Coverage and Compliance of Mass Drug Administration for Elimination of Lymphatic Filariasis in a District of Western Odisha, India

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ABSTRACT

BACKGROUND

Lymphatic filariasis (LF), a group of parasitic infections, is a major public health problem in India which primarily affects people living in extreme poverty and it can lead to disfigurement, disability and chronic pain. It also causes social stigma and discrimination of the individuals and their families within the communities which adversely affects their social and economic life. For elimination of LF, mass drugs administration (MDA) is being implemented since 2004 in Odisha.

METHODS

A cross-sectional study was conducted in Jharsuguda district in the month of November 2019. Data regarding MDA was collected from 300 (200 rural and 100 urban) households (HHs) in a pre-designed, pretested questionnaire and the results were expressed in percentages and wherever applicable, tests of significance were applied.

RESULTS

Among the 1331 beneficiaries in the surveyed population, the overall coverage, compliance and effective supervised coverage of MDA were found to be 87.2 %, 94.1 % and 62.4 %, respectively. The coverage and effective supervised coverage of MDA was found to be significantly better in Kolabira block than in Lakhanpur block and Jharsuguda town. But the difference in compliance among the three studied clusters was not found to be significant. Though the drugs were distributed in the schools from this year, majority (93.5 %) of the beneficiaries received the drugs at home and only 6.5 % had received the drugs at school.

CONCLUSIONS

A high coverage along with strict adherence to compliance should be there for elimination of LF. Improved information education communication (IEC) activities in the district will build confidence and alleviate fear of side effects among the beneficiaries and consumption of drugs in front of drug distributors (DDs) will increase the compliance.

KEYWORDS

Lymphatic Filariasis, MDA, Coverage, Compliance, Effective Supervised Coverage

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BACKGROUND

Lymphatic filariasis is a group of parasitic infections which primarily affect the poor group of the society.[1] Although LF is not fatal, it can lead to disfigurement, disability and chronic pain, which in turn leads to social stigma and discrimination so that it is difficult for the affected individuals, their families and communities to lead a socially and economically productive life.

About 120 million people in 83 countries of the world are infected with lymphatic filarial parasites and more than 1.1 billion are at risk of acquiring the infection. Over 40 million people are severely disfigured and disabled by filariasis and 76 million are apparently normal with hidden internal damage to lymphatic and renal systems. World health organization (WHO) launched its Global Programme to Eliminate Lymphatic Filariasis (GPELF) in 2000 with the aim of eliminating the disease as a public health problem. In 2012, the WHO NTD roadmap reconfirmed the target date for achieving elimination as 2020.[2,3]

The Government of India (GOI) in 2004 began a nationwide MDA campaign in all the known LF endemic districts with an annual single dose of diethylcarbamazine (DEC) with the aim of eliminating it by the year 2015 according to National Health Policy 2002.[3] Subsequently goals of National Health Policy (2017) were to achieve and maintain elimination status of LF in endemic pockets by 2017 but not achieved yet. In 2007, India changed its strategy from delivery of DEC alone to delivery of DEC plus albendazole. In 2012, about 87 % people at risk were treated. India has reduced the prevalence to less than 1 % in 192 out of 250 districts. But the coverage levels varied from 55 % to 90 %.

Odisha has reported a MF rate of 0.43 in 2011 compared to 2.57 in 2004. However, coastal districts are more endemic for the disease, particularly the district Puri. Considering the fact that many of Odisha's non-coastal districts were non-endemic for filariasis, this reported MF rate could be misleading. Recent studies have shown that annual MDA campaign with DEC and albendazole is an effective tool for the control of LF and 5 - 7 rounds of treatment with more than 85 % compliance could possibly eliminate it by reducing the transmission to very low levels.[4,5]

In spite of the awareness of the community regarding the MDA programme for elimination of LF by various strategies, a substantial proportion of community members do not consume the drugs. Hence assessment of MDA programme is being done by independent team members who are not directly connected with MDA programme. In Odisha, till 2014, coverage was more than 85 % except for 2012 when the survey was not done.[6] In 2016, the overall coverage of MDA in Jharsuguda district was found to be 93.55 %.[7] This year in Jharsuguda district MDA was conducted in the last week of November 2019. In addition to distribution of drugs in the house, new strategy was adopted to distribute the drugs to eligible children in schools. Hence, the present evaluation was carried out to estimate the coverage and compliance of MDA in the surveyed areas of Jharsuguda district and to provide evidence-based recommendations for improving the coverage of the same.

