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Evaluation of mass drug administration programme for elimination of lymphatic filariasis in Nalgonda district, Telangana, India

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ABSTRACT

Background: Lymphatic filariasis is an important public health problem in India. Nalgonda district of Telangana is one of the endemic districts where Mass Drug Administration 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 December 2015.
Methods: The guidelines of National Vector Borne Disease Control Programme (NVBDCP) was used to select a total of 131 households from three villages and one urban ward using three stage random sampling. Each household was visited by a team and data was recorded on structured questionnaire. Data was compiled on Windows excel spreadsheet and analyzed using SPSS software version 21.
Results: The study population consisted of 523 individuals from 131 households, out of which 498 (95.21%) were eligible for mass drug administration. The study revealed that coverage rate, compliance rate and effective compliance rate were 73.29%, 72.05% and 52.81% respectively. Fear of side effects (76.47%) and being unaware of the benefits (21.56%) were the main reasons for non-compliance. Side effects were reported by only 1.14% of cases.
Conclusions: The study reveals that the programme managers at all levels must ensure the upgradation of coverage rates by involving more human resources, supervision and incentive linked to work-output and enhance compliance by intense information, education and communication activities.

Keywords: Coverage rate, Compliance rate, Effective compliance rate, Lymphatic filariasis, Mass drug administration, Nalgonda district

INTRODUCTION

Lymphatic Filariasis (LF) is infection with the filarial worms, *Wuchereria bancrofti*, *Brugiamalayi* or *B. timori*. These parasites are transmitted to humans through the bite of an infected mosquito and develop into adult worms in the lymphatic vessels, causing severe damage and swelling (lymphoedema). Elephantiasis which is a painful, disfiguring swelling of the legs and genital organs is a classic sign of late-stage disease.

Filariasis is a global problem. Currently 73 countries are considered endemic for filariasis.[1] World Health Organization (WHO) estimates that 120 million people in tropical and subtropical areas of the world are infected with LF. Of these, almost 25 million men have genital disease (most commonly hydrocoele) and almost 15 million, mostly women, have lymphoedema or elephantiasis of the leg. LF accounts for at least 2.8 million Disability Adjusted Life years (DALY).[2] Considering significant public health importance and in response to World Health Assembly Resolution 50.29, WHO launched its Global Programme to Eliminate Lymphatic Filariasis in 2000.[3] It is estimated that 600 million people residing in 250 endemic districts in 20 states of India are 'at risk' of infection. 8.27 lakh

lymphoedema and 3.76 lakh hydrocele cases were reported from LF endemic states/Union Territories of India.[4]

The National Health Policy (2002) has set the goal of elimination of lymphatic filariasis (ELF) in India by 2015. 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.[5] The concept of MDA is to approach every individual in the target community and administer annual single dose of anti-filarial drugs. This is to be repeated every year for a period of 5 years or more aiming at minimum 85 % actual drug compliance.[5] Hence, the quality of MDA programme in the community as measured by coverage and compliance rates is important for success of the elimination programme.

The present study was undertaken to study the coverage and compliance rates, and identify reasons for non-compliance during the annual MDA conducted during December 2015 in Nalgonda, an endemic district of Telangana.

METHODS

Annual MDA was undertaken in Nalgonda district on 14th, 15th and 16th December 2015. The present study for evaluation of MDA was carried out during January 2016. As per National Vector Borne Disease Control Programme (NVBDCP) guidelines, multi-stage random sampling was used to select households.[5] In first stage Primary Health Centers (PHCs) were selected, while second stage was undertaken to select three villages in rural areas, and one ward in urban areas falling within the jurisdiction of selected Primary Health Center's (PHC). The third stage was undertaken to randomly select households in identified villages.

A total of 131 households were included in the study. Information was obtained from one individual, preferably head of the family and recorded on structured questionnaire as per NVBDCP operational manual.[5] Data was collected by four teams, each consisting of a faculty of Department of Community Medicine, one post graduate, and two interns. Data was compiled on Windows spread sheet, and analyzed using SPSS statistical package version 21. Ethical approval of the Institutional Ethics Committee and informed consent of the head of family were obtained.

RESULTS

A total of 4 clusters (one urban and three rural) were studied. These covered 131 households (97 rural and 34 urban) and yielded a population of 523 (386 rural and 137 urban).

