household who uses ordinary bed nets only is found to be 17.00% whereas the household using ITN only is calculated to only 2.00%. People are of the opinion that use of ITN does not prevent them from the nuisance of mosquito biting as the hole in the net are believed to be larger than the ordinary nets that can easily facilitate mosquito entry into them. Similar findings have also been recorded from southern Ghana where people do not prefer the use of ITN believing it does not give comfort while sleeping (Ahorlu *et al.* 1997). Some people from the villages also reported that sleeping under ITN especially at night during summer makes them uncomfortable because it leads to a lot of sweat and that when mosquitoes enter inside the net the situation gets worse. Further, though the villagers have been provided free ITN by the health care centres, it is not possible to accommodate all the members of the family especially a household with extended family members in the net. Thus, pondering upon the above statement by the householders it may be said that a sense of feeling uncomfortable may be a limiting factor in the use of ITN and hence the low level of usage than the ordinary ones.

### **Indoor Residual Spray (IRS)/DDT (Dichloro-Diphenyl-Trichloro-Ethane)**

IRS or indoor residual spray is one of the effective methods to control generation of mosquitoes in and around the households (Kleinschmidt *et al.* 2009). Currently there are twelve insecticides belonging to four chemical classes recommended by WHOPES (World Health Organisation Pesticide Evaluation Scheme) for IRS of which DDT is considered as having comparatively longer residual efficacy of more than six months as an insecticide to control mosquito (WHO 2011). As a major target to eradicate malaria, spraying of DDT in a house is commonly seen in various rural as well as urban areas. In some areas like in the present field of study, every household in the village has been covered



with the spraying of DDT however, it was reported by many householders that most of the households get sprayed only once in a year which is a total negligence by the concerned department. Since DDT has residual efficacy of six months it should be sprayed more than twice in a year so that the life cycle of the mosquito could be discontinued and hence can be controlled.

**Table 3: Spray of IRS/DDT**

<i>Number of times sprayed in the last one year</i>	<i>n</i>	<i>%</i>
Once	65	65.00%
Twice	34	34.00%
Thrice	01	1.00%
None	00	0.00%
<b>Total household</b>	<b>100</b>	<b>100.00%</b>

Source: Fieldwork 2016

It is observed that there are people who think that spraying of DDT contaminates other daily use items of the household. They do not prefer repeated spraying despite the gap of time until the next spray. These people account to about 65.00% who sprayed their houses only once and thus are very much prone to malaria infection as compared to those who sprayed repeatedly at particular interval of time. Further, 34.00% of the household had sprayed DDT twice while only 1.00% of them had sprayed three times in a year.

## **Treatment**

There are two main sources of treatment of malaria found in the area viz. modern health care system and the traditional/herbal system. Malaria is mostly treated at home with drugs like paracetamol and chloroquine during the initial stage of manifestation of symptoms of the disease. These drugs are directly collected from the drug stores without prescription of any specialist because of the fact that the community is largely dominated by the farmers, they cannot easily run to the doctors for prescription in the middle of their daily work which provide them the livelihood. Therefore, the preference is given to home treatment with the drugs that are easily available in the stores. It is also reported that malaria is treated with the combination of herbal and modern medicines and it is believed to be the most effective treatment of the disease. However, if the disease cannot be treated with home remedy, the only choice left with the community is to take the patient to nearby health care centre.

Treatment of malaria among the community is almost received through bio-medicine with a little interest being given to traditional medicinal system. It is a fact that traditional medicine is an important part of any health care system but the difference lies on the scope rendered by it which is practically very limited as compared to modern medicine system. Traditional medicine is usually provided by either a very experienced member of a society to treat the disease or a knowledgeable member of a society in the field of traditional medicine.

**Table 4: Health Seeking Behaviour**

<i>Sources of Treatment</i>	<i>n</i>	<i>%</i>
Traditional knowledge system/herbal only	00	0.00%
Modern medicinal system/bio-medicine only	98	98.00%
Both	02	2.00%
<b>Total household</b>	<b>100</b>	<b>100.00%</b>

Source: Fieldwork 2016

Despite being the dwellers of rural area, it is revealed that 98.00% of the households prefer to seek treatment of malaria through bio-medicine i.e., through doctors and the home treatment with the drugs purchased from the stores, while only 2.00% of the total household prefer treatment through a combination of traditional/herbal medicine and bio-medicine. The frequency of preferences on traditional medicine only was found to be nil.

## Conclusion

This study is unique in itself as its approach focused on the community perceptions of cause and recognition, knowledge, attitude and practices of the disease and its transmission. A malarial study that focuses on socio-cultural aspects of the disease had been generated by very few scholars from the state. To name one, Umpo and Asghar's (2018) study on Idu tribe of Lower Dibang Valley district was the first report that focused on socio-cultural aspects of the disease from the state.

Like every other community, people in this study identified and consequently termed the disease on the basis of the exhibited symptoms. Malaria is termed locally as *khai-naaw-Mee* which basically means fever with shivering. There is a vast majority of people with misconception on the process of transmission of malaria and its recurrence. Generally, people are aware of the fact that biting of mosquito transmits the disease but 64% of the population

lack exact knowledge and understanding on the overall process of infection, potential cause, treatment and prevention. This misconception should be changed and proper understanding should be assured through various channels such as the Community Health Centres (CHC), Public Health Centres (PHC) and sub-centres of the targeted areas.

Furthermore, given that the people showing relatively higher acceptance rate of mosquito bed net (ITNs) use and IRS, further studies are required to evaluate the distribution and use of ITNs in far flung and interior areas of the state. Although, treatment usually starts at home using drugs sourced from over-the-counter stores, the people need to be encouraged and their perception, their attitude and practices need to be changed to have access to proper healthcare system. Also, the malaria control strategy should determine key socio-cultural indicators for monitoring change and progress of malaria control activities.

The findings of this study have given just a general picture of a much broader subject we are dealing with, it is therefore recommended that an elaborate and in-depth study be carried out on different socio-cultural and economical aspects and provide a baseline on the community perceptions and practices related to the disease. This would be the way forward for a better and healthier life on earth.

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