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Mass Drug Administration (MDA) for Elimination of Lymphatic Filariasis: Experiences from Nayagarh District of Odisha, India

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Abstract

Background: India has adopted MDA strategy for elimination of lymphatic filariasis since 2004. It requires constant efforts on a nationwide scale particularly in the endemic areas for interruption of transmission of this neglected tropical disease. **Aims & Objectives:** This study aims to assess the coverage and compliance along with factors affecting compliance regarding MDA implementation in Nayagarh district of Odisha. **Material & Methods**: A cross-sectional descriptive study was conducted in November 2016 for evaluation of filariasis elimination activities carried out in the district. A pre-designed, pre-tested semi-structured interview schedule as per National Vector Borne Disease control Programme (NVBDCP) guidelines was used. A qualitative component was added to determine the perceptions and attitudes of the study population regarding MDA implementation. Data was analysed using simple proportion and percentages. **Results**: A total 120 households (90 rural and 30 urban) were surveyed, covering a population of 590. Overall coverage rate of study population was found to be 91.47%. The effective coverage rate was 71.1% (77.8% in rural areas and 48.8% in urban areas). The overall coverage compliance gap was 22.2, being higher in urban than rural areas. **Conclusion:** There is a felt need for health education activities to increase acceptance among the population coupled with supervised on the spot consumption of DEC for decreasing the coverage compliance gap. The issues regarding compliance need to be addressed for realizing the global target of eliminating lymphatic filariasis by 2020.

Keywords

Compliance; Elimination; Filariasis; Mass Drug Administration

Introduction

Lymphatic Filariasis (LF) is a common vector borne parasitic disease affecting over 120 million people around the world, with one billion at risk. It is the second most common cause of disability after mental illness.(1,2) One third of the people with LF live in India.

In India, annual MDA campaign was launched in 2004. MDA programme after 4-6 rounds with high coverage of ≥80% is expected to reach the elimination stage where the prevalence of infection falls below 1%. (3) MDA coverage increased gradually from 72.42% in 2004 to 88.96% in 2014. (4) However, compliance has remained relatively low in most of the endemic areas.(5,6,7)

Among LF endemic regions in India, Odisha is one of the most highly endemic states. (8,9,10) Microfilaria rate was 2.6% in 2004 in the state which was reduced to 0.38% in 2015 after several rounds of MDA. (11) LF still persists in Odisha as a formidable public health challenge.

Aims & Objectives

To find the coverage of MDA programme and the reasons for noncompliance among the beneficiaries in Nayagarh district of Odisha.

Material & Methods

Study area: This study was conducted in Nayagarh district of Odisha, which is considered endemic for LF. According to 2011 census, Nayagarh had a population of 962,215. (12) MDA activities were undertaken in Nayagarh in August 2016 by health workers, Accredited social health activist's (ASHA), Integrated Child development Services Scheme (ICDS) functionaries referred as drug distributors (DD). DEC and Albendazole was administered to the population (excluding children under 2 years, pregnant women & seriously ill persons) with instruction to ingest the tablets preferably on the spot.

Study design and sampling: A cross-sectional descriptive study was conducted in November 2016 for evaluation of MDA implementation activities carried out in the district. As per guidelines suggested by task force of the Government of India for evaluation, four clusters were identified (three from rural and one from urban areas) for the study. (13) The sampling design adopted in the study would provide an estimate of actual coverage to the accuracy of plus or minus 6.5%. (14) Community Health Centres (CHC) were considered the sampling frame for the first stage, and the villages under the CHC constituted the second step. The total number of CHC's in the district is twelve with one Notified Area Council (NAC). The CHCs were classified as low, medium and high on the basis of drug distribution coverage reported earlier by the district authority. One CHC from each group (one each from low, medium & high coverage area) was selected randomly. From each CHC, one village was selected at random. Three villages namely Kasanda, Mardarajpur and Kirialanji were selected from Rajasunakhala, Badapandusar, Mahipur CHC respectively. Ward no 3 was randomly selected from the list of the wards of Nayagarh Municipality as the urban cluster. ([Figure 1](#))

A total of 30 households (HH) in each cluster were selected in such a way that the entire ward/village was represented. For this purpose, the area was divided into four quadrants and in each quadrant, a central point was identified & the first house was selected randomly and thereafter another 7 HH or 6 HH (Total 8 HH from 2 quadrants and 7 HH from another 2 quadrants) serially (open with available family members) were covered. Four investigators covered the four quadrants (one investigator for each quadrant) in one cluster. This exercise was repeated in every cluster. The head of the family (preferably) or any other adult person present at the time of the survey was interviewed. A pre-designed, pre-tested semi-structured interview schedule (as provided by NVBDCP) with a qualitative component to gauge the perceptions and attitudes of the participants was used as the study tool. Information pertaining to all members of the household was collected.

Working definitions: For calculating various rates, the following working definitions were adhered to for drug coverage and compliance as per NVBDCP guidelines:

Drug coverage: It is the number of eligible persons who received DEC during MDA campaign. It is calculated as the total number of persons who received drug divided by eligible population expressed as percentage.

