

# 1. Situation Analysis of Malaria with special reference to Tribal Areas

# 2. Disease Burden among Ethnic Tribes



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**Table 1: Distribution of blood slide examined, *P. vivax*, *P. falciparum* and total malaria cases in states/UTs by categories of %ST Population of India (average of 2008-12)**

<b>Indicators</b>	<b>Categories (% ST Population)</b>			<b>N</b>
	<b>&lt;10</b>	<b>10-29.9</b>	<b>30+</b>	<b>Total (India)</b>
<b>States</b>	<b>17</b>	<b>8</b>	<b>10</b>	<b>35</b>
<b>Population*</b>	<b>70.1</b>	<b>26.6</b>	<b>3.3</b>	<b>1,210,569,573</b>
<b>ST Population*</b>	<b>29.2</b>	<b>54.9</b>	<b>15.9</b>	<b>104,281,034</b>
<b>Blood Slide Examined (BSE) (%)</b>	<b>56.6</b>	<b>39.2</b>	<b>4.2</b>	<b>105,043,313</b>
<b>Total malaria cases (%)</b>	<b>27.0</b>	<b>58.7</b>	<b>14.3</b>	<b>1,378,308</b>
<b><i>P. falciparum</i> (%)</b>	<b>10.6</b>	<b>68.1</b>	<b>21.3</b>	<b>700,233</b>
<b><i>P. vivax</i> (%)</b>	<b>44.0</b>	<b>49.0</b>	<b>7.0</b>	<b>678,075</b>
<b>Death (%)</b>	<b>26.3</b>	<b>44.6</b>	<b>29.1</b>	<b>885</b>

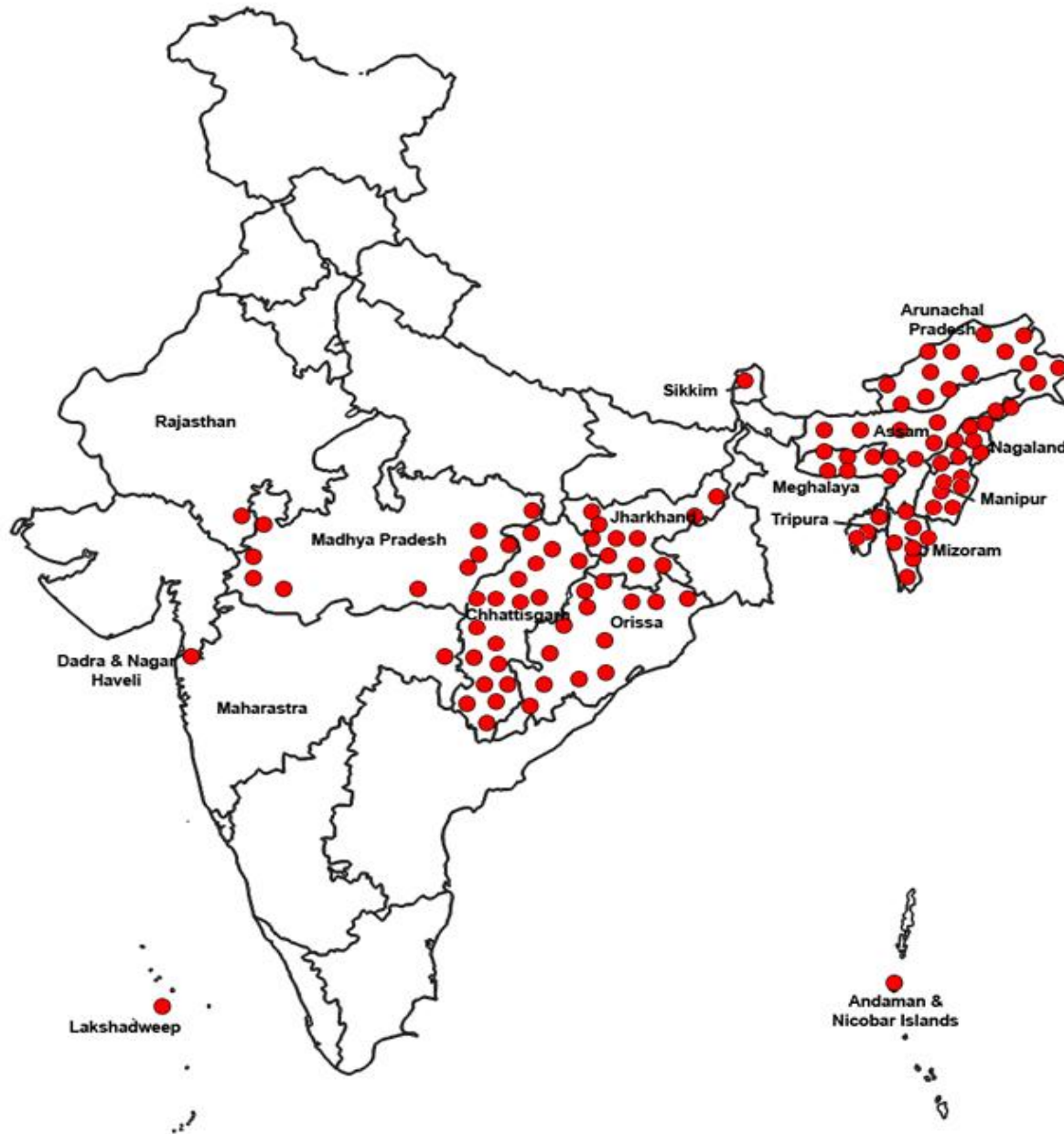
Note : \*Total Population, ST Population are for total country (all 640 districts) as per Census 2011. However rest indicators are for 620 census districts only.

