

## Existence of malaria parasites in Joyhing and Koilamari tea estate, Lakhimpur-A signal for potential malaria epidemic in near future

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(Received: 01/08/15)

(Accepted: 21/08/15)

### ABSTRACT

*Malaria still remains a major problem among the tea garden community in Lakhimpur, Assam. A large outbreak of malaria has been taken place during the month of May-June in Joyhing and Koilamari tea estate. Finger prick blood samples were collected from suspected malaria patients. Rapid malaria test kit and microscopic slide examination method was used for confirmation of malaria parasite. In Boginodi area, a total of 135 patients were affected with malaria, of which *P. falciparum* was detected in 116 cases and *P. vivax* in 19 cases. Adults and females were more prone to malaria infection. Lack of knowledge and poor sanitary condition was observed in that community. People are not using mosquito nets. No travel history was recorded among the malaria patients and it indicated that there is an existence of malaria parasites as well as malaria causing mosquito vectors in that community.*

**Key words:** Malaria, Microscopic examination, *P.falciparum*, RMT

### INTRODUCTION

Malaria is a global problem over the world since antiquity. India is now in control phase. However, it remains a serious problem in few states like Odisha, Chhattisgarh, Madhya Pradesh, Jharkhand, Maharashtra and Tripura. In last few years, the cases of malaria are significantly decreases in Assam. However, there are still few sites where malaria causing a serious problem. Such districts are Baksa, Dima Hasao, Karbi Anglong etc [1]. Among the upper Assam districts, the prevalence of malaria is comparatively less. However according to previous study, Lakhimpur district contributing a major proportion of total malaria cases reported in Assam [2]. It needs to find out those malaria reporting areas and special attention should be given in that particular areas. So, the study has been undertaken in Lakhimpur district, to find out the malaria risk areas as well as the socio-demographic factors associated with high incidence of malaria.

### MATERIALS AND METHODS

In every year, the number of malaria cases reported from Boginodi block area is more than other block areas. Accordingly, the study was undertaken in Boginodi area of Lakhimpur district. The study was carried out during the month of May-June, 2015. Mass fever survey was done in Rajgarh area, Joyhing and Koilamari tea estate. Blood samples were collected from suspected malaria cases by finger prick method. Initially, rapid malaria test kit (RMT) was used for detection of malaria parasite. A drop of finger pricks blood samples were also taken on a glass slide for further confirmation of malaria parasite. Thick and thin blood smear was prepared on glass slide, allow it for air dry and then dipped in Giemsa stain (10%). After that, the presence of malaria parasites in the blood specimen was confirmed under light microscope at 1000 fold magnification. Depending upon the visual observation of the physical appearance of malaria parasites, species identification was done.

## RESULTS AND DISCUSSION

From the period of May-June, 2015 a total of 9609 blood samples were examined for detection of malaria parasite. During this period, 166 malaria positive cases were detected from Lakhimpur, Assam. The *P. falciparum* monoinfection was found in 142 cases and *P. vivax* was detected in 24 cases. Females were found as more vulnerable (69.88%) group for malaria infection in our study. However, many previous studies complained that males were more at risk for getting malaria infection as compared to female [3-4]. This is because, in most of the time, males were more engaged in outdoor activities than female. Few studies have told that, males and females were equally affected by malarial infections [5-6]. However, the situation is somewhat different in tea garden areas. Here, both male and female were equally engaged in outdoor activities due to very poor socioeconomic status. Beside this, the females were mostly unaware and have less in contact with outside environment. Consequently, they have poor knowledge on malaria transmission. The incidence of malaria was found very high (59.04%) among adult age groups (Table 1). According to previous findings, children were mostly susceptible for malaria infection due to outdoor playing habit [7-9]. However surprisingly in our study, children were found less susceptible for malarial infection as compared to adult age groups.

Table 1: Malaria positive cases based on age groups

Age groups	1-4	5-8	9-14	15- above
Number of malaria positive cases	10	18	40	98

Out of total 166 malaria cases, 135 cases were observed in Boginodi area, including 19 *P. vivax* and 116 *P. falciparum* infections. Out of the 135 malaria positive cases reported under Boginodi block, 117 cases were found from Joyhing and Koilamari tea estate. It means that the tea garden labours shared a major proportion (70.48%) of malaria infection reported from Lakhimpur. Such abruptly increase in numbers of malaria cases occurs in tea garden areas, may be due to the poor socio economic status[10]. Previous study has also reported that the tea garden communities are mostly susceptible for getting malarial infection[10].

