

## Original article

# Incidence of malarial in a government hospital of surguja district Chattisgarh -a retrospective study

\*Mallik M, \*\*Singh A

\*Pathology Department, Associate professor , Government Medical College, Ambikapur.

\*\*Pathology Department, Assistant professor, Government Medical College, Ambikapur.

Corresponding author: Dr.Mahasweta Mallik

---

## ABSTRACT

**Background:** In India, states having predominantly tribal population have high incidence of malarial.

**Aim:** - aim of this study is to find out the incidence of malarial in district hospital of surguja district, Chattisgarh.

**Material and method:** This was a retrospective study for a period of 3 year from Jan 2013 to Dec. 2015.

**Result:** Plasmodium falciparum was 70.26% out of the total malarial cases , followed by plasmodium vivax 29.73%.

**Conclusion:** Tribal community contributes a major bulk of malarial cases, special surveillance is needed to prevent malarial related morbidity and mortality.

**Key words:** Tribal community , Plasmodium Falciparum , Plasmodium vivax

---

## Introduction:

Malarial is a preventable and treatable disease but it still remains a major public health problem in India. In 2012 WHO estimates 207 million cases of malarial world with 6,27,000 deaths, 13 % of this is present in south east asian region and India contributes to 61 % (1,2). Malarial is a major health problem in the rural and tribal area of the central India keeping this in view enhanced malarial control project (EMCP) was introduced in 1998 by the national antimalarial programe in the seven malarial prone states. 25 % of the tribal population in Madhya Pradesh and Chattisgarh have been EMCP. Chattisgarh which have total population of 23,070,000 of which 41 % are under EMCP which contributes 91 % of malarial and 96 % of plasmodium falciparum cases in the state (3). The ethnic tribal population of Chattisgarh is one third of total population and it is the second highest malarial state only after Orissa. Chattisgarh is both hilly and forested and is inaccessible with poor communication facility so it is difficult to control the out breaks. Present study is to see the incidence of malarial recorded in the district hospital of surguja district in the last three years.

## Material and methods:

This is a retrospective study for a span of 3 years from Jan 2013 to Dec 2015 out of number of cases 1305 were positive for malaria of which Plasmodium vivax 388 and plasmodium falciparum 917. The

positivity was given by thick and thin smear by light microscopy and confirmed by rapid malarial antigen detection test (Rapid diagnostic test) of ADVY chemicals. This test detects the (PLDH) of plasmodium vivax and HRP II plasmodium falciparum in the patient serum.

**Result :**

745 cases were of male 560 cases were of female 71 are of 1 – 4 year of age reported positive for plasmodium vivax.

117 are of 5 – 14 year of age reported positive for plasmodium vivax.220 are of above 15 year of age reported positive for plasmodium vivax.

145 are of 1 – 4 years of age reported positive for plasmodium falciparum.298 are of 5 – 14 years of age reported positive for plasmodium falciparum.

474 are of above 15 year of age reported positive for plasmodiumfalciparum.

Average age of plasmodium vivax is 26.5 years.

Average age of plasmodium falciparum is 26.82 years.

There was a male prepondence in malarial cases and falciparum cases out number the vivax case.

Year - 2013

S.No.	Month	P.V	P.F.							M	F	Total
		0-1	1-4	5-14	15 +	0-1	1-4	5-14	15 +			
1	Jan.2013	-	2	3	4	-	2	7	10	16	12	28
2	Feb.2013	-	1	2	5	-	2	4	12	12	14	26
3	March.2013	-	2	2	5	-	2	4	10	14	11	25
4	Apr. 2013	-	1	2	2	-	1	2	10	10	8	18
5	May.2013	-	2	2	6	-	2	5	10	16	11	27
6	Jun.2013	-	2	2	8	-	2	2	18	21	13	34
7	Jul.2013	-	3	4	14	-	6	10	22	36	23	59
8	Aug.2013	-	3	3	8	-	6	8	13	29	12	41
9	Sep.2013	-	3	4	16	-	5	12	19	39	20	59
10	Oct.2013	-	1	6	12	-	4	12	17	28	24	52
11	Nov.2013	-	4	4	12	-	4	18	36	48	30	78
12	Dec.2013	-	1	3	5	-	2	4	16	19	12	31
		Nil	25	37	97	Nil	38	88	193	288	190	478

P. Vivax Positive Case - 0-1 - Nil  
 1-4 - 25 Cases  
 5-14 - 37 Cases  
 15+ - 97 Cases

P. Falciparum positive Case 0-1 - Nil  
 1-4 - 38 Cases  
 5-4 - 88 Cases  
 15+ - 193 Cases

Total Male - 228

Female - 190

P. Vivax 159 Cases

Total Number of Cases = 478 -----

P.Falciparum 319 Cases

Year – 2014

S.No.	Month	P.V.	P.F.							M	F	Total
		0-1	1-4	5-14	15+	0-1	1-4	5-14	15+			
1	Jan.	-	1	2	6	-	2	3	10	14	10	24
	Feb.	-	5	8	5	-	6	14	6	20	24	44
	March	-	3	2	2	-	3	4	5	9	10	19
	April	-	3	5	3	-	6	6	5	12	15	28
	May	-	2	3	2	-	4	4	6	11	10	21
	Jun	-	-	-	-	-	4	6	6	10	6	16
	July	-	3	3	4	-	5	10	7	18	14	32
	Aug	-	2	4	3	-	3	7	12	16	15	31
	Sep	-	1	2	1	-	12	44	13	48	25	73
	Oct	-	4	8	5	-	12	24	23	33	31	64
	Nov	-	4	8	5	-	20	24	31	34	58	92
	Dec	-	1	1	2	-	8	5	5	11	11	22
		Nil	29	46	38	Nil	85	139	129	237	229	466