**Table 2: Distribution of districts, population, ST population, Blood Slide Examined, malaria cases and malaria deaths by categories of districts**

Indicators	Categories (% ST Population)			N
	<10	10-29.9	30+	Total (India)
Districts* (Number)	381	104	124	609
Total Population (%)	75.7	16.5	7.8	1,196,742,105
ST Population (%)	18.6	32.8	48.7	102,547,818
Blood Slide Examination (BSE) (%)	61.5	24.9	13.6	105,043,313
Total malaria cases (%)	33.4	20.6	46.0	1,378,308
<i>P. falciparum</i> (%)	10.9	19.5	69.7	700,233
<i>P. vivax</i> (%)	56.6	21.9	21.6	678,075
Deaths (%)	30.7	22.8	46.5	885

Note: \* Actual 620 census districts but in NVBDCP programme clubbed in 609 districts.

# Location of highly endemic Districts



**Table 3: ABER, SVR, SFR, SPR and API by categories of districts (average values for 2008-12)**

<b>% ST Population</b>	<b>ABER</b>	<b>SVR</b>	<b>SFR</b>	<b>SPR</b>	<b>API</b>
<b>&lt;10</b>	7.1	0.6	0.1	0.7	0.51
<b>10-29.9</b>	13.3	0.6	0.5	1.1	1.44
<b>30+</b>	15.3	1.0	3.4	4.4	6.77
<b>Total</b>	8.8	0.6	0.7	1.3	1.15

**Annual blood examination rate (ABER)** - Number of blood smears examined in a year in the total population under malaria surveillance.

