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Malaria case detection in Chhattisgarh, 2015–2019: Comparison of cases reported by the National Vector Borne Disease Control Programme and community health workers

The National Vector Borne Disease Control Programme (NVBDCP) has reported a dramatic decline in the cases of malaria in India from 2017 onwards, led by the two high-burden states of Odisha and Chhattisgarh.¹ However, many have doubted the officially reported number of malaria cases in India.^{2,3} Estimates of malaria incidence by the WHO have been several times higher.⁴ According to the Joint Monitoring Mission for Malaria in 2014, the actual number of cases could be around six times the NVBDCP's reported numbers.⁵ Therefore, there is a need to triangulate official statistics with other sources, e.g. data from community health workers (CHWs), non-governmental organizations (NGOs) and other healthcare providers.

Chhattisgarh has a network of 70 000 CHWs known as 'Mitanins'. Mitanin-CHWs are residents of the habitation they cover, and the average population per CHW is around 300.⁶ In 2015, the state started implementing community case management of malaria through Mitanin-CHWs.⁷ The programme involved training and equipping CHWs for this role—combining social mobilization for prevention, using bivalent rapid diagnostic kits (RDKs) to detect malaria and to treat *Plasmodium falciparum* (Pf) cases with artemisinin combination therapy and *Plasmodium vivax* (Pv) cases with chloroquine.⁷ CHWs used RDKs evaluated and approved by the WHO with a false-positive rate of 1.4% for Pf and 1.3% for Pv.⁸ The WHO has recommended these RDKs for use in field conditions.⁸ An assessment of 1106 CHWs in 2016 showed that 98% could carry out correct testing and 88% had adequate skills in treatment; this was confirmed later in an external evaluation.^{9,10} Around one-third of annual tests done by formal health workers were through RDKs. In absolute numbers in 2019, RDK tests done by formal health workers were around 1.8 million, almost equal to the number of RDK tests done by CHWs.

The name-wise lists of tests, results and treatment were recorded in the CHW registers. Subcentre-wise reports of testing done by CHWs were collected monthly by their supervisors and compiled at the state level. The reports of NVBDCP covered detection done by the formal health workers of the government and did not include the testing done by CHWs. We believe there is no duplication in the number of cases between the two sources. No information was included by either source on cases detected by NGOs or private providers.

A substantial decline in malaria cases was reported by the NVBDCP as well as CHWs after 2017 (Table I). The increase from 2015 to 2017 is likely to be due to increased testing and not due to malaria increasing in this period.

CHWs diagnosed twice as many cases as detected by formal health workers. Although CHWs reported greater incidence than NVBDCP's reports, this data source confirms the decline in the incidence of malaria after 2017. Factors that might have helped Chhattisgarh include community-level detection and treatment by CHWs and bednet distribution. CHWs are able to diagnose greater number of cases because through them detection has become available close to where people live. It can be a key factor in tribal populations and remote areas in which most malaria occurs in India. Detection by CHWs has been a big part of the success in Odisha too.^{11–14} Odisha has also shown a steep decline in malaria in 2018 using a strategy of mass testing in high-burden areas, including in the afebrile population.^{11–14} Chhattisgarh's CHWs in high-burden tribal districts will be crucial in achieving good coverage under mass testing on the lines of Odisha.

While malaria is on the decline in some of the key states, further strategies may be needed for sustaining the gains. Many states in India, especially those with sizeable tribal populations, can learn from the CHW-led strategy in managing malaria. Having a well-equipped workforce close to community can offer advantages in sustaining the change.

The key systemic gaps contributing to under-reporting of malaria in India include poor access to detection, poor systems of surveillance and lack of data-sharing between the public and private sectors.^{5,15} A system to integrate private sector data has often been suggested but is yet to emerge. Access to detection has improved due to RDKs, especially through CHWs in case of Chhattisgarh. Chhattisgarh does include RDK-based detection by formal health workers in its reporting, which may not be the case in some other states in India.¹⁶ However, the data of cases diagnosed by CHWs have not been included in Chhattisgarh despite being easily available as part of a government-funded programme. The formal information system needs to take into account the data on testing by CHWs, NGOs and private providers if we want a more realistic picture of malaria in India.

Conflicts of interest. None declared

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TABLE I. Malaria testing and cases reported by the National Vector Borne Disease Control Programme (NVBDCP) and by community health workers (CHWs) in Chhattisgarh, 2015–2019

Item	2015	2016	2017	2018	2019	Change from 2017 to 2019 (%)
Malaria cases reported by Mitanin-CHWs	148 570	229 644	271 092	187 208	129 714	–52
Number of tests by Mitanin-CHWs	793 021	1 485 380	1 534 490	1 458 472	1 847 804	20
Malaria cases reported by NVBDCP	144 886	148 220	140 727	78 717	60 575	–57
Number of tests done by formal government health facilities and workers	3 886 092	4 830 145	5 183 717	4 640 658	5 871 732	13

Sources: NVBDCP data¹ CHW data: State Health Resource Centre, Chhattisgarh

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