



Analysis of Malaria Situation in Chhattisgarh: Issues, Strategies and Solutions from a Field Workers Perspective

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Abstract

Malaria is a major health epidemic in Chhattisgarh and a large number of cases and deaths are reported from the tribal dominated districts. Also, some cases are not reported because of the lack of access to the public health system in heavily forested and tribal dominated areas. It is particularly important to identify the existing issues and gaps in the delivery and implementation of malaria control and the eradication schemes launched by the Central and State Government. This research article identifies the key issues, gaps and proposes strategies, solutions based on the field worker's perspective. It evaluates the opportunities available, the institutional mechanism alongwith resources available with the administration. The analysis of the situation and strategies are practical and can be implemented as they are given with a deep understanding of the health system in the state.

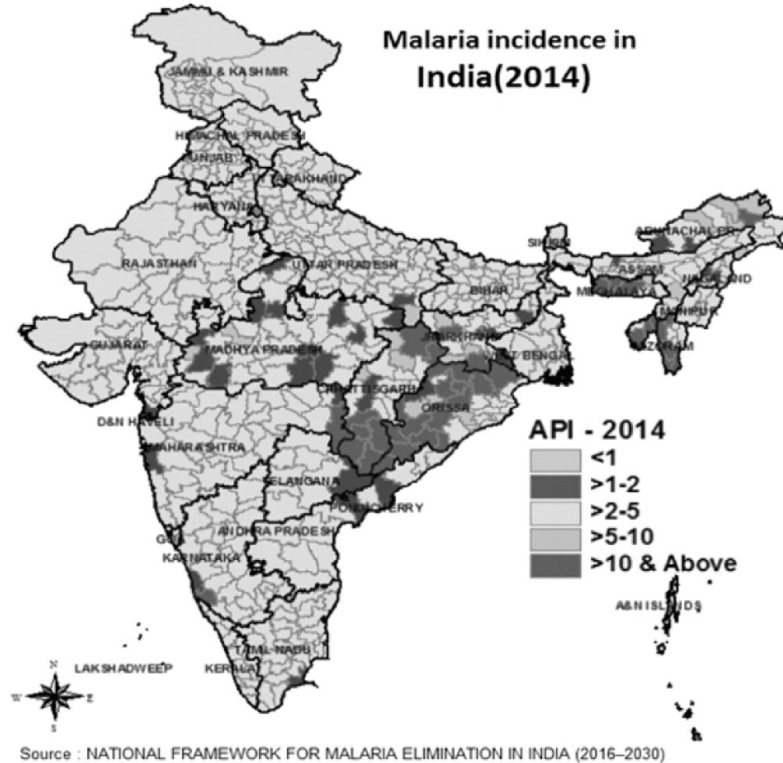
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Introduction

Malaria poses significant costs to the humanity. On a global scale, there is an estimate of 214 million cases of malaria and 4,38,000 malarial deaths in 2015. World Health Organization (WHO) estimates that a child dies almost every minute due to malaria in Africa, which accounts for 80% of the malarial infections and 90% of deaths (WHO, 2015). The region with the second highest occurrences is South-East Asian region, as monitored by WHO. It includes Bangladesh, Bhutan, Democratic People's Republic of Korea, India, Indonesia, Myanmar, Nepal, Sri Lanka, Thailand and Timor-Leste. This region accounts for an estimated 15% of malarial incidence.



As per the World Malarial Report 2016, India contributes for 89% of the total Malaria incidence in the South-East Asian Region. India reported 1,018,729 malarial infections and 562 deaths in 2014, dominated by Orissa accounting for 24% of the cases, Jharkhand (13%) and Chhattisgarh (11%) (GoI, 2014). However, WHO (WHO, 2015) estimates the figures for India to be in order of higher magnitude than reported.

Malaria Situation in Chhattisgarh

Chhattisgarh is a heavily forested state in central India, known for its temples and waterfalls. The northern and southern parts of the state are hilly whereas the central part is a fertile plain. As of 2011, Chhattisgarh recorded a Human Development Index value of 0.358, the lowest out of any Indian state and the occurrence of poverty is high as well. Inadequate health infrastructure and human resources has been one of the major constraints of the state. As can be seen from the Table 1, high chances of Vector borne diseases like Malaria is high in the state and its neighbouring states as well.