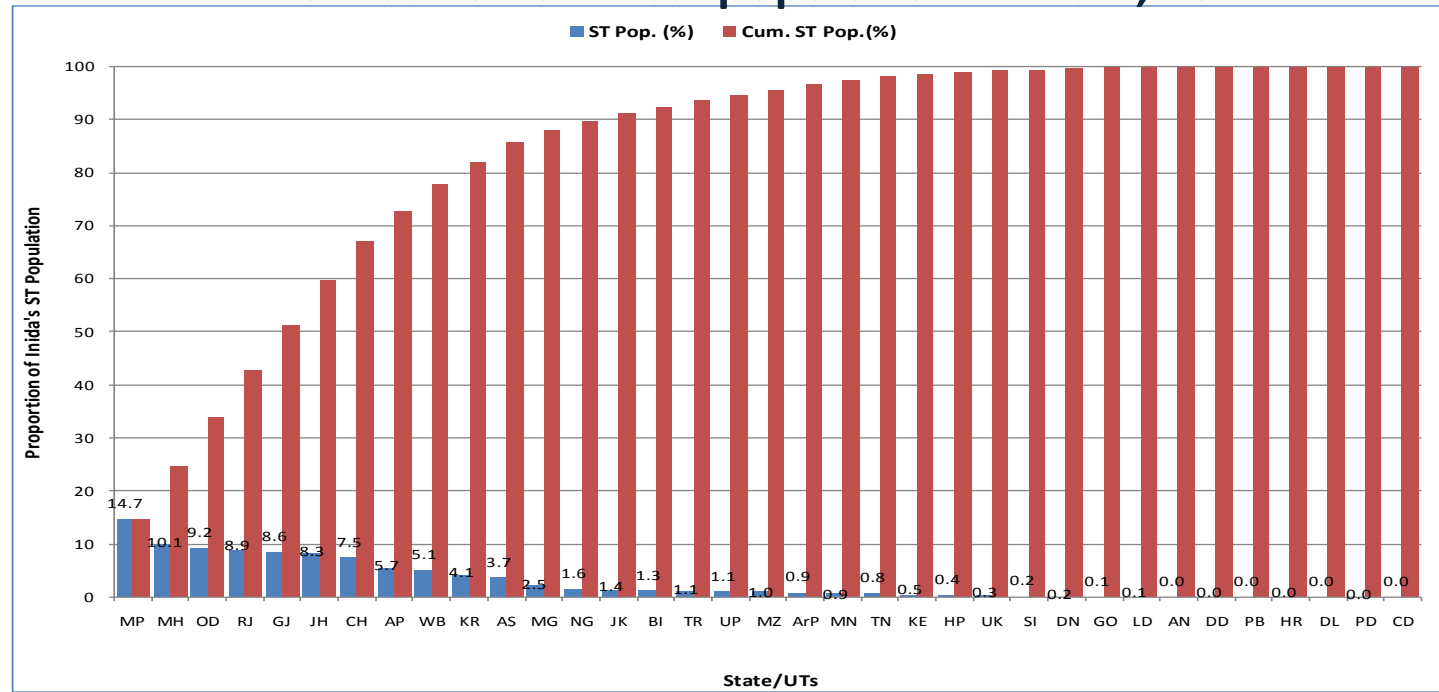
**Slide vivax rate (SVR)** - Total number of blood smears found positive for *P. vivax* in total number of blood smear examined.

**Slide falciparum rate (SFR)** - Total number of blood smears found positive for *P. falciparum* in total number of blood smears examined.

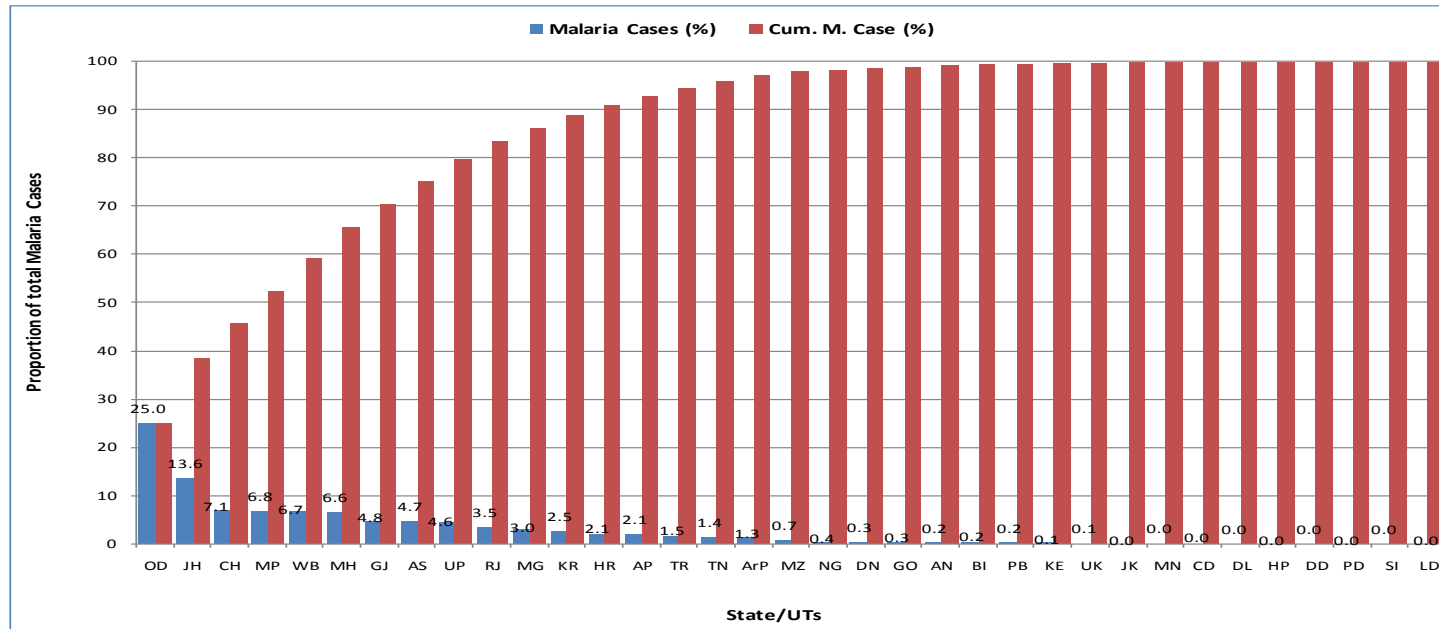
**Slide positivity rate (SPR)** - Total number of blood smears found positive for malaria parasite in total number of blood smears examined.

