

## Coverage survey for assessing mass drug administration against lymphatic filariasis in Gulbarga district, Karnataka, India

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Lymphatic filariasis (LF) is endemic in 83 countries and territories, with more than a billion people at risk of infection. Some 120 million people are affected worldwide of whom about 40 million are incapacitated and disfigured by the disease. It is one of the world's leading causes of permanent and long-term disability<sup>1</sup>. In 1997, the 50th World Health Assembly resolved that LF should be eliminated as a public health problem<sup>2</sup>. The Government of India (GOI) in 2004 began a nationwide mass drug administration (MDA) campaign in all the known LF endemic districts with an annual single dose of diethylcarbamazine citrate (DEC) with the aim of eliminating it as a public health problem by the year 2015. In the year 2007, around 600 million people in 250 districts in 20 states/union territories of the country which are endemic for LF were covered under the campaign. The annual microfilaria (mf) survey for the year 2007 reports mf rate of 0.63% out of which 177 districts have rates <1% and 73 districts >1%<sup>3</sup>.

The fifth MDA campaign in the eight LF endemic districts of Karnataka state was held on 11 November 2008, followed by mopping up activities on two successive days. A single dose of DEC and Albendazole tablets was distributed to households by drug distributors who were health workers, anganawadi workers, accredited social health activists (ASHAs) and student volunteers. The eligible population did not include pregnant women, children below two years of age and seriously ill persons<sup>4</sup>. An effective surveillance can help fulfill the aim of global elimination of LF as a public health problem<sup>2</sup>. The purpose

of this survey in Gulbarga district of Karnataka state is to assess the coverage of MDA of single dose DEC and Albendazole and to recommend mid-course corrections. This evaluation survey was conducted one week after the MDA campaign over a period of five days by the author independently for the GOI.

The estimated population in Gulbarga district in 2008 was 35,26,184 and 32,41,801 of them were eligible for DEC distribution. Of the 11 talukas excluding Gulbarga urban taluka, three were selected for the survey, namely Gulbarga rural, Chincholi and Chitapur. One primary health centre (PHC) was selected from each taluka randomly. One subcentre was selected from each PHC area and one village selected from it randomly. Of the 11 health centre areas in the Gulbarga City Corporation limits, one was selected randomly with an eligible population of 38,640. Each of the selected clusters was divided into two manageable areas with approximately the same number of households and one of them was selected at random. Then from the approximate centre of the subunit a random direction of travel was selected. The number of households between the centre and the limit of the subunit was counted and the starting house selected randomly. Once the data of all the eligible individuals in the selected household was collected, the next nearest household was selected<sup>2</sup>. Parents or care givers answered for young children. The questions included whether the person received the dose or not and the reasons for not having received it and for not consuming, if received. The coverage survey captured data on a sample of 150

individuals from each cluster. In the analysis, the numerator used for coverage is the total number of people who responded that they had consumed the dose during the recent MDA and the denominator is the total number of people for whom the data were available<sup>2</sup>. Data were entered into a spread sheet and analysed manually. The results of the survey are presented as proportions. The coverage rate is presented as proportion with 95% confidence interval (CI). Chi-square ( $\chi^2$ ) test was used to test the significance of difference between two proportions. Probability of <0.05 is considered statistically significant.

Data were collected from 602 persons (341 females and 261 males). The age distribution is presented in Table 1. About 85% of the surveyed people had received the drugs from the drug distributors. The surveyed coverage for DEC (consumed all the distributed DEC tablets) was 32.7% (95% CI 29.4–35.9%). The surveyed coverage for DEC consumed partially is 28.4% (27.3–32.1%), for DEC consumed both partially and completely is 61.1% (57.1–65.1%), for Albendazole 44% (39.9–48%) and for both DEC and Albendazole consumption was 26.6% (22.9–30.1%). The reasons for not consuming DEC tablets in the MDA campaign are presented in Table 2. The most important reason is that it was not distributed among 90 (38.5%) of them. About 53 (22.6%) of them had not consumed it because the drug distributor had left behind the drugs with other household members in their absence. They could not ingest the drugs as they were not informed about it by other household members or the information on the dose was forgotten by them. Among the surveyed people, 62.4% in rural Gulbarga and 57.3% in the urban area had consumed

**Table 1. Age distribution of study population in the evaluation of MDA campaign at Gulbarga district (n=602)**

Age group (yr)	No.	Percentage
2–5	77	12.8
6–14	165	27.4
15–60	309	51.3
≥60	51	8.5

**Table 2. Reasons for not consuming DEC in the MDA campaign at Gulbarga district (n=234)**

Reason for non-consumption	No.	Percentage
Drug not given	90	38.5
Drug given at home but no information	53	22.6
Fear of side effect	26	11.1
Forgot to take	16	6.8
I am healthy	11	4.7
Fear to give drugs to children	38	16.2

DEC either partially or completely. This difference was not statistically significant ( $\chi^2 = 0.829$ ;  $p > 0.05$ ).