Table 1: General Information on Malarial Infections (data available till 2014)

Name	India	Chhattisgarh
Level	Country	State
Area(km ²)	3,287,263	135,192
Population(2011 census)	1,210,193,422	25,545,198
Population Density (people per.sq.km)	382	189
Malaria Positive Cases	11,02,205	1,28,993
ABER	10.05	14.42
SPR	0.89	3.27
Deaths	562	53
API	0.89	4.72
PF Percentage	65.55	84%

BSE – Blood Slide Examinations used in calculating ABER,SPR

*ABER - Annual Blood Examination Rate calculated as $BSE*100/Population$*

*SPR - Slide Positivity Rate calculated as $Positive\ Cases*100/BSE$*

*API - Annual Parasite Incidence calculated as number of cases for a population of 1000 or $Cases*1000/Population$*

PF Percentage - Percentage of cases, which were caused by the parasite Plasmodium Falciparum in that respective geographic level.

Sources: Raw data for India and Chhattisgarh (GoI, 2015)

Currently Malarial control programs fall under the ambit of National Vector Borne Disease Control Programme (NVBDCP) of the Ministry of Health and Family Welfare. NVBDCP provides technical as well as operational guidelines and shares half of the State's expenditure incurred on the control of infectious diseases (Kumar, Valecha, Jain, & Dash, 2007), which include Malaria, Dengue, Filariasis, Kala-azar (Visceral Leishmaniasis), Japanese Encephalitis and Chikungunya.

The NVBDCP action plan for malaria is designed to break the cycle of malarial transmission at all possible junctures. The NVBDCP has three major vector control measures i.e, anti-larval operations to reduce transmissions, promotion of Long Lasting Insecticide Treated Nets(LLINs) and In-house Residual Spraying (IRS) as part of its action plan. In addition, the malarial action plan has Early Diagnosis and Prompt Treatment (EDPT) as its main strategy in controlling the epidemic. In addition to the above measures, capacity building amongst the health functionaries and intensive IEC (Information, Education and Communication) activities during the anti-malaria month (every June) are taken up to control malaria.

Anopheles mosquito attacks at night. The strategies are designed generally to safeguard from mosquitoes. The strategies have worked globally and also in some parts of India. When we see the Malaria incidence map of 2014 cases, it can be seen that there are some issues and gaps in the strategies that are adapted for these regions. Hence, it is must to delve deep into the measures taken up and analyze the gaps through them.

Issues and Gaps in Malaria Control

Long Lasting Insecticide Treated Bed Nets (LLINs): Bed nets have been found to be the cheapest and relatively more effective than other methods for malaria control. Insecticide treated bed nets (ITNs) can reduce all-cause child mortality by 25 percent (World Bank, 2005). The Government distributes LLINs free of cost to the affected areas with a ratio of one bed net per two persons in a household. But the real effectiveness depends on the usage of bed nets. Research shows that usage of bed nets has strong seasonality. Usage is expected to be most in rainy seasons.

More than half of the bed nets are not used but they are being merely stored, the prime reason being the lack of awareness of the utility of the bed nets. Field studies indicate that bed nets are alternatively used as fishing nets, stitching for male undershirts and as a swing between trees.

In-House Residual Spraying (IRS): IRS is used to disarm the mosquitoes which consume blood from humans, thereby preventing further transmission. The NVBDCP (National Vector Borne Disease Control Programme) funds the spraying operations for malaria. But there are some time delays and issues in state health departments which receives funds from NVBDCP. Further, the amount of budget given for spraying is not sufficient for labour costs for two rounds of spraying.

Spraying is done in all the rooms including the verandah and the huts of the house (GoI, 2009). A day before the spraying, a plan of action is strategised for the village. The respective MPHA (M) informs the ASHA who in turn informs the village. The residents are expected to stay within their houses and keep their belongings outside their houses so that the spraying teams can spray in all the rooms of the houses. People would go to their MNREGS works or work in their farms. Further, the households present in the village at the time of spraying, need not necessarily agree to get all their rooms sprayed. Therefore, the efficacy of spraying in decreasing malarial transmission depends not only on technical factors like insecticide used, the formulation, the resistance of vector etc., but also social factors like cooperation of the residents and their action after spraying like mud-plastering or white washing on the walls. (Raghavendra, Barik, Reddy, Sharma, & Dash, 2011).