METHODS

The post MDA coverage evaluation was a community based cross sectional study conducted in Jharsuguda district of Odisha in the month of November 2019.

Sampling Technique

As per recommendation of NVBDCP, multistage random sampling was done to select the required number of households (HHs) surveyed in both rural and urban areas. 200 HHs in the rural area and 100 HHs in the urban area were selected. In rural areas, at all the stages, study samples were selected randomly. In the first stage, two blocks of Jharsuguda district were selected (Lakhanpur and Kolabira). In the second stage, two sub-centres per block were selected. In Lakhanpur block, the two selected sub-centres were Kumbharbandh and Rampela and in Kolabira block the two sub-centres were Jhirlapali and Belmunda. In the third stage, five villages per sub-centre were selected and in the fourth stage, ten households from each village were selected. HHs of the selected villages were the sampling units and in each selected HH, respondents were the adults present in the house.

In urban area, Jharsuguda town was selected purposively and two wards (Ward Nos. 6 and 10) in the town were selected randomly. In each ward of the urban area, the first crossroad in the main street was visited and from there one street was selected randomly and then survey was continued in a consecutive manner till 10 HHs were reached in that street.

Study Population

The study population was all the eligible individuals residing in the HHs of the selected villages willing to respond to the interview were included in the study. Those HHs which were locked or absence of adult person in the HHs to respond to the interview were excluded from the study.

Study Tool

A pre-designed, semi-structured schedule adopted from the recommended guidelines for conducting post-MDA assessment was used for interviewing the study participants. The schedule contained information on age and sex distribution of the families. Also, information regarding distributions, consumption, reasons for non-consumption of DEC & albendazole tablets, side effects if any, treatment sought after the side effects and source of information on MDA programme were included.

Method of Data Collection

The data was collected through door-to-door visit. After reaching the HHs, the investigating team introduced themselves to the head of the HH or any responsible adult person present in the house and explained them the purpose of the visit. With their consent, data was collected using the schedule by interview method.

Statistical Analysis

The data collected was compiled and tabulated using MS excel. The results were expressed in numbers and percentages and the data was analysed by using chi-square test wherever applicable. P value < 0.05 was taken as significant.

Working Definitions

The following working definitions are as per NVBDCP guidelines.

Eligible Population

All the people more than two years of age, not pregnant or not seriously ill were considered as eligible persons for consumption of medicines in MDA programme.

Drug Distributors

DDs were those who distributed drugs in the community. They were ASHAs/MPW (F) accompanied by AWW and MPW (M).

Drugs

Diethylcarbamazine (DEC) and albendazole were distributed to the beneficiaries.

Monitoring Indicators

Coverage

It is the number of eligible persons who received DEC during MDA campaign. It is calculated as the total no. of person who received drug divided by eligible population expressed as percentage.

$$Coverage = \frac{Number\ of\ individuals\ received\ drugs}{Total\ number\ of\ eligible\ individuals}$$

Compliance

It is defined as the proportion of population who ingested received drugs to the number of individuals who received drugs.

$$Compliance = \frac{Number\ of\ individuals\ who\ ingested\ received\ drugs}{Total\ number\ of\ individuals\ received\ drugs}$$

Effective Coverage

It is defined as the proportion of people who ingested received drugs to the total number of eligible individuals.

$$Effective\ Coverage = \frac{Number\ of\ individuals\ who\ ingested\ received}{Total\ number\ of\ eligible\ individuals}$$

