

## Research Article

# Evaluation of coverage and compliance of elimination of lymphatic filariasis by mass drug administration campaign in Gulbarga and Yadgiri districts of Karnataka state

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## ABSTRACT

**Background:** Lymphatic filariasis (LF) is a mosquito-borne parasitic infection that occurs in many countries in the Globe including India. Single dose once yearly mass administration of Diethylcarbamazine citrate (DEC) 6 mg/Kg and Albendazole 400 mg to all inhabitants of filariasis endemic areas excluding children <2 years, pregnant women and seriously ill patients is the recommended strategy for elimination of LF. The mass drug administration (MDA) campaigns are carried out by the Health Departments through door to door distribution of DEC and Albendazole tablets by drug distributing teams. The objective of this study was to evaluate the coverage, compliance, effective coverage and coverage compliance gap of MDA campaigns in Gulbarga and Yadgiri districts during the 10<sup>th</sup> and 11<sup>th</sup> MDA campaigns respectively.

**Methods:** Cross sectional population based house to house visit. Outcomes were assessed as actual coverage, compliance and effective coverage in percentages and proportions.

**Results:** 320 households from 8 clusters in 2 districts were covered. Among the 1653 eligible population the coverage rate is 93.42% in Gulbarga and 74.12% in Yadgiri district with inter cluster variation. The compliance rate is 86.35% in Gulbarga and 75.78% in Yadgiri district. The effective coverage rate is 80.67% in Gulbarga district and 56.17% in Yadgiri district. The coverage compliance gap is 13.65% in Gulbarga district and 24.22% in Yadgiri district.

**Conclusions:** The effective coverage in both Gulbarga and Yadgiri districts is below the target (<85%) which is essential for progression towards elimination of LF. Side effects after drug consumption were minimal.

**Keywords:** Lymphatic filariasis, Mass drug administration, Coverage, Compliance, DEC

## INTRODUCTION

Worldwide 1.3 billion people are at risk of lymphatic filariasis (LF) infection and about 120 million people are affected in 83 countries.<sup>2</sup> Following the World Health Assembly resolution on Elimination of LF as a public health problem by the year 2020, a Global Programme to Eliminate Lymphatic Filariasis (GPELF) was launched in 1999 to help endemic countries initiate national programs.<sup>3,4</sup> The global strategy to interrupt transmission

of LF, is a once-yearly, single-dose, two-drug regimen (Albendazole with either Diethylcarbamazine (DEC) or Ivermectin) to be used by communities at risk with the goal of reaching 80% coverage for 4–6 years. The endemic areas in South East Asia region including India constitute about 64% of the Global burden. In India, filariasis cases have been reported from about 250 districts in 20 states and union territories. The Government of India (GOI) in 2004 began a nationwide MDA programme in all the known LF endemic districts

with an annual single dose of DEC + Albendazole with the aim of eliminating filariasis as a public health problem by the year 2015. Nine districts of Karnataka are identified as lymphatic filariasis endemic regions. MDA is being conducted with the objective to eliminate Lymphatic Filariasis, by 2015 (as per National Health Policy) by distributing the population annually with DEC and Albendazole tablets in the endemic districts of the state.<sup>1</sup>

## METHODS

Every year MDA campaigns are conducted in endemic districts. The present study was community based cross sectional study conducted during the month of August 2014 in Gulbarga district and February 2105 in Yadgiri district by the team from community medicine department. In Gulbarga district DEC and Albendazole tablets were distributed by drug distributors on fixed day and next two days for mopping-up to cover the absentees on fixed day whereas in Yadgiri district the door to door distribution of DEC and Albendazole tablets by drug distributors was carried out for a period of one week. Selection of clusters for evaluation: The process of selecting clusters for evaluation was aimed at identifying one urban cluster and three rural clusters in each district. Primary Health Canters of entire districts were classified as low (<50% coverage), medium (50 – 80% coverage) and high (> 80% coverage) on the basis of drug distribution coverage. One sub-centre area was selected randomly from each PHC area. One village was selected randomly from each sub-centre area, wherein the data collection was conducted. One ward from the urban area was selected randomly. This served as the data collection unit for urban area. 30 households from each cluster were covered and information pertaining to all inmates of the household was collected.<sup>1</sup> Total of 240 households were covered in both districts.