Total number of cases – 466

P. Vivax – 113

P. Falciparum - 353

P. Vivax Positive Case -        0-1        -    Nil  
    1-4        -    29  
    5-1        -    46  
    15+        -    38

P. Falciparum Positive Case    0-1        -    Nil  
    1-4        -    85  
    5-14      -    139  
    15+        -    129

Total Male    -    237  
                     Female -    229

Year - 2015

S.No.	Month	P.V.	P.F.							M	F	Total
		0-1	1-4	5-14	15+	0-1	1-4	5-14	15+			
1	Jan.	-	2	4	5	-	2	3	6	14	8	22
2	Feb	-	1	3	4	-	2	4	8	15	7	22
3	March	-	1	3	8	-	1	4	10	16	11	27
4	April	-	1	4	6	-	2	10	8	18	13	31
5	May	-	1	3	4	-	2	4	7	14	7	21
6	Jun	-	1	3	7	-	2	8	14	20	15	38
7	July	-	1	3	6	2	2	8	18	24	14	38
8	Aug	-	2	2	5	-	1	5	20	20	15	35
9	Sep	-	2	3	7	-	2	8	18	25	15	40
10	Oct	-	2	2	4	-	2	3	16	17	12	29
11	Nov	-	1	2	5	-	2	6	16	20	12	32
12	Dec	-	2	2	4	-	2	8	11	17	12	29
		Nil	17	34	65	Nil	22	71	152	220	141	361

P. Vivax Positive Case -        0-1        -    Nil  
    1-4        -    17  
    5-14      -    34  
    15+        -    65

P. Falciparum Positive Case -	0-1	-	Nil
	1-4 Yr.	-	22
	5-14 Yr.	-	71
	15+	-	152

Total Male - 220

Female - 141

Total number of cases 361

P. Vivax 116

P. Falciparum 245

#### **Limitation of our study :-**

1. Data is collected at district level so local effect could not be detected.
2. Patient attending district hospital are both tribal and non tribal population, so strict categorization is not possible.

#### **Discussion :**

In Chattisgarh due to poor vector control, illiteracy large concentration of ethnic tribes and poor health service a parasitic reservoir is present and continued transmission is going on (4,5). Here the major contributor is plasmodium falciparum amounting to 70.26 % of total malarial cases followed by vivax which was 29.73 %. This high incidence may be due to the fact that the tribal community prefers spiritual healers and quack rather than licensed practitioner (6,7,8,9) more over both primary and secondary vectors such as anopheles culicifacies, anopheles baimai, anopheles minimus, anopheles fluciatils, anopheles nivips and anopheles sundacinus are present in the tribal area (9,10,11,12,13) along with rising insecticide resistance (14,15,16). The most effective way to control malarial is vigorous surveillance and to treat promptly both symptomatic and asymptomatic cases to prevent spread of disease (17,18) involvement of gram panchayat for successful control of malarial has also been cited by some authors (19). Under national vector borne disease control programme the state has domiciliary visit by passive agency along with accredited social health activist providing both diagnosis and treatment at door step (20). There is usually two rounds of DDT spraying routinely during march to may and June to august. Malarial positive cases were administered radical treatment as per national drug policy programme (21), but due to inadequate health care infra structure and inadequate spray coverage malaria remains an important cause of morbidity in tribal part of India (22,23). Rapid traditional microscopy and help in prompt diagnosis and treatment (24,25). But due to its technical fallacies PCR remains the gold standard.

#### **Conclusion**

we conclude that vigorous surveillance and treatment to control the malaria morbidity and mortality should be undertaken in tribal population. As tribals are the major contributors in the malaria cases our approach

should be multifaceted with both strengthening the health sector and also develop the socio – economic status of the tribal community.