**Annual Parasite Incidence (API)** - Total number of blood smears found positive for malaria parasite in a year per thousand population.

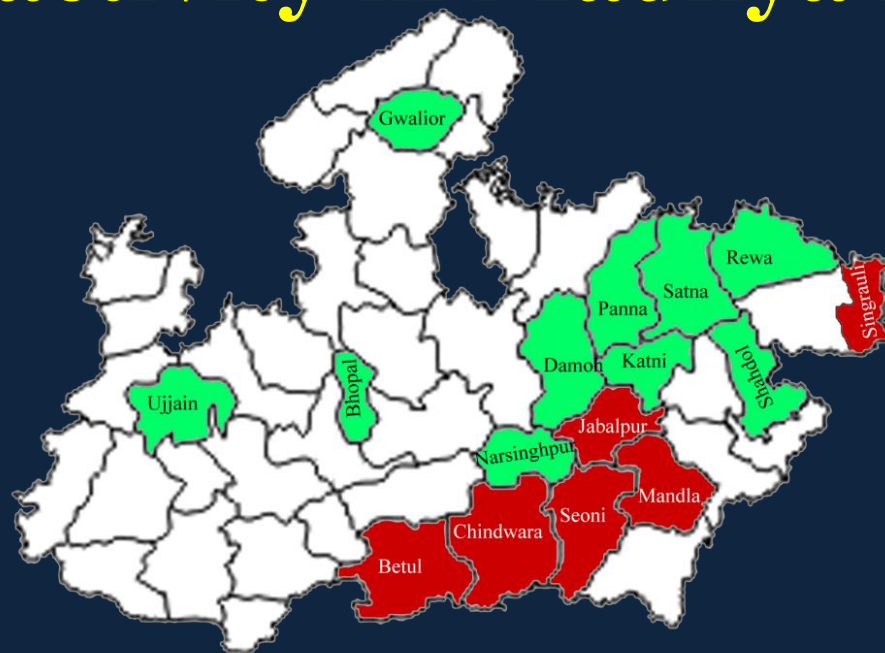
# Distribution of tribal population in India, 2011



# Distribution of total malaria cases in India (average 2008-12)



# Dengue activity in Madhya Pradesh



Out of 28 districts of MP from where the samples were referred, 16 districts dengue activity.

Six dengue positive districts are designated tribal districts and remaining 10 had mixed population of tribals and neglected populations.

