
PUBLIC HEALTH RESEARCH

An evaluation of compliance of Mass Drug Administration (MDA) against Lymphatic Filariasis of Satna district of Madhya Pradesh, India

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ABSTRACT

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Introduction Mass drug administration (MDA) means once-in-a-year administration of Diethyl Carbamazine (DEC) tablet to all people (excluding children under 2 years, pregnant women and severely ill persons) in identified endemic areas. It aims at cessation of transmission of Lymphatic Filariasis. To study the coverage and compliance of MDA in Satna district during the campaign in June 2013.

Methods Cross-sectional observational study. Setting: Urban And Rural Areas In Satna District Identified As Endemic For Filariasis Where MDA 2013 Was Undertaken. Study Variables: *Exploratory* - Rural and urban clusters of Satna district; *Outcome* - coverage, compliance, actual coverage, side effects.

Results Four clusters, each comprising 30 households from the Satna endemic district, yielded an eligible population of 650 (95.87%) of total 678. The coverage was 586 (90.15% out of eligible population) with variation across different areas. The compliance with drug ingestion was 88.05% with a gap of 11.95% to be targeted by intensive IEC. The effective coverage (79.38%) was below the target (85%). Side effects of DEC were minimum, transient and drug-specific.

Conclusions Overall coverage was marginally better in rural areas. The causes of poor coverage and compliance have been discussed and relevant suggestions have been made.

Keywords Diethyl Carbamazine - MDA - Lymphatic Filariasis.

INTRODUCTION

Lymphatic Filariasis (LF) is an important public health problem next to malaria in India¹. WHO had recently called on member states to identify the global elimination of LF as a public health priority². The International Task Force for Disease Eradication too had identified LF as one of the seven infectious diseases considered eradicable or potentially eradicable³. Several interventions have been tried in recent times to deal with this health problem. Mass drug administration (MDA), which means once-in-a-year administration of Diethyl Carbamazine (DEC) tablet to all people (excluding children under 2 years, pregnant women and severely ill persons) in identified endemic areas, is one of them⁴. It aims at cessation of transmission of LF in the community. MDA in combination with other techniques has already eliminated LF from Japan, Taiwan, South Korea and Solomon Islands and markedly reduced the transmission in China^{5,6}. MDA has been as effective as 12-day therapy, as a public health measure, with lesser side effects, thus enhancing public compliance and decreasing delivery costs⁷. It does not require complex management and infrastructure, and can be integrated into the existing primary health care (PHC) system. In order to achieve the elimination of LF by 2015 under the National Health Policy, National Filarial Day (NFD) was proposed to be observed every year starting from 2004 in the endemic districts⁸. Based on microfilaria surveys and the line listing of lymphoedema cases, Madhya Pradesh had identified 11 districts and accordingly they were included for observing MDA since 2004. The present communication deals only with the evaluation of coverage (distribution of drug to the community) and compliance (actual drug consumption) of MDA in June 2013 in endemic areas (Satna district) of Madhya Pradesh.

General Objective

To find out the coverage and compliance of MDA in Satna district during the campaign in June 2013.

Specific Objectives:

Objectives dealt in this communication were:

1. To review the progress of activities of single dose DEC mass administration in the selected district.
2. To assess independently the program implementation with respect to process and outcome indicators.
3. To recommend mid-course correction and suggest necessary steps for further course of action.

METHODS

MDA was undertaken in identified endemic areas in 2013. The activities under MDA involved administration of DEC tablets to eligible

population from endemic area by health staff and Integrated Child Development Scheme (ICDS) functionaries referred as drug distributors (DD) make house-to-house visits on select dates in 2013. DEC was administered to all people (excluding children under 2 years, pregnant women and severely ill persons) with the instruction to ingest the tablet preferably on the spot.

