

## Original Research Article

# Evaluation of coverage of mass drug administration programme conducted in Nalgonda district of Telangana state

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## ABSTRACT

**Background:** Lymphatic filariasis has been a major public health problem in India. Government of India during 2004 initiated Mass Drug Administration (MDA) with annual single dose of DEC tablets to all the population living at the risk of filariasis. Nalgonda is endemic district where MDA programme is undertaken every year to eliminate lymphatic filariasis. The present study was undertaken to evaluate the coverage and compliance rates of the MDA programme conducted during January 2018.

**Methods:** The guidelines of National Vector Borne Disease Control Programme (NVBDCP) were used to select a total of 129 households from four clusters (three rural and one urban). Each household was visited by a team and data was recorded on pre-structured questionnaire available in operational guidelines manual of NVBDCP. Data analyzed by SPSS version 22.

**Results:** Total of 129 households were included in the study, Among the 523 study population, only 494 were eligible population to receive MDA. Current study shows that coverage rate was 79.84% and compliance rate was 84.6%. Fear of side effects was most common reason for noncompliance.

**Conclusions:** Efforts should be made to improve coverage rates by involving more human resources, supervision and incentives. Though compliance rates were higher than required there is need to maintain these rates by IEC activities and community participation.

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

## INTRODUCTION

Lymphatic filariasis, commonly known as elephantiasis, is a neglected tropical disease and a major public health problem in India next only to malaria. The disease was recorded in India as early as 6th century BC by the famous Indian physician, Susruta in his book 'SusrutaSamhita'.<sup>1</sup> WHO estimates that currently, more than 1.3 billion people in 81 countries are at risk. Approximately 65% of those infected live in the WHO South-East Asia region. Since the prevalence and

intensity of infection are linked to poverty, its elimination can contribute to achieving the United Nations Millennium Development Goal.

In 2000, WHO established the Global Programme to Eliminate Lymphatic Filariasis (GPELF) to assist Member States in achieving this goal by 2020. The global programme includes 2 main components: First interrupting transmission of the parasite that causes lymphatic filariasis by using mass drug administration to deliver annual treatment to all people living in endemic

areas that are at risk of the disease; and second managing morbidity and preventing disability among people who have already been affected by the disease.<sup>2</sup>

The National Health Policy 2002 aims at elimination of lymphatic filariasis by 2015. The strategy for achieving the goal of elimination is by Annual Mass Drug Administration of DEC for 5 years or more to the population excluding children below two years, pregnant women and seriously ill persons in affected areas to interrupt transmission of disease.<sup>3</sup> Mass drug administration of diethyl carbamazine and albendazole was undertaken in 16 districts of Andhra Pradesh on 9th, 10th and 11th December 2011.<sup>4,6</sup>

Elimination of LF means that LF ceases to be a public health problem as defined by the number of microfilaria carriers being less than one percent and the children born after initiation of ELF free from circulating antigenaemia. To achieve this goal the National Task Force recommended the strategy with two major thrust areas;

(a) Transmission control by administration of annual single dose of anti-filarial drugs i.e. diethylcarbamazine (DEC) and albendazole called mass drug administration (MDA), and (b) Disability prevention and management of individuals who already suffer from the disease. The concept of MDA is to approach every individual in the endemic districts and administer anti-filarial drugs once every year. As the longevity of adult worms is approximately 5 years, repetition of annual dose for at least 5 years with minimum 85% effective compliance should achieve the objective.<sup>7</sup>

As of 2016, preventive chemotherapy (PC) to eliminate the transmission of LF infection was considered required in 53 out of 72 endemic countries. Due to the tremendous efforts of national programmes, more than 6.7 billion treatments have been delivered worldwide in 64 countries since the GPELF was launched in 2000. Twenty countries have reduced infection prevalence to levels at which transmission is assumed not to be sustainable. Nine of these countries have now been acknowledged as achieving the elimination of LF as a public health problem.

The total population in all implementation units (IUs) in a given country with evidence of more than 1% infection prevalence is considered to require PC. Globally, in 2016 the total population of such IUs is 856.4 million and declining as more and more IUs undergo and successfully pass the WHO recommended transmission assessment survey (TAS).<sup>8</sup>

It has been observed in the past that actual drug consumption was lower than the reported coverage.<sup>4,6</sup> The present study was undertaken to study the coverage and compliance rates, and identify reasons for noncompliance during the annual MDA conducted during February 2018.

## METHODS

Annual MDA was undertaken in Nalgonda district on 28th, 29th and 30th January 2018. As per the directions, house to house visits were made by drug distributors (DDs), and DEC and albendazole was administered to the eligible population. Children under 2 years, pregnant women and severely ill persons were excluded from the MDA programme. The DDs were instructed to persuade the eligible population to consume tablets on the spot and avoid taking tablet on empty stomach. The DDs were provided with a note book to keep record of name of head of the family, number of tablets given and reason for not accepting the tablets.

The present study for evaluation of MDA was carried out by the study team within a month after the MDA activity. The evaluation was conducted as per NVBDCP guidelines i.e. by selecting four clusters; three from the rural and one from urban area (each cluster having at least 30 households).