Age and gender distribution of the study population are shown in Table 1 and 2. As shown maximum population (77.40%) belonged to age group more than 14 years and only 3.3% of population was under 2 years of age. Table 2 reveals that majority (51.8%) of study population were males (Table 1) (Table 2).

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

Age	Cluster A (Rural)	Cluster B (Rural)	Cluster C (Rural)	Cluster D (Urban)	Total	Percentage
<2	03	02	05	07	17	3.3
2-5	11	08	03	07	29	5.5
5-14	20	19	11	22	72	13.8
>14	106	108	90	101	405	77.4
Total	140	137	109	137	523	100.0

As per guidelines, children below 2 years of the age, pregnant women and seriously ill patients are not eligible to receive MDA.[5]

Thus the eligible population in four study clusters was 498 (95.21%) (Column 'B' of Table 3). Out of these 365 (73.29%) had received the drugs (Column 'C'). Column 'D' shows that only 263 (72.05%) individuals consumed the drugs.

Thus, the effective compliance rate was 52.81% (95% CI 48.43-57.19). (Table 3).

Table 2: Distribution of population as per gender (n=523).

Cluster	Number of house holds	Male	Female	Total
A (Rural)	37	69	71	140
B (Rural)	30	75	62	137
C (Rural)	30	59	50	109
D (urban)	34	68	69	137
Total	131	271(51.8%)	252(48.2%)	523(100.0%)

Table 3: Coverage and compliance rates.

Cluster	No. of house holds	Population in the cluster (A)	Eligible population (%)* (B)	Coverage rate (%)** (C)	Compliance rate (%)*** (D)	Effective Compliance rate **** (D/B ×100)
A (Rural)	37	140	135 (96.42)	97 (71.85)	51 (52.57)	37.78%
B (Rural)	30	137	135 (98.54)	73 (54.07)	57 (78.08)	42.22%
C (Rural)	30	109	101 (92.66)	69 (68.31)	48 (69.56)	47.52%
D (Urban)	34	137	127 (92.70)	126 (99.21)	107 (84.92)	84.25%
Total	131	523	498 (95.21)	365 (73.29)	263 (72.05)	52.81% (95% CI 48.43-57.19)

*Eligible population (B): Total population excluding children <2 years, Pregnant women and seriously ill patients; Coverage rate (C): Percentage of individuals, out of eligible population provided MDA drugs by Drug Distributor (DD); Compliance rate (D): Percentage of individuals who ingested the drugs out of individuals provided with drugs; Effective compliance rate: Percentage of individuals who ingested drugs out of total eligible population.

Table 4: Reasons for non-compliance (n=102).

Reason	Number*	Percentage
Fear of side effects	78	76.47
Benefit of taking medication not informed	22	21.56
Forgot to take tablets after food	18	17.64
Difficult to give medicine to children 2-5 years	05	4.90

*Total exceeds n= 102 and 100% due to multiple responses.

Table 5: Side effects (n=263).

Cluster	Compliance	No of cases with side effects
A (Rural)	51	Nil
B (Rural)	57	Nil
C (Rural)	48	03
D (Urban)	107	Nil
Total	263	03 (1.14%)

Table 4 highlights the reasons for non-compliance i.e., non-ingestion of MDA drugs by those who were distributed drugs.

The most common reason for non-compliance was found to be fear of side effects (76.47%) followed by unaware of benefits (21.56%), forgot to take medicines (17.64%), and difficult to give medicine to young children (4.90%) (Table 4).

Three individuals (3.14%) developed side effects after MDA (Table 5).

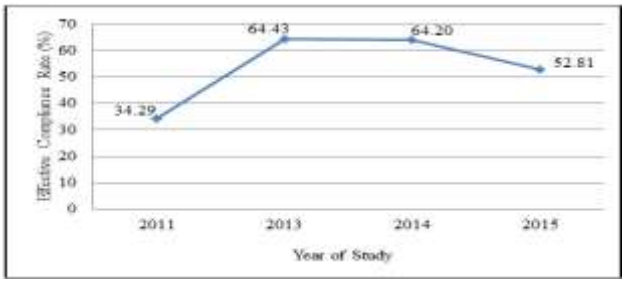

Figure 1: Effective compliance rates for both DEC and albendazole in MDA conducted in Nalgonda district since 2011.