In this evaluation survey on MDA for LF, the coverage rate of DEC was 32.7% which is much lower than the reported coverage of 89.05% by the district health authority<sup>5</sup>. The reported range of coverage rate of MDA for LF in the country and Karnataka state from 2004–07 was 60.9 to 81.4%; and 81 to 91% respectively<sup>3</sup>. It must be noted that the reported coverage of the districts was a compilation of the rates reported by the responsible drug distributors of that area. The proportion of the eligible population who were distributed with DEC was reported as coverage rates, whereas the World Health Organization defines coverage rates as the proportion of those who actually consume the distributed drugs<sup>2</sup>. Over-estimates of coverage obtained by the routine reporting system are frequent<sup>6</sup>. In an independent evaluation of MDA in 2007 in Udupi district of Karnataka, 73.4% of the eligible population had received DEC and 85.6% of them had consumed it<sup>7</sup>. The drug distribution was lower in Udupi whereas the consumption rate was higher when compared to Gulbarga. An independent evaluation of the MDA campaign in 2007 was undertaken in the three endemic districts of Chhatarpur, Datia and Tikamgarh in Madhya Pradesh state<sup>8</sup>. The DEC distribution in these districts ranged from 28.8 to 67.9% and the actual consumption among them was 61.3 to 77.4%. The drug distribution was low in Madhya Pradesh and the coverage rate was similar to Gulbarga. In the evaluation of MDA in 2006 in six districts and one town of Gujarat state, the overall drug distribution rate was 85.2% and was highest in Porbander

(99.6%) and lowest in Navsari (77.3%) districts. The actual consumption of DEC in Gujarat state was 89% and was highest in Porbander (99%) and least in Navsari (72.4%) districts<sup>9</sup>. The drug distribution in Gujarat was similar to Gulbarga but the actual consumption of the distributed drugs was higher. The surveyed coverage rate was higher in Udupi (Karnataka) and Gujarat state but does not mention whether it included only those who consumed all the distributed DEC tablets or even included those who had consumed it partially. The surveyed coverage in Gulbarga for DEC tablets consumed both partially and completely was 61.1%.

The differences in the reported coverage by the district health authorities and the surveyed coverage in Gulbarga district can be attributed to: (i) the drug distributors left behind drugs for household members who were absent during their visit and recorded it as having consumed, presuming that the absentees would take the drugs on their return. In two of the three rural clusters surveyed there was no mopping up activities carried out on the second and third day by the drug distributors. Those who had failed to ingest the drugs distributed on the campaign day were not identified and motivated to do so on the subsequent mopping up days; (ii) 16.4% of the persons who failed to consume the distributed drugs were children. The parents feared to give the drugs to their children. Around 11.2% of the persons had not consumed the drugs because of fear of side effects. The drug distributors could have ensured that the children swallowed the drugs in their presence. This would have reassured the parents; and (iii) the drug distributors did not ensure that the eligible people swallowed the drugs in their presence. Some of them had not food in the morning. Since the drugs were to be consumed after food, they forgot to take it later. Some 171 (28.4%) of them were confused with the dosage and had consumed the distributed drugs incompletely. Hence, the implementation teams were without team leaders to supervise and monitor the campaign. In two of the three rural areas surveyed Albendazole tablets were not distributed as they had not received it until the day of the campaign. As per

the plan, the drugs had to reach the implementation units seven days before the MDA campaign<sup>4</sup>. In Madhya Pradesh state, the MDA campaign of December 2006 was postponed twice, as the drugs were not received on time by the districts<sup>8</sup>.

One of the strategies to eliminate lymphatic filariasis is to achieve 80% coverage (actual drug consumption in the eligible population) in the MDA campaign conducted every year for four to six years<sup>10</sup>. With coverage rates of 32.7% reported in this survey, it might be a far reached goal. The technical advisory group on the global elimination of LF in the year 2007 noted that the delivery of drugs to people who did not consume it had an adverse effect on drug availability as well as programme impact<sup>6</sup>. As the reported coverage of MDA (89.05%) is much higher than the surveyed coverage (32.7%) it must be concluded that the drug distributors are incorrectly reporting on the ingestion of the drugs. There is an urgent need to revitalize the programme implementation. Corrective actions must be taken to improve the skill and motivation of the drug distributors by better training and supervision. The drug distributors must ensure that the drugs are swallowed in their presence (directly-observed treatment). Mopping-up activities must be undertaken by them in the households where there are absentees on the campaign day. The programme managers must ensure proper supply of drugs in the stipulated time. There must be supervision and monitoring activities by the implementing unit team managers (medical officers). Adequate communication efforts should be undertaken in the community to allay the fear of side effects of drugs used in the MDA campaign.

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