Effective Supervised Coverage

It is defined as the proportion of the individuals who ingested received drugs in the presence of drug distributors to the total number of eligible individuals

$$Effective\ Supervised\ Coverage = \frac{Number\ of\ individuals\ who\ ingested\ received\ drugs\ in\ presence\ of\ DD}{Total\ number\ of\ eligible\ individuals}$$

RESULTS

A total of 300 households (200 in rural and 100 in urban) were surveyed covering a population of 1,331. Of them 1,258 (94.5 %) were found to be eligible. Among the eligible, 651 (51.7 %) were males and 607 (48.3 %) were females and 253 (20.1 %) were < 15 years of age and 1,005 (79.9 %) were above the age of 15 years. (Table No -1)

The overall coverage, compliance and effective supervised coverage of MDA in the surveyed areas were found to be 87.2 %, 94.1 % and 62.4 %, respectively as shown in Table 2. The coverage was found to be more in Kolabira block (97.9 %) than in Lakhanpur block and Jharsuguda town and this difference was statistically significant (χ^2 = 8.32, P < 0.05). The effective supervised coverage of MDA was also significantly more (χ^2 = 55.26, P < 0.05) in Kolabira block (93.1 %) than in the other two clusters. The drug compliance was also better in Kolabira block (97.6 %) than in the other two clusters but the difference in compliance was not found to be statistically significant. In Kolabira block the study participants stated that they were compelled to take the drugs in front of DDs.

Out of 1097 persons who had received the drugs, 1026 (93.5 %) received at home and 71 (6.5 %) received at school. Detailed block wise distribution is given in the Table 3. Of the 1,258 eligible population, 161 (12.7 %) did not receive the drugs and the reasons were either the DDs did not go to their HHs 81 (6.4 %) or none of the family members were at home 47 (3.7 %). Out of those who received the drugs, 65 (5.1 %) didn't consume the drugs. Fear of side effects was told by 27 (2.1 %) and 16 (1.3 %) were not concerned about taking the drugs as shown in Table no 4. The beneficiaries being absent at their home during drug distribution was the commonest reason for not receiving the drugs. Among those who received the drugs but did not consume, the major reason was fear of side effects.

As described in Table 5, only 59 (5.7 %) people complained of some side effects. The main complaints were nausea (2.5 %), reeling of head and drowsiness (2.3 %), headache (2.2 %) followed by fainting attack and fever in 0.2 % each. But none of them were hospitalised or taken any medication.

All the households were aware of the MDA programme. The most common source of information for MDA was ASHAs 197 (65.67 %), followed by AWWs 137 (45.67 %) and ANMs 41 (13.67 %). But in Kolabira block, AWWs were the major sources of information to the people. (Table no. 6).

Sex	Lakhanpur			Kolabira			Urban (Jharsuguda Town)			Jharsuguda District		
	Age (Years)		Sub Total	Age(Years)		Sub Total	Age (Years)		Sub Total	Age (Years)		Total N (%)
	<15	>15	N (%)	<15	>15	N (%)	<15	>15	N (%)	<15	>15	
Male	49	183	232 (50.5)	40	182	222 (52.8)	48	149	197 (52)	137	514	651 (51.7)
Female	37	190	227 (49.5)	35	163	198 (47.2)	44	138	182 (48)	116	491	607 (48.3)
Total n (%)	**86 (18.7)**	**373 (81.3)**	**459 (100.0)**	**75 (7.9)**	**345 (82.1)**	**420 (100.0)**	**92 (24.3)**	**287 (75.7)**	**379 (100.0)**	**253 (20.1)**	**1005 (79.9)**	**1258 (100.0)**

Table 1. Area-Wise Age and Sex Distribution of Eligible Population (N= 1,258)

Surveyed Clusters	Beneficiaries (a)	Received (b)	Coverage (b/a*100)	Consumed (c)	Compliance (c/b*100)	Supervised Consumption (d)	Effective Supervised Coverage(d/a*100)
Lakhanpur	459	411	89.5 %	384	93.4 %	227	49.5 %
Kolabira	420	411	97.9 %	401	97.6 %	391	93.1 %
Jharsuguda town	379	275	72.6 %	247	89.8 %	167	44.1 %
Total	**1,258**	**1,097**	**87.2 %**	**1,032**	**94.1 %**	**785**	**62.4 %**
		χ^2= 8.32, p<0.05		χ^2= 0.56, p>0.05		χ^2= 55.26, p<0.05	