Selection of the Survey Area

Four clusters of district (one from urban and three from rural areas) were identified for the survey. Thus, a total of 4 clusters were studied. The survey was done 2 months after the MDA and the coverage reported by the health system was used to select the clusters. The selection of various health centres for the further selection of four clusters was done as per the following criterias of National Vector Borne Disease Control Programme (NVDCP) of Govt. of India:

1. One PHC with >80% (highest) MDA coverage reported by District Health officials.
2. One PHC with 50-80% (medium) MDA coverage reported by District Health officials
3. One PHC with up to 50% (lowest) MDA coverage reported by District Health officials
4. One Urban area irrespective of MDA coverage reported by District Health officials.

After the selection of four clusters as per NVDCP,GoI Guideline , at least 30 households (HHs) were selected from each clusters hence total 120 HHs (90 HHs from Rural & 30 HHs from Urban) were enrolled in the present study.Hence total population of 678 (548 out of 90HHs - rural and 130 out of 30 HHs- urban) was analysed in the present study.

A total of 30 households (HHs) in each cluster was 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 and the first house was selected randomly (any number between 1 and 9) and thereafter another seven HHs (total eight) serially (open with available family members) were covered. The exercise was repeated in the other three quadrants. In fact, this was an improvement over 30 HHs suggested per cluster by NVBDCP for evaluation⁴. The collection of 30 HH sample from different areas has been taken as per NVBDCP guidelines because the validity of sampling was found most appropriate when it is 30 in number selection.

All the data were collected in a pre-designed and structured proforma. After data collection, analysis was done with the help of Epi Info.

Place of Study

Four clusters (Named Jamuna SHC Jamuna PHC Rampur baghalan,; Saraiya tola SHC Saraiya tola

PHC Kothi,; Akaha SHC Akaha PHC Uchehara,; Satna urban Nai basti ward no. 17 District hospital Satna).

clusters covered a total of 120 HHs (90 rural and 30 urban) and yielded a population of 678 (548 - rural and 130- urban). In the studied clusters, against a population of 678, 650 (95.87%) were eligible for MDA [Table 1].

OBSERVATIONS AND DISCUSSION

A total of 4 clusters including 1 from urban and 3 from rural areas were studied. Together, these 4

Table 1 Distribution of population of surveyed districts

SATNA	TOTAL POPULATION	ELIGIBLE POPULATION		POPULATION COVERED (OUT OF ELIGIBLE)	
		N	%	N	%
JAMUNA	187	180	96.25	163	90.55
SARIYA TOLA	171	164	95.90	148	90.24
AKAHA	190	181	95.26	179	98.89
WARD NO. 17	130	125	96.15	96	76.80
TOTAL	678	650	95.87	586	90.15

Adhering to the criteria of NVBDCP, the eligible population in various clusters varied between 95.2% and 96.2%. The proportions of eligible population in rural and urban clusters were 93.3 and 76.8%, respectively. The rest was either below 2 years of age (n=21), pregnant females (n=03) or severely ill (n=04.) Out of 650 persons eligible, 586 (90.15 %) received DEC [Table 1]. Against overall coverage rate of 90.15 %, it was highest in Akaha (98.89 %) and lowest in Ward no. 17 Nai Basti (76.80%). The remaining (n = 64) although eligible did not get the drug for various reasons. The common reasons were DD did not visit (n=50), followed by houses were locked or

people were not available (n=14). All these problems require powerful advocacy tools and strategies⁹. The 79.38% coverage observed by us was not satisfactory because under the MDA, the target was to ensure effective coverage of 85% - a product of coverage as well as compliance. The main reasons for no coverage were that workers could not cover the population or did not administer drug and importantly the misclassification of persons rendering them not eligible. It can be improved by making efficient micro-plans, improved supervision and emphasizing more strongly the selection criteria in training.