Drug compliance: It is the number of persons who ingested DEC in presence of a Drug Distributor (DD) during MDA campaign. It is calculated as the total number of persons who ingested drug divided by total number of persons who received the drug expressed as percentage.

Coverage–Compliance Gap: It refers to the people who got the drug but did not consume due to various reasons.

Effective coverage rate: It is the end product of coverage by the health system and compliance by community. The percentage for effective coverage was calculated after taking total number of people who were eligible for receiving DEC tablets as denominator (Effective coverage = No. of people who had ingested sufficient dose of DEC tablets/Total people eligible for receiving the DEC tablets × 100).

Ethical approval: Ethical permission was taken from the Institutional Ethical Committee. Informed consent was taken from the respondents prior to interview.

Results

A total 120 households (90 rural and 30 urban) were surveyed, covering a population of 590. Out of them, 551 were eligible for drug administration (93.38%). Most of the eligible population for MDA were in the 15-60 years age group. Among the eligible population, 504 had received the tablets from a DD. Overall coverage rate of study population was found to be 91.47% (Table 1). The coverage was highest in Kasanda village (99.3%) and lowest in Ward no-3 in Nayagarh Municipality area (77.1%).

Effective coverage rate was highest in Kasanda (88.9%) but lowest in urban cluster (48.8%). The overall Effective coverage rate was 71.1%. It was 77.8% in rural areas and 48.8% in the urban area. (Table 2)

The overall CCG was 22.3%, being higher in urban than rural areas. With respect to the gender perspective in MDA coverage, the compliance was better in females which was statistically significant (p<0.05). (Table 3)

Most of the people were of opinion that the drug was not necessary as they were not suffering from filariasis and this was more or less same both in rural and urban areas. The second most common cause was the drug was not received. (Table 4)

Persuasion for consumption of drug by the DD was reported by only 8.3% households (Table-5). The remaining said that the DD handed over drugs to one family member for consumption later on. Similarly, information regarding prevention and trans¬mission of filaria and why DEC is being given was furnished to only 40% households. Very few households had prior infor¬mation (previous to this MDA round) regarding MDA (6.6%). IEC (audio-visual aids) activities reached to 52.5% households. In rural area (Kirialanji village), IEC was done by some innovative methods like role play and folk song ("Ghantapita") which is a good practice embracing the local socio-cultural milieu

Discussion

A high coverage (>85%) in endemic areas, which is sustained for 5 years, is required to achieve the interruption of transmission and elimination of disease in India. (15) The effective coverage rate for our survey was 71.1%, being higher in rural than urban areas. In a study in Orissa by BV Babu, (7) the coverage was 67%. A study by Hussain et al (16) in Puri district of Odisha reported less than one third (28% in the rural areas and 31% in the urban areas) had consumed the distributed drugs. The assessed coverage of distribution as per Indian Council of Medical Research study (17) was significantly higher in rural areas (65-73%) of Tamil Nadu compared to urban areas (40-45%).

We found out coverage and compliance were better in rural areas when compared to urban areas, similar to other studies. (18,19) The higher coverage in rural areas may be attributed to the familiarity of the health workers in villages and the close proximity of houses. While in urban areas the low coverage may be due to larger areas and scattered population and non-availability of people during drug distribution activities which were mostly done during office hours. In our study there was a significant difference in compliance in males and females. The higher compliance in females might be due to the direct interaction with the DD in contrast to males, who usually remain absent in the house during that period of the day due to their outdoor activities like harvesting/ farming. Coverage compliance gap is a better indicator for assessing the effectiveness of implementation of MDA programme.

The barriers that were pertinent in the way of successful MDA implementation during our study were:

1. A significant proportion of participants responded that since neither they nor their family members have filariasis, they need not consume the tablets. They need to be sensitized and educated regarding these misconceptions; hence, awareness and health education play an important role.

2. Fear of side effects was one of the deterrents in the mind of the study population. Though the actual reported side effects number in the field was very less, there were various myths and superstitions regarding the drugs. This was apparent in one village where many of the villagers did not take the drug because of the belief that one of the villagers died after consuming the drug, though it was not the case as narrated by other villagers. The actual consumption in the field remains unsatisfactory in spite of good coverage. A district wide sensitization cum educational campaign describing the side effects along with simple suggestions on how to manage them could alleviate fear and thus increase MDA compliance. A strong post distribution follow-up mechanism might be helpful to achieve better

compliance. (16) Patients with filariasis residing in the same community can be roped in for such a campaign.

3. Also, it was seen that many people still did not recognize the importance of anti-filarial medications. This is noticeable from the practice among some female members in rural households who received the drug and kept it or threw it as such without informing other members of the family. The community needs to have confidence in the programme to achieve desired results. As approximately two-thirds of those infected remain asymptomatic, people do not realize that DEC can personally benefit them. (16) The felt need that all people living in endemic areas are at risk of infection and that they can be infected even if asymptomatic should be clearly emphasized in pre-MDA educational campaigns.

