

Original Research Article

# An Operational Research on Annual Mass Drug Administration (MDA) For Elimination of Lymphatic Filariasis in Medak District, Telangana

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## Abstract

**Background:** Lymphatic filariasis caused by nematode parasite is a public health problem in India. Filariasis in man manifests as acute and chronic lymphangitis, elephantiasis of genitalia arms, legs, hydrocele in males and lymphadenitis. The Government of India incorporated initial National Filariasis Control Programme under the National Vector Borne Disease Control Program (NVBDCP) with a goal of eliminating the disease as Public Health Problem by targeted date of year 2016.

**Aim:** Aim of the study was to test the hypothesis that reducing “MICRO FILARIAEMIA” in humans to <1% will stop transmission by mass administration of two drug for more than 5 Annual rounds with 65% coverage of total population.

**Materials and methods:** The study was retrospective prospective analytical study from 2010 to 2014 (from coverage evaluation reports) of Medak dist. There is need to enhance community participation to cover more than 65% of total population for future 5 years.

**Results:** The distribution of the drugs was carried to 68% of rural population and 18% of urban population. The effectiveness was only 57.7% of rural and 16% of urban population. The drug

compliance was 81% in rural and 87% in urban respectively. The coverage of the population for MDA by using DEC plus Albendazole tabs was 74.7% and 15.3% in rural and urban areas of Medak district respectively. But the actual effectiveness was observed 68% in rural and 15.3 % of urban population. However the drug compliance was found 91% of total population. 79.3% of respondents were aware of MDA through banners / posters only. All other available Medias were found to be non-functional.

**Conclusion:** MDA coverage was more in rural population in comparison with urban population. Major reasons for noncompliance having some underlying disease (40%), fear of side effects (18%) which can be overcome by intensification of IEC activities. In order to achieve the goal of elimination of lymphatic filariasis there is need to intensify IEC activities about modes of transmission and methods of prevention at community levels by all modes of communication so as to increase the coverage with drugs.

### **Key words**

Lymphatic Filariasis, Drug compliance, Drug consumption, Mass drug administration.

### **Introduction**

Lymphatic Filariasis in humans is caused by Microfilaria of Nematode parasitic worms such as *W. Bancroft*, *B. Malayi* and *B-Timori* through mosquito bites such as *Culex*, *Aedes*, and *Mansonia*. Adult worms live in lymphatic vessels and female worms release 50,000 microfilariae every day into the peripheral blood circulation [1]. Man with one microfilaria in 40 ml of blood is infective to 2.6% mosquitoes which feed on him [2-4]. Filariasis in man manifests as acute and chronic lymphangitis, lymphadenitis and elephantiasis of genitalia, arms, legs, breasts in females, hydrocele in males. It may also manifest as filarial arthritis, deformity and disability.

In the world of present 1.3 billion in 83 countries are at risk of getting infection. 15 million suffer from Lymphedema and 25 million from Hydrocele [2]. In India, an estimate of 600 million people are at risk of L.F in 250 endemic districts. In 2010, the morbidity survey revealed that 8 lakh cases of Lymphedema and 4 lakh cases of Hydrocele are present in the country [3]. The Government of India incorporated initial National Filaria Control Programme under National Vector Borne Disease Control Programme (NVBDCP) with a goal of

eliminating the disease as Public Health Problem by targeted date of year 2016.

This study aimed to test the Hypothesis that reducing "MICRO FILARIAEMIA" in humans to <1% will stop transmission by mass administration of two drugs for more than 5 Annual rounds with 65% coverage of total population.

### **Materials and methods**

The present retrospective analytical study was conducted in Department of Social and Preventive Medicine, MNR Medical College and Hospital, Sangareddy, Medak during 2010 to 2014. Techniques to select 3 rural clusters and one urban cluster each cluster covering 40 Households amounting to 160 Households each year. The present study was carried out to meet the objectives of study by tabulating, compiling and analyzing the coverage evaluation reports of 5 years. Necessary statistical tests are applied to draw the conclusion.

### **Results**

The distribution of the drugs was carried to 68% of rural population and 18% of urban population. The effectiveness was only 57.7% of rural and 16% of urban population. The drug compliance

was 81% in rural and 87% in urban respectively (**Table – 1**).

The coverage of the population for MDA by using DEC plus Albendazole tabs was 74.7% and 15.3% in rural and urban areas of Medak district respectively. But the actual effectiveness was observed 68% in rural and 15.3 % of urban population. However the drug compliance was found 91% of total population (**Table – 2**).

Coverage of population in rural areas under MDA was to be 69% and 24% in the rural and urban areas respectively in Medak district. After

having received the tablets from drug distributor the actual consumption of drugs was observed in 64% and 22% of rural and urban population respectively. The drug compliance was found to be 91 % and 83 % in rural and urban areas respectively (**Table – 3**).