Anti-Larval Operations: Tribal and forest areas possess multiple sites for larvae breeding. One of the main sources for breeding is near the hand pumps. Unused tyres, frequently used stone grinders, cow sheds, discarded coconut shells etc., are some of the other breeding sites identified by the ASHAs. The anti-larval operations do not fall under the ambit of health department. It comes under the responsibility of Gram Panchayats, who are expected to use their general funds for spraying larvicide in all potential breeding points. Alternately, *Gambusia* fish could be grown in these spots, as it feeds on the larvae. The Panchayats face financial issues which act as the main constraint in taking up these operations as tribal pockets have a lesser revenue. Even if the process is to be initiated, there is a tedious process to get the funds released from panchayat.

Surveillance Operations: Based on the diagnosis by a doctor, treatment is provided based on NVBDVP guidelines (GoI, 2011) to the patient through either MPHS (M) or MPHA (M). The diagnosis delivers the tablets to the patients and inform the respective ASHA to monitor the patient so that the patients consume the tablets as per the prescription. But data shows that only half of the cases are followed. There is a lack of updates on the tour program of health workers. The Panchayats generally do not have a reporting system or supervision to check if they have conducted anti-larval operations.

Treatment Seeking Behaviour: The treatment seeking behavior of patients show that when people catch fever, they wait for a period of 2-3 days to heal naturally without any treatment. If it does not get healed, then they seek external assistance. Besides, people believe RMPs offer better treatment and also spend sizeable amount of money on their treatments. Perception surveys indicate that malaria is considered dreadful, given the economic burden in terms of loss in wages during the days of sickness (usually around 7 days) in addition to the medical expenses and physical suffering (Vijayakumar, Gunasekaran, Sahu, & Jambulingam, 2009).

Trust on Public Health System: When people approach the public health functionaries, they

first approach ASHA or ANM. But even when medicines are prescribed, patients cannot be trusted to take these medicines on a regular and weekly basis. Even with doctors there seems to be a legitimate ground for people to rely less on the public health system. People visit the PHC to meet the doctor but the Medical Officer Incharge in a government PHC has many administrative duties of reporting and managing, hence he/she would be busy with other works than patients to attend.

IEC Activities: Literacy rate of Chhattisgarh was 70.28% as per Census 2011 but tribal dominated parts like Bijapur has only 40.86%. So the generally backward regions need more specific focus on educative and informative activities. But, IEC activities are not available in local or tribal languages, which pose a serious challenge in education about diseases.

Institutional Gaps: There is lack of staff for public health offices and vacancies are to be filled at epidemiology departments. Also, the convergence between departments doesn't take place at panchayat level.

Proposed Strategies and Solutions

Setting up of district level taskforce to implement the strategic action plan should be the first priority. This taskforce would provide rapid and co-ordinated response to oversee prevention and control strategies. They would also request government for resource allocation from time to time. District level macro and micro plans would be designed and implemented by them based on the field inputs.

From the field studies, it is observed that presence of a child usually below 5 years or so in a family increases the usage of bed nets. This trend could be used as an opportunity to promote the usage of bed nets in all the houses with infants, children and pregnant women. To promote the further use of bed nets, the government could call for a "Bed Nets Day" every month during the endemic rainy season. Alternately, folk media campaigns (kalajathas) could be used to increase the public awareness. Such campaigns have shown impressive results in Karnataka (Ghosh, Patil, Tiwari, & Dash, 2006). Also, it is necessary to find out the appropriate number of bed nets required based on the sleeping habits, so that the entire population benefits from their use and distribute accordingly.

Spraying during the noon and evening could help in increasing the presence of residents in the village. The spraying teams could carry along tarpaulin sheets to wrap the household belongings and finish their spraying. Also the IEC activities have to precede the spraying operations. All the IEC material should be mandatorily displayed in local languages so that maximum impact of the work takes place. Posters in local dialect need to be pasted in various locations in the village. Haat Bazaar campaigns can be arranged weekly as well.