#### References :

1. Who. World malaria report 2013. Geneva : World health organization : 2013. Available from: [Www.who.int/iris/bitstream/10665/97005/9789241564694\\_eng.pdf](http://www.who.int/iris/bitstream/10665/97005/9789241564694_eng.pdf), accessed on march 11, 2014.
2. Who. World malaria report 2011. Geneva : World health organization. Available from : [http://www.who.in/malaria/world\\_malaria\\_report\\_2011/9789241564403\\_eng.pdf](http://www.who.in/malaria/world_malaria_report_2011/9789241564403_eng.pdf), accessed on march 11, 2014.
3. ....national institute of malaria research, Raipur , chattisgarh
4. Dev v, phookan s, sharma vp, dash ap, anand sp. Malaria parasite burden and treatment seeking behavior in ethnic communities of assam, northeastern india. *J infect* 2006, 52 : 131-9.
5. Dev v, sangma bm, dash ap. Persistent transmission of malaria in garo hills of maghalaya bordering bangladesh, north-east india. *Malar j* 2010 : 9:263.
6. Sundararajan r, kalkonde y, gokhale c, greenough pg, bang a. Barriers to malaria control among marginalized tribal communities : A qualitative study. *Plos one* 2013 : 8 : E816966.
7. Singh n, mishra ak, chand sk, sharma vp. Population dynamics of anopheles culicifacies and malaria in tribal area of central india. *Am j mosquito control assoc* 1999, 15 : 283-90.
8. Singh n, singh mp, saxena a, sharma vp, kalra ni knowledge, attitude, beliefs and practices (kabp) study related to malaria and intervention strategies in ethnic tribals of mandla (madhya pradesh). *Curr sci* 1998, 75 : 1386-90.
9. Nanda n, bhatt rm, sharma sn, rana pk, kar np, sharma a. Et al. Prevalence and incrimination of anopheles fluviatilis species s (diptera : Culicidae) in a malaria endemic forest area of chhattisgarh state, central india. *Parasit vectors* 2012 ; 5 : 215-20.
10. Prakash a, bhattacharyya dr. Mohapatra pk, mahanta j. Potential of anopheles philippinensis-nivipes complex mosquitoes as malaria vector in north-east india. *J environ biol* 2005 ; 26 : 719-23.
11. Dev v. Anopheles minimus : Its bionomics and role in the transmission as malaria in assam, india. *Bull world health organ* 1996 ; 74 : 61-6.
12. Jambulingam p, sahu ss, manonmani a reappearance of anopheles minimus in singhbum hills of east-central india. *Acta trop* 2005 ; 96 : 31-5.
13. Das m, das b, patra ap, tripathy hk, Mohapatra n, Kar sk, et al. Anopheles culicifacies sibling species in odisha, eastern india : First appearance of anopheles culicifacies e and its vicinior role in malaria transmission. *Trop med it health* 2013 ; 18 : 810-21.

14. Mishra ak, chand sk, barik tk, dua vk, raghavendra k. Insecticide resistance status in anopheles culicifacies in madhya pradesh, central india. *J vector borne dis* 2012 ; 49 : 39-41.
15. Sahu ss, Patra kp. A study on insecticide resistance in anopheles fluviatilis and anopheles culicifacies to hch and ddt in the malkangiri district of orissa. *Indian j malariol* 1995 ; 32 : 112-8.
16. Sahu ss, gunasekaran k, raju hk. Vanarmail p, pradhan mm. Jambulingam p. Response of malaria vectors to conventional insecticides in the southern districts of odisha state, india. *Indian j med res* 2014 ; 139 : 294-300.
17. Sturrock hj, Hsiang ms, cohen jm, smith dl, geenhouse b, bousema t, et al. Targeting asymptomatic malaria infections : Active surveillance in control and elimination. *Plos med* 2013 ; 10 : E1001467.
18. Singh r, godson ii, singh rb, isyaku nt, ebere uv. High prevalence of asymptomatic malaria in apparently healthy schoolchildren in aliero, kebbi state, nigeria. *J vector borne dis* 2014 : 51 : 128-31.
19. Patil rr, ghosh sk, tiwari sn. Assessing perceptions about among the elected representatives in rural india. *Trop parasitol* 2011 ; 1 : 83-7.
20. Malaria control strategies. National vector borne disease control programme. Directorate general of health services, ministry of health & family welfare, government of india. Available from : [Http://www.nvbdc.gov.in/malaria11.html](http://www.nvbdc.gov.in/malaria11.html), accessed on may 20, 2012.
21. National drug policy on malaria 2012. National vector borne diseases control programme, directorate general of health services, ministry of health & family welfare, government of india. Available from : [Http://www.nvbdc.gov.in](http://www.nvbdc.gov.in), accessed on may 20, 2012.
22. Singh n, dash ap, krongthong t, gighting malaria in madhya pradesh(central india). Are we losing the battle ? *Malar j* 2009 ; 8 : 93.
23. Singh n, shukla mm, chand g, bharti pk, singh mp, Shukla mk, et al. Epidemic of plasmodium falciparum malaria in central india, an area where chloroquine has been replaced by artemisinin-based combination therapy. *Trans r soc trop med hyg* 2011 ; 105 : 133-9.
24. Bharti pk, silawat n, singh pp, Singh mp, shukla mm, Chand g, et al. The usefulness of a new rapid diagnostic test, first response r combo malaria ag (pl dh/hrp2) card test for malaria diagnosis in forested belt of central india. *Malar j* 2008, 8 : 126.
25. Singh n, bharti pk, singh mp, mishra, shukla mm, sharma rk, et al. Comparative evaluation of bivalent malaria rapid diagnostic tests versus traditional methods in field with special reference to heat stability testing in central india. *Plos one* 2013 ; 8 : E58080.