65% of total population in rural clusters and 45% in the urban clusters was covered by drugs by drug distributors. 59% of rural and 33% of urban population had the benefit of protection against lymphatic filariasis in the total population of urban and rural areas respectively (**Table – 4**).

**Table – 1:** Performance of MDA programme 2010 in Medak district.

| Total population surveyed             | Rural         | Urban      | Total       |
|---------------------------------------|---------------|------------|-------------|
| Received drugs (coverage)             | 450/657= 68%  | 32/176=18% | 482/833=57% |
| Consumed drugs (protected population) | 366/657=55.7% | 28/176=16% | 394/833=47% |
| Drug compliance                       | 366/450=81%   | 28/32=87%  | 394/482=82% |

**Table – 2:** Performance of MDA programme 2011 in Medak district.

|                                       | Rural              | Urban              | Total           |
|---------------------------------------|--------------------|--------------------|-----------------|
| Total population surveyed             | <b>419 (73.5%)</b> | <b>151 (26.5%)</b> | <b>570</b>      |
| Received drugs (coverage)             | 313/419(74.76%)    | 23/151 (15.3%)     | 336/570 (58.9%) |
| Consumed drugs (protected population) | 285/419= 68%       | 23/151= 15.3%      | 308/570 (54%)   |
| Drug compliance                       | 285/313(91%)       | 23/23 = 100%       | 308/336= 91%    |

**Table – 3:** Performance of MDA programme in 2012 in Medak district.

|                                       | Rural                | Urban                | Total          |
|---------------------------------------|----------------------|----------------------|----------------|
| Total population surveyed             | <b>600/780 (76%)</b> | <b>180/780 (24%)</b> | <b>780</b>     |
| Received drugs (coverage)             | 418/600 (69%)        | 48/180 (26%)         | 466/780 (59%)  |
| Consumed drugs (protected population) | 384/600 (64%)        | 40/180 (22%)         | 424/780 (54%)  |
| Drug compliance                       | 384/418 (91%)        | 40/48 (83%)          | 424/ 466 (83%) |

**Table – 4:** Performance of MDA programme 2013 in Medak district.

| Total population surveyed              | Rural                | Urban                | Total           |
|--|----------------------|----------------------|-----------------|
|  | <b>612/780 (78%)</b> | <b>168/780 (22%)</b> | <b>780</b>      |
| Received drugs (coverage)              | 403/612 (65%)        | 76/168 (45%)         | 479/780 (61%)   |
| Consumed drugs ( protected population) | 364/612 (59%)        | 57/ 168 (33%)        | 412 / 780 (53%) |
| Drug compliance                        | 364/403 (90%)        | 57/76 (75%)          | 421/479 (87%)   |

It is observed from above table that 72% of rural and 69 % of urban population received the drug from the drug distributors but the effectiveness was observed in 53% in both urban and rural clusters of the district however the drug compliance was 75% on average the district (Table – 5).

It is observed in the above table that out of 5 round of MDA in the district only one year effectiveness coverage was observed in rural areas and in all 5 rounds in the urban areas effectiveness coverage was much below the

target. Hence null hypothesis was accepted (Table – 6).

Underlying disease and fear of side effects were major reasons for non-consumption (Table – 7). Performance indicators of various health workers in MDA in 5 annual rounds were as per Table – 8. 79.3% of respondents were aware of MDA through banners / posters only. All other available Medias were found to be nonfunctional (Table – 9). There is improved drug compliance from 2010 study population to 2014 study population (Table – 10).

**Table – 5:** Performance of MDA programme 2014 in Medak district.

| Total population surveyed             | Rural           | Urban            | Total           |
|---------------------------------------|-----------------|------------------|-----------------|
|                                       | 538/773(69.5%)  | 235/773 (309.5%) | 773             |
| Received drugs (coverage)             | 389/538 (72%)   | 160/235 (69%)    | 549/773 (71%)   |
| Consumed drugs (protected population) | 288/538 (53.5%) | 124/235 (53%)    | 412 / 773 (53%) |
| Drug compliance                       | 288/389 (74%)   | 124/160 (77.5%)  | 412/549 (75%)   |

**Table – 6:** Consolidated report of performance under MDA from 2010 – 2014 in Medak district.

|   | 2010  | 2011  | 2012 | 2013 | 2014  |
|---|-------|-------|------|------|-------|
| Effectiveness of MDA with DEC plus Albendazole out of total population in rural areas | 55.7% | 68%   | 64%  | 59%  | 53.5% |
| In urban areas  | 16%   | 15.3% | 22%  | 33%  | 53%   |

## 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 [5-9] and the existing health care system is capable of operating the program. However studies have shown that the main limitation in this program is a comparatively poor coverage of drug distribution and consumption in urban areas [7]. 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. Programs based on community

health workers have been successfully employed to address several health problems throughout the world [10].