**Table 2: Eligible population, coverage rate, compliance rate, effective coverage and coverage compliance gap in Gulbarga and Yadgiri districts.**

District	Eligible Population	DEC+Alb given by Drug Distributor (Coverage Rate)	DEC+Alb Consumed (Compliance Rate)	Effective Coverage Rate	Coverage Compliance Gap
<b>Gulbarga</b>	745	696 (93.42%)	601 (86.35%)	80.67%	13.65%
<b>Yadgiri</b>	908	673 (74.12%)	510 (75.78%)	56.17%	24.22%
<b>Total</b>	1653	1369 (82.82%)	1111 (81.15%)	68.42%	18.94%

The compliance rate (Proportion of consumption of tablets out of those received tablets) was 86.35% in Gulbarga district and 75.78% in Yadgiri district.

The effective coverage rate (Proportion of eligible population actually consumed tablets) was 80.67% in Gulbarga district and 56.17% in Yadgiri district.

## RESULTS

From the six rural and two urban clusters, the total population covered was 1750 of which eligible population in Gulbarga district was 745 and in Yadgiri district it was 908. In the study population non eligible population i.e., children <2 years, pregnant women and seriously ill was 6.54% in Gulbarga district and 4.96% in Yadgiri district. Among the eligible population, 50.07% were males and 49.93% were females in Gulbarga and 50.55% were males and 49.45% were females in Yadgiri. In this study among the eligible population, major bulk was constituted by the age group of 15-60 years in both districts.

### Coverage, Compliance and Effective Coverage:

Among the 1653 eligible population, 93.42% in Gulbarga district and 74.12% in Yadgiri district received DEC and Albendazole tablets from drug distributors.

**Table 1: Demographic characteristics of the eligible population in Gulbarga and Yadgiri districts.**

Age group (Years)	Gulbarga District		Yadgiri District	
	Male (%)	Female (%)	Male (%)	Female (%)
<b>2 to 5</b>	28 (7.51)	27 (7.26)	34 (7.41)	35 (7.80)
<b>6 to 14</b>	75 (20.11)	83 (22.31)	102 (22.22)	99 (22.05)
<b>15 to 60</b>	251 (67.29)	242 (65.05)	279 (60.78)	277 (61.69)
<b>&gt; 60</b>	19 (5.09)	20 (5.38)	44 (9.59)	38 (8.46)
<b>Total</b>	<b>373 (50.07)</b>	<b>372 (49.93)</b>	<b>459 (50.55)</b>	<b>449 (49.45)</b>

The coverage compliance gap (Proportion of those who received tablets but did not consume it) was 13.65% in Gulbarga district and 24.22% in Yadgiri district.

## DISCUSSION

Massive efforts have been taken by the national and state governments along with World Health Organization

(WHO), towards elimination of LF in India as a public health problem. In a country like India, annual MDA is an economic option.<sup>5</sup> The twin pillars of LF elimination strategy are a) Transmission control b) Disability Prevention and Management. For transmission control the recommended approach is supervised mass drug administration by door to door visit preferably on a single day with two-day mopping up operations, instead of mere distribution of drugs.<sup>1</sup> However studies have shown that the main limitation in this program is a comparatively poor coverage of drug distribution and consumption in urban areas.<sup>6,7</sup> The rate of coverage and consumption is the most crucial factor in the success of MDA program and this is to a large extent dependent on the type of personnel involved in drug distribution.

In this study the coverage rate was 93.42% in Gulbarga district and 74.12% in Yadgiri district. In a similar studies Ranganath TS et al coverage was 78% in Bidar,<sup>8</sup> Babu BV et al it was 77% in East Godavari,<sup>9</sup> Kumar P et al the coverage rate ranged from 70.8% to 99.6% in Gujarat.<sup>10</sup> and Kumar A et al coverage rate was 73.4% in Udupi.<sup>11</sup>

The various reasons for non-coverage of eligible population were locked house at the time of drug distributor visit and drug distributing team did not visit were major in Gulbarga district compared to family members absent during the drug distributing team visit. In similar studies by Kumar P et al in Gujarat found the common reasons for non-coverage were DD did not visit, DD did not give drug, houses were locked or people were not available and non-receipt of drug due to misclassification.<sup>10</sup>

In this study the compliance rate is 86.35% in Gulbarga district and 75.78% in Yadgiri district. In similar studies compliances recorded were 78% Ranganath TS et al<sup>8</sup>, 89% Kumar P et al<sup>10</sup> and 85.6% Kumar A et al.<sup>11</sup> Among the 258 non-compliant individuals, various reasons were afraid of side effects, Forgot to take the drugs and refused for no reason were major reasons in both Gulbarga and Yadgiri districts. In similar studies the various reasons for non-compliance were by Kumar P et al refusal without any reason, fear of side effects, either forgot to take or misplaced the drug,<sup>10</sup> Ranganath TS et al fear of reactions, this is not for me or healthy, forgotten.<sup>8</sup> Kumar A et al fear of side-effects, did not consume for the reason of failure to deliver the drugs.<sup>11</sup> In the programme DEC is available in 100 mg strength tablets and it should be swallowed as one, two and three tablets for age group 2-5 years, 6-14 years and >15 years respectively. Albendazole is available in 400 mg strength tablet and single tablet is swallowed irrespective of age. In order to interrupt transmission of LF in endemic countries, GPELF recommends the mass administration of effective anti-filarial medicines to the entire population at risk for a sufficient period of time.<sup>1,2</sup>