The clusters were selected by two stage random sampling. In first stage Primary Health Centres/ Urban Health Centre were selected, while second stage was undertaken to select the village in rural areas, and ward in urban area within the jurisdiction of selected PHC/UHC. In each cluster, the households were selected by systematic sampling.

Data was collected by four teams, each team consisting of a faculty of Department of Community Medicine, one post graduate, and two interns. Information was obtained from one individual, preferably head of the family and recorded on structured questionnaire as per NVBDCP operational manual 5. Data was compiled and analyzed using SPSS statistical package version 22.

## RESULTS

It was observed that majority of the study population belongs to greater than 14 years of age group (78.2%) followed by 5 to 14 years (15.1%), 2-5 years (5.73%) and less than 2 years of age (0.95%) (Table 1).

Total of 129 households were included in the study, Among the 523 study population, only 494 (94.45%) were eligible population to receive MDA (Table 2).

Number of families visited by the drug distributor was 103 (79.84%) out of 129. It was observed that 418 (84.6%) out of 494 eligible individuals received the drugs (Table 3 and 4).

It was observed that 395 (94.49%) individuals out of 418 who received the DEC consumed the medicine in full dosage. Similarly, it was observed that 406 (97.12%) individuals out of 418 who received Albendazole consumed the medicine (Table 5 and 6).

The reasons for non-compliance were found to be fear of side effects (30.44%), forgot to take drug after food (30.44%), chronic conditions like HTN (21.73%) and benefit of taking medication not informed (17.39%) (Table 7).

Effective compliance rate of the drugs distributed in MDA (i.e. the number and percentage of eligible

population who consumed the drug) was found to be 79.95% (Table 8).

The side effects due to medication were reported in 0.5% of the individuals who ingested the drugs. Dizziness was the only side effect reported which was mild in nature and the individuals recovered fully without any medication (Table 9).

**Table 1: Distribution of population as per age (n=523).**

Age	Cluster A (Rural)	Cluster B (Rural)	Cluster C (Rural)	Cluster D (Rural)	Total	Percentage (%)
<2	2	1	2	0	5	0.95
2-5	13	12	3	2	30	5.73
5-14	20	22	25	12	79	15.1
>14	101	113	96	99	409	78.2
<b>Total</b>	<b>136</b>	<b>148</b>	<b>126</b>	<b>113</b>	<b>523</b>	<b>100.0</b>

**Table 2: Eligible population in each cluster (n=523).**

Cluster	No. of houses surveyed	Total population	Eligible population	%Eligible population
<b>Cluster A (Rural)</b>	31	136	123	90.4
<b>Cluster B (Rural)</b>	31	148	147	99.3
<b>Cluster C (Rural)</b>	35	126	116	92.06
<b>Cluster D (Rural)</b>	32	113	108	95.6
<b>Total</b>	<b>129</b>	<b>523</b>	<b>494</b>	<b>94.45</b>

**Table 3: Number of houses covered by drug distributor (n=129).**

Name of Cluster	No of houses surveyed	No of families covered by DD (%)	Percentage of houses covered (%)
<b>Cluster A (Rural)</b>	31	27	87.09
<b>Cluster B (Rural)</b>	31	19	61.29
<b>Cluster C (Rural)</b>	35	30	85.71
<b>Cluster D (Rural)</b>	32	27	84.37
<b>Total</b>	<b>129</b>	<b>103</b>	<b>79.84</b>

**Table 4: Drug coverage (DEC and albendazole) in each cluster (n=494).**

Cluster	Eligible population	Drug coverage	% coverage of DEC
<b>Cluster A (Rural)</b>	123	118	95.3
<b>Cluster B (Rural)</b>	147	91	61.9
<b>Cluster C (Rural)</b>	116	111	95.6
<b>Cluster D (Rural)</b>	108	98	90.7
<b>Total</b>	<b>494</b>	<b>418</b>	<b>84.6</b>

**Table 5: Compliance rate for DEC in each cluster (n=418).**

Cluster	Drug Coverage DEC	Drug compliance full dose DEC	Drug compliance partial DEC	Percentage compliance (%)
<b>Cluster A (Rural)</b>	118	118	NIL	100
<b>Cluster B (Rural)</b>	91	91	NIL	100
<b>Cluster C (Rural)</b>	111	100	NIL	90.09
<b>Cluster D (Rural)</b>	98	86	NIL	87.75
<b>Total</b>	<b>418</b>	<b>395 (94.49%)</b>	<b>0(0%)</b>	<b>94.49</b>

**Table 6: Compliance rate for albendazole in each cluster (n=418).**

Cluster	Drug coverage albendazole	Drug compliance full dose albendazole	Percentage albendazole (%)
Cluster A (Rural)	118	118	100
Cluster B (Rural)	91	91	100
Cluster C (Rural)	111	111	100
Cluster D (Rural)	98	86	87.75
Total	418	406	97.12