4. Inadequate persuasion for taking on the spot consumption of tablets and partial or no explanation regarding the details of prevention of transmission are barriers from the supply side. Since the programme has been running from quite a long time, fatigability and inertness are natural to set in. Hence it requires constant motivation and reinforcement training sessions of the DD before subsequent rounds.

Effective community mobilization activities prior to MDA activity are essential to reinforce the people's knowledge and to change their perceptions regarding LF. Coverage may be increased by developing a micro-plan by taking into consideration the population density and livelihood practices/occupation of the population to be covered. Date and time selected for the MDA should be suitable for majority of the population. The timing of drug distribution can be during evening hours or on Sundays when maximum people are expected to be at home. The implementation of the programme can be streamlined by making efficient microplans, ensuring improved supervision, emphasizing the proper training of workers and supervised 'on-the-spot' DEC consumption. (20, 21)

The successful implementation of MDA campaign for realizing its objectives needs concerned efforts of the health staff, officials and policy makers. The present study could not assess their viewpoints because of time and resource constraints and limitations in the activities according to the study design.

Conclusion

Compliance should be adhered to strictly as the major criterion for evaluating the MDA campaign rather than mere drug distribution. Despite a significant reduction in the mf rate from 2.6 in 2004 to 0.38 in 2015, the complete elimination of filariasis in Odisha depends on the sustained maintenance of MDA coverage coupled with high compliance

Recommendation

'On the spot' drug consumption along with surveillance for side effects should be mandated. Intensive health education campaigns, community sensitization and active participation of all the stakeholders need to be ensured for the achievement of LF elimination in near future.

Limitation of the study

This study being cross-sectional in nature does not infer a causal relationship. Further, qualitative indepth studies with more varied population are needed in this context to explore about the underlying reasons. This couldn't be assessed in the present study due to time and resource constraints.

Relevance of the study

We observed that MDA coverage is limited to tablet distribution at large. This study emphasizes that there is a felt need to address the coverage compliance gap by investing more on health education, sensitization and proper planning prior to wide scale MDA activities.

Authors Contribution

VB and PPG are responsible for conception and design of the study. PPG, SSS, PSP, DPS are responsible for data collection, literature search, data analysis and its interpretation. PPG and SSS are responsible for manuscript preparation and drafting. All the authors have made a final approval of the submitted version.

Acknowledgement

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Tables

TABLE 1 DISTRIBUTION OF POPULATION OF SURVEYED CLUSTERS

Cluster	Total population surveyed	Eligible population n (%)	Population covered n (%)
Ward No-3	135	127(94.1)	98 (77.1)
Kasanda	159	145(91.1)	144 (99.3)
Mardarajpur	154	146(94.8)	137 (93.8)
Kirialanji	142	133(93.7)	125 (93.9)
Total	590	551(93.3)	504 (91.5)

TABLE 2 COMPLIANCE RATE, COVERAGE-COMPLIANCE GAP (CCG) & EFFECTIVE COVERAGE RATE

Cluster	Eligible population	Drug given (DEC+albendazole) n (%)	Drug consumed (compliance rate) n (%)	CCG (in %)	Effective coverage rate (in %)
Ward No-3	127	98 (77.2)	62 (63.2)	36.8	48.8
Kasanda	145	144 (99.3)	129 (89.5)	10.5	88.9
Mardarajpur	146	137 (93.8)	117 (85.4)	14.6	80.1
Kirialanji	133	125 (94.0)	84 (67.2)	32.8	67.2
Total	551	504 (91.5)	392 (77.7)	22.3	71.1

TABLE 3 GENDER WISE DISTRIBUTION OF COMPLIANCE RATE, COVERAGE-COMPLIANCE GAP (CCG) & EFFECTIVE COVERAGE RATE

Gender	Eligible Population	Drug (DEC+ Albendazole) given (Coverage)		Drug consumed (Compliance rate)		CCG	Effective coverage rate
	Total	n	percentage	n	percentage	%	percentage
Male	292	260	89	185	71.1	28.8	63.3
Female	259	244	94.2	207	84.8	15.1	79.9
Total	551	504	91.5	392	77.7	22.2	71.1
p-Value		p =0.030		p = 0.000			p =0.079

TABLE 4 REASONS FOR NOT TAKING THE DRUG (MULTIPLE RESPONSES) (N=112)

Reasons	Rural	Urban	Total
Drug not delivered	18	29	47
Previous experience of side effect	9	4	13
Fear of side effect	7	5	12
Drug not necessary	25	29	54
Forgot	6	1	7
Out of house during MDA	9	3	12
Not informed by wife/family member	10	4	14

TABLE 5 DRUG DISTRIBUTORS APPROACH TO REACH THE ELIGIBLE POPULATION

Action	Number of key persons in household interviewed (N=120)	
DD persuaded swallowing of drug in his/her presence	10	8.3
DD explained importance and other details regarding prevention and transmission	48	40
Prior information of MDA dose, C/I, side effect	8	6.6
Any audio or visual media announcement on MDA	63	52.5

Figures

FIGURE 1 FLOWCHART FOR MDA ASSESSMENT