Spatial Patterns of Malaria among Bharia Tribe of Tamia, Chhindwara (M.P.), India

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Abstract: The study was carried out to determine the spatial malaria patterns of Bharia tribe. Tamia is a tribal community block of Chhindwara district, and has more than 85 percent unique tribal population of Bharia tribe. Geographically, Tamia is situated between 22° 20’ northern latitude and 78° 40’ in eastern longitude. It extends over an area of 1268.02 km, which is about 9.32 percent of the district geographical area. Malaria is a febrile disease caused by the four species of plasmodium parasites to host by the bite of an infected female mosquito of the genus Anopheles. Early symptoms of malaria include fever, shivering, aches, and pain in the joints and headache. Bharia is one of the important tribal groups of Tamia, Chhindwara district and suffered with malaria from a very far time due to the environmental factors of Tamia block. Tamia is surrounded by hills and forests and provide favorable environmental conditions for malaria occurrence. This study was based on secondary data collection from PHCs, District hospital and malaria office and their analysis

Key Words: Malaria, Bharia-tribe, plasmodium parasite, mosquitoes.

I. Introduction

This study is mainly concerned on malaria among Bharia tribe of Tamia, Chhindwara (M.P.). Malaria is the most devastating disease in India nearly 300-500 million clinical cases and 1.5-2.7 million deaths every year [1]. Tribal community is the last ladder of socio-economic development and always suffered with malaria. In central India malaria is complex because of vast tracks of forests with tribal settlements. The tribal community contributed 30% of total malaria cases, 60% of total falciparum cases and 50% of total malaria deaths in the country [2]. Bharia is the Dravidian tribe, mainly reside in Patalkot valley of Tamia [3] and have frequent malaria prevalence. The Tamia block is considered for national Malaria Control Program (NMCP/NMEP) from 1960s, but a huge amount of population is always suffered with the disease [4, 5]. So it is necessary to study the environmental factors of Tamia block on malaria disease and its spatial distribution patterns among Bharia tribe. Malaria is a major health problem in India and its dynamics vary from place to place [6]. Malaria is a febrile disease caused by the four species of plasmodium parasites to host by the bite of an infected female anopheles mosquito. The malaria is mainly characterized four types such as: Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale and Plasmodium malariae. Early symptoms of malaria include fever, shivering, aches, pain in joints and headache. Plasmodium falciparum malaria infected red cells can obstruct the blood vessels of the brain, causing cerebral malaria, which is often lethal [1-3, 7]. In the study area mainly Plasmodium falciparum and Plasmodium vivax malaria are found.

II. Bharia Tribe

Bharia is a Dravidian tribe. The Bharia tribe is mainly concentrated in the Patalkot valley, tamia and its adjoining regions. The Bharia is one of the indigenous tribe of the region. The name bhumia meaning “Lord of soil” is another name of this tribal group. It is one of the scheduled tribes of the Indian subcontinent. The Bharia tribe has adapted to the profession of cultivation mainly shifting cultivation has been practiced in order to
sustain their livelihood. Apart from cultivation, Bharia tribes also collect various forest products like tubers, roots, and fruits and thus meet the demands of their day to day living. The Bharia tribe also works as labourers in the forest department. The field survey data on occupational positions of bharia tribe has thrown some light on the variety of occupations i.e. about 38.7 percent of the people are farmers, agriculture labour comprises 37 percent. The rest around 24.3 percent work as forest labourers. Since the whole region of Patalkot valley are quite rich in plants of medicinal values. The Bharia tribe is also going to depend on these plants to meet various purposes. Bharia tribe has set up their own system of treatment for all the health hazards and illness. Bharia tribe pays least attention to education and learning only 11.6% passed primary education and about 66.4% of the Bharia tribes are illiterate. The Bharia tribes have maintained their originality without adopting the modern culture. They follow the structure of nuclear family and live in beautiful households built by their own hands. Bharia people strongly follow birth and funeral rites and they are highly religious by nature.