**Table 7: Reasons for non compliance among those who received the drugs (n=23).**

Reason	Number	Percentage (%)
Fear of side effects	7	30.44
Forgot to take tablets after food	7	30.44
Chronic conditions like HTN	5	21.73
Benefit of taking medication not informed	4	17.39
Total	23	100.00

**Table 8: Coverage and effective compliance of MDA (n=418).**

Cluster	Eligible population (a)	Population covered (b)	Population complied (c)	Effective compliance rate (% complied out of eligible) (c/a×100)
Cluster A (Rural)	123	118	118	95.93
Cluster B (Rural)	147	91	91	61.90
Cluster C (Rural)	116	111	100	86.20
Cluster D (Rural)	108	98	86	79.62
Total	494	418	395	79.95

**Table 9: Side Effects (n=395).**

Cluster	Compliance	No of cases with side effect
Cluster A (Rural)	118	1
Cluster B (Rural)	91	Nil
Cluster C (Rural)	100	Nil
Cluster D (Rural)	86	1
Total	395	2 (0.5%)

## DISCUSSION

### Coverage of MDA

As mentioned earlier, a compliance rate of 85% or more in the target population in endemic districts is considered essential for eliminating LF.<sup>7</sup> Obviously, this means that a much higher coverage rate should be achieved so that those who do not comply due to any reason are discounted, and the overall compliance rate remains above 85%. The present study revealed that the coverage rate was 84.6% which itself is slightly below the expected compliance rate of 85%. MDA coverage in state of Andhra Pradesh as reported by Directorate General of Health Services since 2007 has been between 89.13-93.30%.<sup>9</sup> In a study conducted in Nalgonda district after MDA activities in 2010 reported a coverage rate of 46.2% while, Nirgude et al reported a coverage rate of 79.70% in the same district after MDA programme

during 2011.<sup>10,11</sup> Higher coverage rate was seen in the study conducted by Malhotra et al as 85.05% of those who received DEC took the drug in full dosage and 86.07% of those who received albendazole took the drug.<sup>12</sup> In the study by Prasad et al it was seen that coverage rate among study population was 84.05%.<sup>13</sup> Similar low coverage was observed in the Jothula et al study which showed coverage rate of 73.29%.<sup>14</sup>

### Compliance rate

Although the coverage is direct reflection of programme management, the compliance rates are more intimately related to IEC activities and community involvement. The present study showed that the compliance rates for both DEC (94.49%) and albendazole (97.12%) among those who were covered was above 85%. In comparison, the study by Nirgude et al detected a much lower compliance rate of 43.04% after MDA activities during

2011 in the same district.<sup>11</sup> This reflects an improving trend in compliance rates and a positive sign towards programme success. In a study conducted in Thiruvanthapuram district of Kerala by Nujum during 2007 reported a low compliance rate of 39.5%, while a study by Ghosh conducted to evaluate the MDA programme conducted during 2012 in Bankura district of W Bengal detected an effective compliance rate of 93.7%.<sup>15,16</sup> In the studies by Prasad et al and Jothula et al showed that the compliance rates for both DEC and albendazole among those who were covered was above 76.39% and 72.05% respectively which were less than the current study results.<sup>13,14</sup>

### Reasons for non-compliance

In any mass drug administration programme, perceived side effects are important for programme success. In the present study fear of side effects (30.44%) and forgot to take tablets after food (30.44%) were the commonest cause of non-compliance. Other reasons were chronic conditions like HTN (21.73%) and benefit of taking medication not informed (17.39%). All these reasons can be tackled by improving the Information Education Communication (IEC) activities prior to MDA programme so that the target population were well aware of benefit and safety of the programme. Tablet albendazole is a 400 mg tablet, and many children are unable to swallow the tablet. It may be worthwhile to introduce a liquid preparation for children below 5 years of age. Various studies conducted earlier in India have also reported 'fear of side effects' as an important reason for noncompliance.<sup>10,11,15-17</sup> Fear of side effects was the commonest cause of non-compliance in studies done by Malhotra et al (25%), Prasad et al (46.08%) and in Jothula et al (76.47%).<sup>12-14</sup>

### Side effects

Dizziness was only side effect (0.5%) and minimal and mild and did not require any treatment. Other studies in India have also reported a low incidence of side effects.<sup>16,18</sup> This reflects the safety of the drugs, and deserves to be highlighted during IEC activities prior to MDA every year to augment compliance rate. In the study conducted by Malhotra et al it was seen that the side effects were rare and developed by only 5 (1.35%) individuals.<sup>12</sup> Prasad et al showed that side effects were minimal (1.81%) and did not require any treatment.<sup>13</sup> Jothula et al also showed similar results with 1.14% of study population with side effects.<sup>14</sup>

### CONCLUSION

Current study showed that coverage rate was 84.6%, compliance rate was 94.49% and effective compliance rate was 79.95%. Fear of side effects and forgot to take drugs were the most common reasons for noncompliance. Dizziness was the only side effect reported in the study. Coverage rate is slightly less than the 85% which is

required for eliminating lymphatic filariasis. Efforts should be made to improve coverage rates by involving more human resources, supervision and incentives.

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