In our study drug compliance was promoted by 80% by AWW and ASHA, Which is similar to study done by Nandha, et al. [6] in which the role of AWWs in achieving more than 70% coverage of DEC drug distribution and more than 68% compliance in urban areas.

In this study, underlying disease and fear of side effects were major reasons for non-consumption. Similar findings were found in study done by Mohammad A Hussain in which, Out of all of them, the fear of side effects (77%) was the major cause for non-consumption [5].

**Table – 7:** Reasonable non-compliance by people who received drugs during 5 annual MDA rounds.

| Reasons  | No. | %   |
|--|-----|-----|
| Under treatment for some other disease           | 129 | 40  |
| Fear of side effects                             | 81  | 18  |
| Reservation on drug distributor                  | 111 | 24  |
| Patient thinking Not having lymphatic filariasis | 15  | 3.3 |
| Taste not good                                   | 5   | 1.1 |
| Pregnancy and lactating mothers                  | 12  | 2.6 |
| Forgot to take after food                        | 16  | 3.5 |
| Fasting  | 9   | 2   |
| Misbeliefs                                       | 18  | 4   |

In study done by Mohammad A Hussain Nearly 99% of the studied individuals in both rural and urban areas received DEC and ABZ during the

MDA campaign [5]. However, less than a third (28% in the rural areas and 31% in the urban areas) had consumed the distributed drugs. However, in our study of analysis of annual MDA coverage for 5 successive from 2010 to 2014 in Medak district of Telangana state the coverage of population with drugs fluctuating from 53 to 68% in rural areas and 16 to 53% in urban areas and consumption of the drugs was coming to average of 60% in rural areas and 34% in urban areas which is different from study done by Mohammad A Hussain. The higher rate of consumption in present study may be due to consistent motivation by drug distributors to consume the drugs in their presence and also involvement of ASHA workers, Anganwadi workers having good rapport with the community.

**Table – 8:** Performance indicators of various health workers in MDA in 5 annual rounds.

|                                  | Health staff | AWW/ ASHA | Community leaders |
|----------------------------------|--------------|-----------|-------------------|
| Information about purpose of MDA | 22%          | 77%       | 1%                |
| Drug compliance promoted by      | 10%          | 80%       | 10%               |
| Contraindications explained      | 20%          | 80%       | -                 |
| Side effects explained           | 20 %         | 80%       | -                 |
| Prior information about MDA      | 10%          | 90%       | -                 |

**Table – 9:** Role of IEC activities for enhanced drug consumption.

| Year of MDA | Banner/poster    | News paper | Advertisement | Hand bill | Mike | Dandora | Street play | TV radio |
|-------------|------------------|------------|---------------|-----------|------|---------|-------------|----------|
| 2010        | 113              | -          | -             | -         | -    | -       | -           | -        |
| 2011        | 111              | -          | -             | -         | -    | -       | -           | -        |
| 2012        | 120              | -          | -             | -         | -    | -       | -           | -        |
| 2013        | 141              | -          | -             | -         | -    | -       | -           | -        |
| 2014        | 150              | -          | -             | -         | -    | -       | -           | -        |
| Total       | 635 /800 (79.3%) |            |               |           |      |         |             |          |

**Table – 10:** Distribution of surveyed population with drug compliance.

| Year | Consumed drug | Not consumed drug | Total |
|------|---------------|-------------------|-------|
| 2010 | 366           | 84                | 450   |
| 2014 | 288           | 101               | 389   |

\*Chi square value – 6.464. \*P < 0.011

In study done by Nandha, et al. the coverage of drug distribution during the varied from 74.3 to 95.4 percent and consumption rate from 52.9 to 78.8 [6] which is nearer to findings in our study.

## Conclusion

MDA coverage was more in rural population in comparison with urban population. Major reasons for noncompliance having some underlying disease (40%), fear of side effects (18%) which can be overcome by intensification of IEC activities. In order to achieve the goal of elimination of lymphatic filariasis there is need to intensify IEC activities about modes of transmission and methods of prevention at community levels by all modes of communication so as to increase the coverage with drugs. The drug administrator should be given 1 week time so as to cover all the individuals and to explain dosage, side effects and precautions to be taken to prevent side effects. The programme should involve govt. private, office, market schools etc. so as to encourage people to take the drugs in presence of distributors. People suffering from disease should be involved in the programme. Community participation should be increased.

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