Table 2. Coverage, Compliance, and Effective Supervised Coverage of MDA in Three Surveyed Clusters

	Lakhanpur	Kolabira	Jharsuguda Town	Total (Jharsuguda District)
At Home	403	374	249	1026 (93.5 %)
At School	8	37	26	71 (6.5 %)
Total	411	411	275	1097 (100 %)

Table 3. Place of Receipt of Drugs (N=1097)

	Lakhanpur	Kolabira	Jharsuguda Town	Jharsuguda District
	(Total eligible population N=1258)			
Received drugs Reasons for not taking	27 (2.1 %)	10 (0.7 %)	28 (2.2 %)	65 (5.1 %)
Drunk	2 (0.15 %)	-	-	2 (0.15 %)
Young age	1 (0.07 %)			1 (0.07 %)
Forgot	9 (0.71 %)	-	2 (0.71 %)	11 (0.8 %)
Taking other medicines	2 (0.15 %)	-	-	2 (0.15 %)
Fear of side effects	11 (0.8 %)	1 (0.07 %)	15 (12 %	27 (2.1 %)
Not concerned	8 (0.6 %)	4 (0.3 %)	4 (0.3 %)	16 (1.3 %)
Taken partially	8 (0.6 %)	1 (0.07 %)	-	9 (0.7 %)
Ill health	11 (0.8 %)	(1 (0.07 %)	-	2 (0.15 %)
Not received drugs	48 (3.8 %)	9 (0.7 %)	104 (8.2 %)	161 (12.7 %)
Old age	9 (0.71 %)	4 (0.3 %)	-	13 (1.07 %)
Young age	2 (0.15 %)	-	1 (0.07 %)	3 (0.2 %)
DD didn't go	-	-	81 (6.4 %)	81 (6.4 %)
Concerned members not at home	-	3 (0.2 %)	30 (2.3 %)	33 (2.6 %)
None of the members at home	37 (2.9 %)	6 (0.5.6 %)	6 (0.5 %)	47 (3.7 %)
Total	**75 (5.9 %)**	**19 (1.5 %)**	**132 (10.1 %)**	**226 (17.9 %)**

Table 4. Reasons for Not Taking Drugs by the Eligible Population*

*Multiple response table

No of Persons with Side Effects			Side Effects					
	M	F	Total	Nausea	Headache	Fainting Attack	Fever	Others (Reeling of Head/Drowsy)
Lakhanpur	7	15	22	9	11	1	-	9
Kolabira	15	13	28	13	7			13
Jharsuguda Town	1	8	9	4	5	1	2	2
Jharsuguda District	23	36	59 (5.7 %)	26 (2.5 %)	23 (2.2 %)	2 (0.2 %)	2 (0.2 %)	24 (2.3 %)

Table 5. Side Effects among Those Who Consumed the Drugs (N = 1032)

Source of Information	Lakhanpur (N=100 HH)	Kolabira (N=100 HH)	Jharsuguda Town (N=100 HH)	Total (N= 300 HH)
ANM	-	39	2	41 (13.67 %)
AWW	34	68	35	137 (45.67 %)
ASHA	91	20	86	197 (65.67 %)
Volunteers	-	3	1	4 (1.3 %)
Miking	2	-	1	3 (1.0 %)

Table 6. Source of Information Regarding MDA*

*Multiple response table

DISCUSSION

Coverage of MDA for at least 65 % of at-risk population and compliance of more than 85 % in endemic areas, which should be repeated annually for a period of 5 years or more, is required to achieve the interruption of transmission and elimination of LF in India.[7,8]

