



Hospital based study of malarial species in a tertiary health care center, Hassan, Karnataka

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Dear Editor,

Malaria imposes socio-economic burden¹ on humanity and with six other diseases like diarrhoea, AIDS, tuberculosis, measles, hepatitis B and pneumonia account for 85% of global infectious disease. About 36% of the world population i.e. 2020 million is exposed to the risk of contracting malaria in 90 countries. Even a century after the discovery of malaria transmission through mosquitoes in India by Sir Ronald Ross in 1897, malaria continues to be one of India's leading public health problem. The disease is widespread in tropical and subtropical regions that are present in a broad band around the equator.²

Malaria is one of the major public health problems in India as almost all parts of the country are affected by it. Even with many control programmes, it continues to be a major public health problem. A population of 27% lives in low transmission areas i.e. 0-1 case / 1000 population; 58% of population lives in high transmission areas i.e. more than 1case / 1000 population in malaria affected areas.³ Throughout the world, *P. falciparum* is the main cause for malaria⁴ 92% of malaria is caused by *P. falciparum*. Human malarial parasites were first seen in 1880 and their development in both anopheline mosquito and in human bloodstream was well understood by 1900.⁵ Malaria is a vector borne disease mainly transmitted by the female anopheline mosquito². Four recognized and distinct species are⁶ *Plasmodium malariae* (Laveran 1881),

Plasmodium vivax (Grassi and Feletti 1890), *Plasmodium falciparum* (Welch 1897) and *Plasmodium ovale* (Stephens, 1922). This study was carried out to know the presence of malarial species in and around Hassan District. The study was done in the department. of Microbiology HIMS, Hassan to find out the presence of malarial species in and around Hassan. The study group were the patients attending Sri Chamarajendra hospital, HIMS , Hassan.

Annual parasite index (API) was calculated by the following formula:

$$\text{API} = \frac{\text{Confirmed cases during one year}}{\text{Population under surveillance}} \times 1000$$

The study group were the patients attending the Sri Chamarajendra hospital, HIMS, Hassan. Both inpatients and outpatients were included. The peripheral blood sample was collected by finger prick from clinically suspected malaria patients with rigor and chills. Thick and thin smears were made. The smears were stained with Leishman's stain and examined under oil immersion objective for various malarial parasites morphology. The malarial species were identified by their microscopic morphology. Malarial parasites were screened in the thick smears. The species were identified in the thin smears.

In our study, we found that among all the species of malarial parasites, *P. vivax* is more prevalent and next is *P. falciparum* (**Table I**) which is same as the non-tribal

Table I: Yearwise statistics of malarial parasites- positive cases - 2012 to 2015

Month & year	Total cases screened	<i>P. vivax</i> (%)	<i>P.falciparum</i> (%)	API
2012	4602	31(0.67)	4(0.08)	7.60
2013	6341	31(0.48)	12(0.18)	6.78
2014	3834	22(0.57)	7(0.18)	7.56
2015 (Till April)	1022	6(0.58)	0	5.87

proportion of malaria in India.³ Compared to the national scenario in our study, we found that the prevalence of malaria in and around Hassan is same as the non-tribal proportion of malaria in India.³

Annual parasite incidence (API) is a malariometric index to express malaria cases per thousand population. As per the National Vector Borne Disease Control Programme (NVBDCP) incidence records, in most parts of India the API was < 2 whereas 2 to 5 API was in scattered regions, while regions with > 5 API were scattered in the states like Rajasthan, Gujarat, Karnataka, Goa, southern Madhya Pradesh, Chattisgarh, Jharkhand, Orissa and in the north eastern states.

The proportion of *P. vivax* and *P. falciparum*¹ varies in different parts of India. Most of the Indo-Gangetic plains and northern hilly states, northwestern India and southern Tamil Nadu have < 10 % of *P. falciparum* and the rest are *P.*

vivax infections. In the forested areas inhabited by ethnic tribes, the situation is reverse and the *P. falciparum* proportion is 30-90 % and in the remaining areas it is between 10 and 30%. In our studies, we found that the malarial parasites identified are *P.vivax* and *P. falciparum*. The malarial species were identified by their microscopic morphology. Malarial parasites were screened in the thick smears and the species were identified in the thin smears. Trophozoite of *P.vivax* and gametocyte *P. falciparum* were seen in the thin smears.

India has many⁷ states and union territories. There are a number of well structured National disease control programmes that are implemented by the state government following national policies. There are three tiers of government funded healthcare system throughout India (primary health care system having network of primary health

centers and sub centers in rural areas, urban health centers and urban health posts or dispensaries in the towns municipal councils and corporations, district hospital for secondary care and medical colleges and hospitals for tertiary care). Among private healthcare providers, there are general practitioners and quacks besides hospitals and polyclinics that are professionally managed. Tertiary care hospitals are also operated by large public sector industrial units and large private sector industry. An organized National Vector Borne Disease Control Programme (NVBDCP) provides technical and operational guidelines to the state governments besides sharing one half of the costs for control of malaria. Cooperation between the government agencies and the community is necessary for control of malaria.

Malaria is well known for its debilitating, demoralizing and impoverishing consequences and therefore, estimation of its true burden and control is central to focusing on these issues. Lifting up the human resources above poverty line, the impoverished people may find it difficult to deal with persistent malaria problem. Identifying the key environmental conditions favorable for the occurrence and spread of malaria must be integrated and documented to aid in future predictions and control of malaria in the community.

In our study, we found that the prevalence of malaria in and around Hassan is same as the non-tribal proportion of malaria in India. Proper awareness in the community and periodical monitoring of malaria is one of the quintessential steps to control this vector borne infectious disease. So, to reduce the prevalence of malaria, mosquito control measures has to be implemented.

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