III. Approaching Procedure
In this work we try to search the distribution of spatial patterns of malaria cases like species wise, gender wise and on the basis of different age groups among Bharia tribe of Tamia, Chhindwara. The study of malaria is based on secondary data collection due to extensive field work. The secondary data on malaria disease are collected from, district hospital, district malaria office and primary health center (PHC). The collected data are analyzed on the basis of species, gender and age groups.

IV. Environment of Tamia
Tamia is surrounded by hills forests and its area consists of ridges and valleys. Tamia is a treasure of forests and herbal wealth. The average temperature of the region lies in between 20º C to 39º C in summer and 9ºC to 25ºC in winter. The Doodhi and his supporting rivers flow in the study region are crates suitable breeding and hiding places for mosquitoes. The surroundings to Tamia and their environmental conditions are favourable for malaria incidence and prevalence among bharias of the area.

V. Results and Discussion:
The study of malaria cases of the duration 2006-2010 is based on various segments like species wise, gender wise and age wise malaria cases and their distribution in five year duration. The study shows the trends of malaria existence and its variation year by year. The results are mentioned in three sections as follows:-

A. Species Wise Malaria Cases:
The total malaria cases and species wise plot of malaria cases versus years show in figure-1. The plot of total malaria cases from 2006-2010 show that the malaria cases increase from 2006 to 2007. In the year 2008 the total malaria cases are the least and again increase up to 2010. It is cleared that the total malaria cases of 2010 are approximate five times of 2006 total malaria cases; even the anti-malarial activities are running in the study area. The reason is that the due to continuous use of anti-malarial drugs and spray chemicals the development of resistance capacity in mosquitoes and in malaria parasite. Hence the used drugs are ineffective in malaria control in the study area; there is a need of new anti-malarial drugs and chemicals for malaria control.

Figure 1: Total malaria cases and species wise distribution versus years

The figure-1 shows that the Pf cases (Plasmodium Falciparum) malaria cases are very large and nearly equals to total malaria cases while the Pv (Plasmodium vivax) malaria cases are very low among bharia people. It is due to the environmental conditions like temperature and humidity of tamia block of Chhinwara district are more favourable in spread and growth of Plasmodium falciparum parasite in mosquitoes than plasmodium vivax parasite.
B. Age Wise Malaria Cases:

The plot of age wise distribution of malaria cases with years shows in figure-3. The figure shows that in the year 2008 the malaria cases and their age wise distribution are the lowest and in 2010 are the highest. The figure-2 also show that the adult age group is more suffered with malaria. The age group 5-15 ranks second while children age group is ranks last. The reason is that the age group 15 & above years is working in agriculture fields, forests and spent more time in mosquitogenic conditions. The age group 5-15 is generally school going children, playing in open fields hence, exposed for mosquito bites. But the children of age group 0-5 years are always in observation of households, hence less malaria patients are of this age group.

**Figure 2: Age wise distribution of malaria cases versus years**

C. Gender Wise Malaria Cases:

The plot of gender wise distribution of malaria cases versus years is shown in figure-3. The figure shows that during 2006-07 female malaria patients are more than male patients while from 2008 to 2010 the male patients are more than female patients. The figure shows that from 2008 the malaria patterns in the study area are reversed. It is due to the development of resistivity in mosquitoes and malaria parasite against anti-malaria drugs and chemicals makes them more susceptible to men. The reason is that men are working in agriculture fields and forests, hence spent more time in mosquito-genic conditions. Another reason is that men wear fewer cloths to women hence maximum part of their body is opened for mosquito bites.

**Figure 3: Gender wise malaria cases**

VI. Conclusion

Bharia tribe is one of the scheduled tribe of Indian subcontinent and mainly resides in the Patalkot valley of Tamia block of Chhindwara district, Madhya Pradesh (India). The study shows the distribution of malaria patterns among Bharia tribe from 2006-2010. The total malaria cases suddenly rise during 2010 and almost five times of 2006 malaria cases due to development of resistance in mosquitoes and plasmodium parasite against anti-malarial chemicals and drugs. The Pf cases are more than Pv cases because the environmental conditions are suitable for spread and growth of plasmodium falciparum parasite. The adult age group i.e. 15 & above years is more suffered with malaria specially men due to their clothing habits and the environmental conditions of their working place.

VII. References