The objective of MDA is to reduce the level of microfilaraemia in infected individuals so that transmission cannot be sustained, even after MDA has been stopped. In this way, transmission is interrupted. The effectiveness of MDA in reducing the prevalence and density of microfilaria in the blood is directly related to the proportion of the population that ingests the medicines every year.<sup>12</sup> Hence once yearly MDA is an economical way towards elimination of LF. But mere distribution of anti-filarial drugs is not the end; importance should be given to enhancing the compliance and effective coverage.

The coverage compliance gap in this study is 13.65% in Gulbarga district and 24.22% in Yadgiri district. In similar studies by Kumar P et al found coverage compliance gap ranged from 1% to 27.6% in various districts of Gujarat state. Ideally coverage compliance gap should be zero and every effort should be made by Health Department to achieve it.

## CONCLUSION

Effective coverage rate is the end product of coverage by the Health Department and compliance (DEC+ Albendazole tablets consumption) by the community. In order to achieve the elimination of lymphatic filariasis through successive MDA campaigns the effective coverage of eligible population should be more than 85% and in this evaluation study the overall effective coverage is 80.67% in Gulbarga district and 56.17% in Yadgiri district. Low effective coverage indicates inadequate coverage of eligible population and the failure of awareness among the people.

The present study and similar studies in the past have shown that elimination of LF is through successful MDA rounds with effective coverage of eligible population should be more than 85%. Hence every effort should be made to achieve it so that LF ceases to be a public health problem by 2020.

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## REFERENCES

1. Government of India. Operational guidelines on elimination of lymphatic filariasis. 2005, Directorate NVBDCP, 22 Shamnath Marg, Delhi 110054.
2. World Health organization: Global Program to Eliminate Lymphatic Filariasis. *Wkly Epidemiol Rec* 2006, 81(22):221-32.
3. Molyneux DH, Zagaria N. Lymphatic filariasis elimination: progress in global program development. *Ann Trop Med Parasitol* 2002, 96(Suppl 2):S15-40.
4. WHO: Lymphatic filariasis: progress of disability prevention activities. *Weekly epidemiological record* 2004, 79:417-24.
5. Krishnamoorthy K, Ramu K, Srividya A, Appavoo NC, Saxena NB, Lal S, Das PK. Cost of annual mass single dose DEC distribution for the large scale control of lymphatic filariasis in Cuddalore district, India. *Indian J Med Res.* 2000;111:81-9.
6. Ramaiah KD, Das PK, Appavoo NC, Ramu K, Augustin DJ, Vijay Kumar KN, Chandrakala AV. A program to eliminate lymphatic filariasis in Tamil Nadu state, India: compliance with annual single dose mass treatment and some related operational aspects. *Trop Med Int Health.* 2000;5:842-7.
7. Babu BV, Kar SK. Coverage, compliance and some operational issues of mass drug administration during the program to eliminate lymphatic filariasis in Orissa, India. *Trop Med Int Health.* 2004;9:702-9.
8. Ranganath TS, Reddy NR. Elimination of Lymphatic Filariasis: Mass Drug Administration in Endemic Areas of (Bidar District) Karnataka-2008. *Indian J Community Med* 2012;37:219-22.
9. Babu BV, Satyanarayana K. Factors responsible for coverage and compliance in mass drug administration during the programme to eliminate lymphatic filariasis in the East Godavari district, South India. *Trop Doct* 2003;33:79-82.
10. Kumar P, Prajapati P, Saxena D, Kavishwar AB, Kurian G. An evaluation of coverage and compliance of mass drug administration 2006 for elimination of lymphatic filariasis in endemic areas of Gujarat. *Indian J Community Med* 2008;33:38-42.
11. Kumar A, Kumar P, Nagaraj K, Nayak D, Ashok L, Ashok K. A study on coverage and compliance of mass drug administration programme for elimination of filariasis in Udupi district, Karnataka, India. *J Vector Borne Dis* 2009;46:237-40.
12. Michael E, Mwele N, Paul E, Erling M, Guy Barker, Anil Kumar, James W Mathematical modeling and the control of lymphatic filariasis. *Lancet* 2004;4:223-34.

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