DISCUSSION

Coverage of MDA

The concept of MDA is to approach every eligible individual in the target community and administer annual single dose of anti-filarial drugs (DEC+Albendazole). This annual dose is to be repeated every year for a period

of 5 years or more aiming at minimum 85% actual drug compliance. A high coverage (>85%) is essential to achieve the interruption of transmission and elimination of disease in India.[5] The present study revealed that the coverage rate among study population was 73.29%, which is very much below to the desired coverage rate. In a study conducted in Nalgonda district by Nirgude AS, et al, in 2011 reported a coverage rate of 79.70%, while Prasad VG, et al, reported a coverage rate of 84.05% in the same district during 2014**.**[6,7] In the present study coverage in urban cluster (99.21%) is higher than rural clusters (64.42%) which is similar to Prasad VG, et al[7] study, in which urban coverage was 94.96% and rural coverage was 80.76%.

Compliance rate

The present study showed that compliance rates for both DEC and Albendazole was 72.05%. Nirgude AS, et al reported much lower compliance rate of 43.04% in the same district. However Malhotra V, et al, (86.06%), Prasad VG (76.39%) reported compliance rates which were found to be higher than that of present study findings in the same district. In a study conducted by Purnamma R, et al, in Guntur district of Andhra Pradesh during 2014 reported a compliance rate of 92%.[6,8-10] Mishra A, et al, reported a compliance rate of 84.66% in their study conducted during 2013 in Rewa district, Madhya Pradesh.

Effective compliance rate

Though the compliance rate for both DEC and Albendazole was 72.05%, the effective compliance rate was only 52.81 (95% CI 48.43-57.19) in the present study. Nirgude AS, et al MalhotraV, et al, Prasad VG, et al, reported effective compliance rate of 34.29%, 64.43%, 64.20% in the same district.[6-8] Effective compliance rate couldn't reached the target of 85% in the district since 2011 which indicates the need for more focused attention in carrying out the MDA programme (Figure 1).

Reasons for non-compliance

In the present study, the most common reason for non-compliance was 'fear of side effects' (76.47%) followed by being unaware of benefits of medication (21.56%). The other reasons were 'forgot to take tablets after food (17.64%) and difficulty to give tablets to young children (4.90%). Prasad VG, et al, reported fear of side effects (46.08%) as the most common reason for non-compliance.[7] Similar observations were noted by Mishra A, et al, (34.69%) and Godale LB, et al, (45.38%)that the most frequent cause was fear of side effects. Hussain M, et al, reported that most common reason for noncompliance among the subjects received the drugs was 'unaware about the dose and reason for taking the drugs' (30.76%).[10-12] All these reasons can be tackled by improving the Information Education and Communication (IEC) activities prior to MDA programme so that the eligible population is well aware of benefits and safety of the programme

Side effects

In the present study side effects were reported by 3 (1.14%) individuals who consumed the drugs, which was similar to the findings of Prasad VG, et al, (1.81%), Roy RN, et al, (2.91%), Sinha N, et al, (5.7%).[7,13,14] Low incidence of side effects reflects the safety of the drugs, and deserves to be highlighted during IEC activates prior to MDA every year to augment compliance rate.

CONCLUSION

The present study reveals the coverage as 73.29%, compliance rates as 72.05% and effective compliance rate as 52.81% which are far less than the targets set for elimination of lymphatic filariasis in India. There is an urgent need for improved social mobilization and supervision to increase compliance with MDA. There are some recommendations which are listed here; 1) Effective drug delivery strategies need to be undertaken by involving community leaders, school teachers and mahila mandals. 2) One Drug Distributor (DD) should not be given more than 50 households per day as part of house to house activity so that he/she gets sufficient time to explain the benefits, safety of the medicines, as well as persuasion regarding consumption of tablets on the spot. 3) Monitoring and supportive supervision by Medical Officer of concerned PHC or Community health centre and male and female health assistant of MDA activities should be done to ensure complete coverage. 4) Training programme for Medical Officers and health workers (DDs) involved in MDA should emphasize more on how to address the fear of side effects among beneficiaries and benefits of the MDA programme. 5) Many parents are unaware that tablet albendazole is a chewable formation, and can be ingested even by young children by chewing. DDs should explain this to improve compliance rate of young children. 6) Effective IEC activities should be undertaken through multiple channels such as electronic and print media, posters and banners in local language. Drum beating and mike announcement 1-2 days prior to the MDA should be used as IEC tool as these traditional methods are still effective in rural India. 7) The households that could not be covered due to 'being away on the programme days' should be covered by ensuring a 'follow-up activity' day, so that maximum individuals are covered.

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