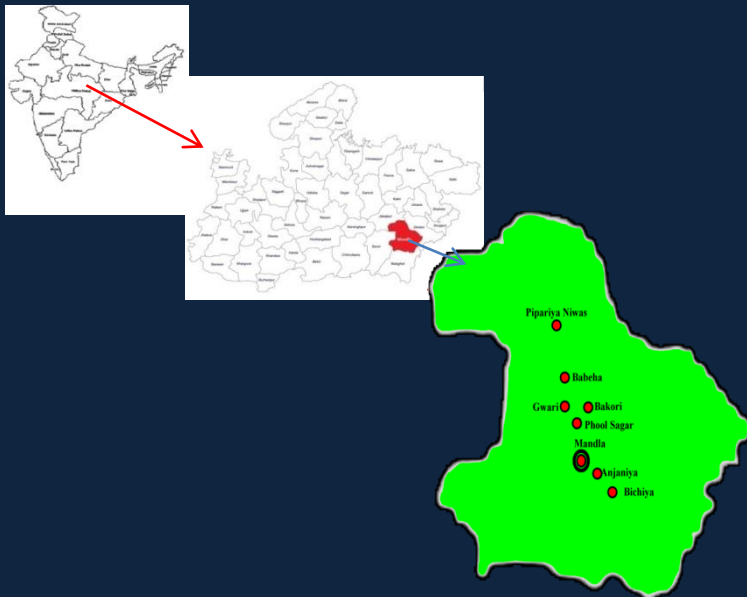
All four dengue serotypes were detected from MP.

Narsinghpur: Dengue 1 and 4 in 2011, Dengue 1 in 2012, Dengue 3 in 2013 and 2014

Mandla: Dengue 2 in 2013, Dengue 3 in 2014

Dengue 1, 2 and 3 have caused outbreaks Dengue 4 are detected from sporadic case

# Dengue outbreaks in tribal villages of Mandla



June –Aug 2013 and May 2014 we did Clinical and entomological investigations.

Out of 18 villages surveyed 11 villages having tribal population showed dengue activity

# Dengue cases in Bakori outbreak in June 2013

Age Group	Number of cases	Positive for Dengue	Positive (%)
0-14	77	33	42.8
15-24	118	69	58.4
25-45	286	144	50.3
46-65	141	63	44.6
>65+	26	12	46.0
<b>Total</b>	<b>648</b>	<b>321</b>	<b>49.5</b>

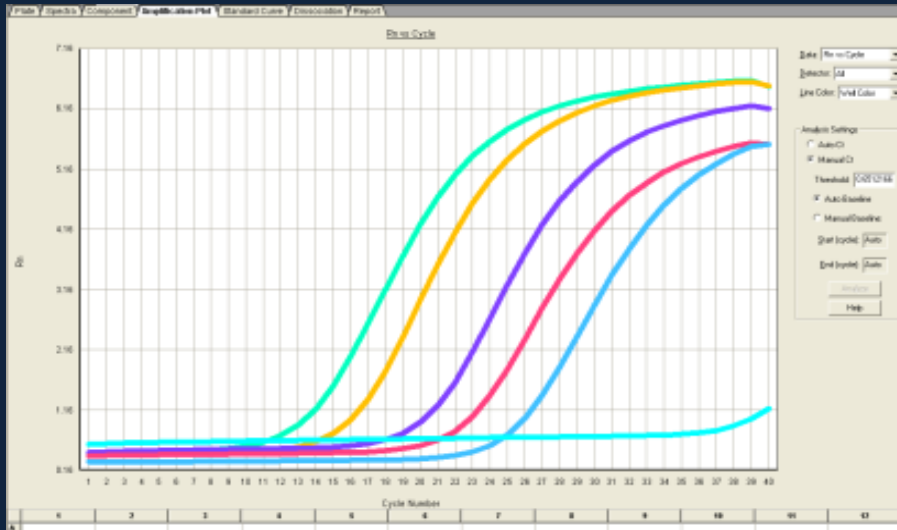


All age groups were affected with dominance of adults

The RT PCR and nested PCR products confirming presence of dengue 2

Virus was also detected form vector mosquito *Ae. aegypti*

# Dengue cases in Bamni outbreak May 2014



All age groups were affected with dominance of adults

Diagnosis by

**CDC's real time RT PCR kit**

**IgM ELISA**

**nRTPCR**

**Dengue NS1 tests**

Dengue virus 3 was detected from the samples

**59/81 (73%)** tested were positive for dengue



RT PCR and nRT PCR of dengue. Lane TS 3 nPCR product of Den 3 (392 bp), Lane Ladder 50 bp: Ladder 50bp, Lane NTC: no template control