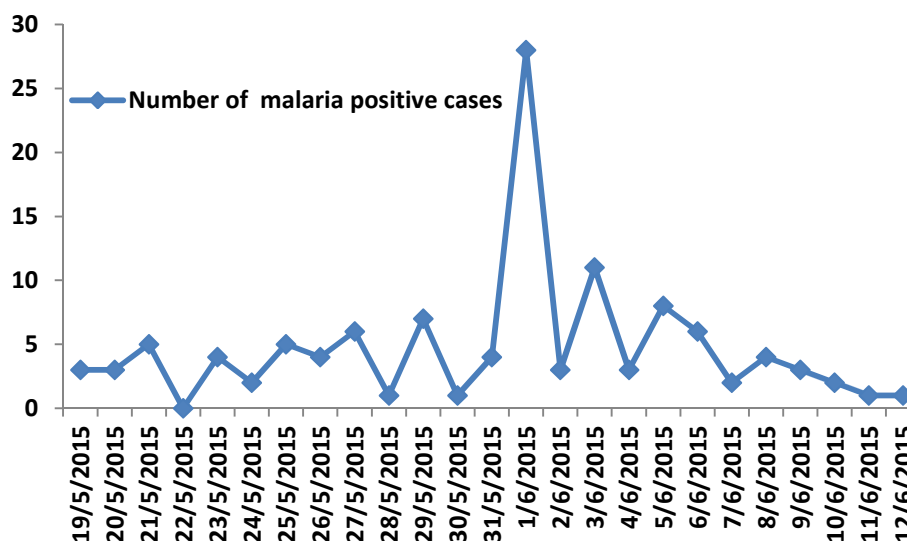


Figure 1: Number of malaria positive cases by date of onset in Joyhing and Koilamari tea estate

Although, sporadic malaria cases were reported over the year, but in Joyhing and koilamari tea estate the first malaria case in 2015 was identified on 19<sup>th</sup> May. Thereafter, the number of malaria cases increased day by day and it reached a peak on 1<sup>st</sup> June and then declined slowly. Few cases were reported upto 12<sup>th</sup> June (Figure 1). The outbreak lasts for a period of 1 month. Lack of awareness about malaria among the tea garden community is also a major factor for malaria transmission. Beside this, still some people of Joyhing and koilamari tea estate are not using mosquito nets during the time of sleeping. Most of the labours are belonged to below poverty level. Sanitary condition was very poor. Many water logging areas are found in the affected lines of the tea estate. Such water logging areas favour the mosquito population for proliferation. Some immigrant's may usually come to this garden from nearby tea estates located in Lakhimpur, Assam. As minimum numbers of malaria cases were reported every year from other tea estates in Lakhimpur, Assam, so we cannot declare that the immigrant people may carry the

malaria parasite from other tea estates. Patients had no travel history. It indicates that there is an undying survival of malaria parasite and malaria causing mosquito vectors in that locality.

During previous year (in 2014), a major outbreak of malaria has been taken place in Joyhing tea estate. During that outbreak, 97 malaria positive cases were detected in the month of June [2]. Similarly, at the same time in 2015, again large numbers of malaria positive cases were detected from Joyhing and koilamari tea estate. It also indicates that the malaria parasite is surviving among the community.

To control any potential malaria epidemic in near future, Lakhimpur district health authority has taken many steps. All the paramedical workers were employed for house to house fever survey. Simultaneously, DDT spraying and fogging was done in the affected garden areas. Awareness camps and leaflet distributions are also going on at frequent intervals.

It is believed that there may be existence of untreated asymptomatic malaria infected patients in that tea estate. Such untreated symptomatic/asymptomatic malaria patients are the potential reservoirs and believed to be associated with malaria transmission. It is very important to find out those untreated symptomatic cases by door to door surveillance and provide accurate treatment to them. In case of asymptomatic malaria cases, special attention should be given in those places where cluster of malaria cases were reported, mass surveillance should be done in that locality, blood samples should be collected from all patients and at the same time treatment should be provided to the asymptomatic malaria positive cases detected in blood slide examination or RMT kit. Step by step this process is to be continued in whole tea garden areas.

### CONCLUSION

From the above study, it could be concluded that malaria may become as an epidemic form at any point of time in Joyhing and Koilamari tea estate under Boginodi block in Lakhimpur, Assam. To prevent this, mass awareness and strong surveillance is needed in a continuous manner.

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