A disease control program would be more effective if all the related operations are under one department. Therefore, the responsibility for anti-larval operations and necessary funding should be transferred to the health department. During the anti-larval operations, the community could be involved through educational projects for the children studying in local educational institutions. The children could be asked to identify the water stagnant points in the village as a part of the project for the authorities so as to take necessary actions. This activity could be institutionalized as a regular feature for anti-malaria month programmes. This step will not only enhance the awareness of children, but will also improve the awareness of the community in managing their own environment.

The flawed concept of having uniform monthly targets should be revisited. Malaria occurrences has innate seasonality and subsequently more targets for ASHAs and more MPHAs should be given during the rainy months. This would help them in reporting the correct figures and not justify their underperformance. Practical planning should be done in smear collection for MPHAs and the process should be scrutinized. The movement of books and records should be analyzed.

The process of payments to the health workers especially ASHAs should be timely. Every hamlet in Chhattisgarh has a ASHA worker which is a huge advantage so as to improve the health conditions of villages and reduce the disease burden. Regular trainings of ASHA workers on their work related techniques would be useful.

A household survey can be designed to be conducted after every season to assess the actual number of cases of fever that occurred in the previous four months. Periodic surveys during the key malaria months should be conducted on the usage of bed nets, rooms sprayed and treatment seeking behavior. Mapping the data collected using GIS will help the health administrators design targeted interventions for malaria control. Malaria information system needs to be developed to get real time data on the ground.

The training of medical officers and health staff should include concepts on perception management and dealing with the tribal and local cultures. This would increase the overall trust on Public Health system.

A reporting format indicating the villages and the number of times they were visited should be formed as a part of the monthly reporting structure. Similarly, the MPHS (M) should randomly pick two villages in every section for surveillance and submit a report on sections and the number of times a detailed supervision was carried out with the details of villages visited. This report should also inform how many surveillance visits the MPHAs (M) has done and the officials skirting their duties. In essence, the supervision format will be a nested supervision, which will ensure accountability throughout the hierarchy.

To enhance the effectiveness of the surveillance visits, a public address (PA) system can be installed in every village with a significant number of households, so that the MPHA (M) could announce their arrival and a prior arrangement could be made an evening before by the local ASHA. If a fixed PA system is not available, an option of providing the health assistants with mobile PA systems positioned at the nearest government offices in GP buildings can be arranged for.

The state Health Resource centre and other public health departments need to be staffed as per the national standards and population ratio. Support of NGOs and non-profit private sector could be availed in capacity building of the health personnel, development of tools for effective IEC, supply chain monitoring, community mobilization and supervision.

Finally, it appears that malaria research is predominantly confined to technical aspects, a type of preventive or curative mechanism needs to be adopted for greater efficacy. The challenge lies not only in adopting the right technical method, but also in administering the technical methods in tandem with the socio-cultural context of the state, especially tribals. This calls for substantial research into the administrative aspects of health systems and the convergence of departments and the people.

Conclusion

The major constraints in the operation of these solutions are community participation aspects, institutional arrangements, training and surveillance. Community participation needs a constant motivation to the villagers with decentralized principles. Regular bureaucracy would not be in a position to fulfill the roles of social work. So, these aspects are handled by state government and hence their involvement is crucial. Then, comes the arrangement of timely funding and human resources for the programs so as to ensure timely implementation and completion.

Involvement of social workers and NGOs at right levels would solve the problem of community participation to an extent. There should be coordination between central, state and district level on funding and human resources. Training to all levels of health functionaries, arranging for timely funding would be in the hands of the state and can only be requested.

Research on public health, filling of vacancies, re-orientation of the administration on socio cultural context would require strong political will and a responsive bureaucracy. Advancing of the MIS and GIS would be done in a easier way than implementing the system on field. These hurdles can be overcome through reporting to appropriate levels and coordinating at timely intervals.

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Author's Profile

Prudhvi Pavuluri is currently working as PMRDF (Prime Ministers Rural Development Fellow), Tribal Welfare Department, Andhra Pradesh, India. He has worked as Prime Ministers Fellow, where in select individuals work with the district collector to improve the governance in naxal affected areas. Most of his journey has been with the vulnerable tribals to design and implement welfare schemes for them. His research interests include health, education and livelihoods. He is a strong research professional who graduated from Tata Institute of Social Sciences, Mumbai, India.