The overall coverage of MDA in our study was found to be 87.2 %. But there was variation in the coverage of MDA in the three surveyed areas. Similar finding of high MDA coverage was observed by Satapathy et al. (93.5 %) in 2015 in Jharsuguda district, Bhatia V et al. (91.47 %) in Nayagarh District in the year 2016, Biradar MK et al. in Kalaburgi in the year 2017 (86.1).[5,7,9] Studies conducted in other parts of India also reported high coverage of MDA.[10,11] But contradictory to our study BV Babu (67 %) and Roy RN et al. (48.76 %) observed low coverage of MDA.[12,13]

The more sensitive indicator was compliance of MDA because this indicates the actual consumption of tablets by the beneficiaries than the coverage. The overall compliance of MDA in our study was 94.1 %. The population in the rural areas showed a proportionately better compliance than those in the urban area. Close proximity of the health workers with the rural population might have influenced them to consume the drugs. Satapathy et al. also observed a high compliance of 96.31 % in the same district in the year 2016.[7] Studies conducted by Bhatia V et al. Kulkarni et al. and Roy et al. reported compliances of 77.7 %, 72.5 % and 70.07 % respectively.[4,13,14] But in a Nagpur based study, Banerjee et al. reported a very low compliance of 48.5 %.[15] In the present study, the effective supervised coverage was 62.4 % and it was significantly more in Kolabira block than the other two places. It was known that, DDs in Kolabira block were specifically instructed to make the recipients swallow the drugs in front of them. Before MDA programme the training was given to all the personnel involved in the drug distribution and IEC activities but in Kolabira block it was followed strictly. This pattern shows that effective training as well as motivation of the DDs plays a very important role in the path towards elimination of LF. Bhatia V and Biradar et al. reported effective supervised coverage of 71.1 % and 59.9 %, respectively.[4,9]

In order to increase the coverage of MDA, the drug distributors were instructed to distribute the drugs in the community by house to house visits as well as in the schools, for which IEC materials were distributed and activities were conducted in the schools prior to MDA. This strategy of

distributing the drugs in school was initiated this year only. But majority (93.5 %) of the beneficiaries received the drugs at home and only 6.5 % had received the drugs at school. In other studies, drug distribution was done only at the HH level.

So far as the consumption of drugs is concerned, 12.7 % of the beneficiaries did not receive the drugs and 5.1 % did not consume even though they received the drugs. The beneficiaries not being at home during the drug distribution was the most common reason among those who did not receive the drugs at all. Among the beneficiaries who received the drugs but did not consume them, the fear of side effects from the drugs was a major cause as reported by them. To alleviate these fears and gain confidence of the beneficiaries, the DDs should have given them sufficient information about the disease and the purpose of consuming the drugs.

In the current study, 5.7 % of the beneficiaries who consumed the drugs complained of some side effects but these were self-limiting and no one had taken any medicine also. The main complaints were nausea (2.5 %), reeling of head and drowsiness (2.3 %), headache (2.2 %). In a similar type of study by Biradar et al. only 2.3 % beneficiaries had some side effects with nausea and vomiting being the major complaints.[10]

In the surveyed villages, as reported ASHAs (65.67 %) were the major source of information followed by AWWs (45.67 %) regarding MDA but in Kolabira block, AWWs were the major source. Satapathy et al. in the same district in 2015 reported AWWs were the main source of information followed by ASHAs.[7]

CONCLUSIONS

Though the coverage and compliance were found to be better, the effective supervised coverage of MDA is still low. A good compliance along with effective supervised coverage should be the main stay of the strategy for elimination of LF rather than the mere coverage of MDA. To increase the drug compliance following recommendations were made:

1. Capacity building of DDs by improved training and supportive supervision during the MDA rounds.
2. DDs to ensure swallowing of the tablets in their presence.
3. In the absence of the members of the family, tablets should not be given at the HHs. This may require repeat visits to the house.
4. Appreciation of the well performing DDs in the district will act as a stimulus for them.
5. Award to the well performing villages/blocks may ensure better community participation.
6. IEC activities should be highly focused in the communities to alleviate fear of side effects.

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