Table 2 Compliance rate, coverage-compliance gap and effective coverage rate

DISTRICT SATNA	ELIGIBLE POPULATIO N	DEC GIVEN BY DD	CONSUMED (COMPLIANCE RATE)		COVERAGE – COMPLIANCE GAP	EFFECTIVE COVERAGE RATE
			N	%		
JAMUNA	180	163	160	98.15	1.85	88.88
SARIYA TOLA	164	148	107	72.29	27.70	65.24
AKAHA	181	179	170	94.97	5.03	93.92
WARD NO. 17	125	96	79	82.29	17.71	63.20
TOTAL	650	586	516	88.05	11.95	79.38

Compliance rate (ingestion of drug by those who received it) was 88.05 % with lowest in Sariya tola (72.29 %) and highest in Jamuna (98.15 %). A total of 70 persons accounted for this gap. The main reason for this was fear of side effects (n= 46) and the rest (n=24) either forgot to take or misplaced the drug. Effective coverage rate is the end product of coverage by the health system and compliance by community. It was 79.38% less than the target (85%) for the entire District as a whole. It was highest in Akaha (93.92%) and lowest in Ward

no. 17 nai basti (63.2%) (Table 2). In fact, the district could NOT achieve the targeted coverage of 85%. Effective coverage rate is the end product of coverage of the health system and compliance by community. In fact this should be 85% or above for the elimination of disease. Overall, it was 79.38% for the district. Good coverage in the absence of good compliance and similarly motivated community (for good compliance) with poor coverage will be of little use. The coverage in the districts of 79.38% was below the target of 85%.

Table 3 Drug coverage and compliance rates in urban and rural settings

Satna	Coverage rate Out of eligible (%)	Compliance rate (%)	CCG (%)	Effective coverage rate (%)
Urban (n=130)	76.80	82.29	17.71	63.20
Rural (n=548)	93.33	89.18	10.82	83.23
Total (n=678)	90.15	88.05	11.95	79.38

Both coverage and compliance were marginally better in rural areas (93.33 %, 89.18 % respectively) as compared to urban areas (76.80 %, & 82.29 % respectively), and accordingly the actual coverage too was better in rural areas [Table 3]. CCG helps to understand why people fail to consume the drug. It was around 11.95% and needs to be bridged with side by side efforts through IEC from all possible channels to motivate people for ingestion (preferably on the spot) of the drug. It seems that LF is not perceived as a serious public health problem or people think that they will not be affected by this disease. All these point out to one thing that there is no resistance in the community for DEC; however, more important is to emphasize on supervised “on the spot” DEC consumption.

One reason commonly given by the community for not consuming DEC on the spot was that it causes gastric upsets and so they prefer to take it after the meal. In this regard, a suggestion came to us that DD may carry small packets of biscuits (costing about USD 0.03.) to facilitate spot consumption of DEC. As such, the side effects were very few and they were also minor, transient and drug-specific. However, they also need to be addressed as they constitute the cause of noncompliance. Information about the Rapid Response Team (RRT) must be widely publicized in order to increase the faith of people and will indirectly result in better compliance.

Coverage and Compliance of Mass Drug Administration for Elimination of Lymphatic Filariasis in Endemic Areas of Bijapur district, Karnataka by Dr. Ravish K.S. *et al.* also observed that the survey coverage rate was 85.9% in the study population in 2012. The difference of 14% could be attributed to people not having received tablets either because they were not at home when distributors visited or distributors having not visited their houses at all. Distributors have not visited few houses because of confusion in area demarcation. In the study compliance rate was 45.9%. There was hardly any stress on supervised “on the spot” consumption of tablets. Compliance rate was bit better where health staff was deputed for drug distribution¹⁰. Kumar *et al.* the coverage was 85.2% and compliance was 60% and in B.V. Babu Study in Orissa it was seen that coverage was 67% and compliance was 42%^{11,12}.

Among the 989 people who did not consume tablets – 512 i.e., 51.8% people said that they have not been informed properly about why

and how much they should consume. Fifteen percent of people did not consume tablets for the fear of the reaction. Seven percent of the people did not consume tablets because either they feel they are healthy or sick. So almost 74% people did not consume because of inadequate information from drug distributors. 15.7% of people were not at home during the activity. 10.3% people have not received tablets though they were at home.

Adverse reactions among the study population were only 0.6%, which is negligible. The following adverse reactions noted were giddiness, vomiting, gastric irritation, etc., which were mild. Even though adverse reactions were negligible, people should be made aware of it through IEC, because only sustained high compliance can lead to elimination of Filariasis.

MDA coverage evaluation survey for LF in Bagalkot and Gulbarga districts by Prakash Kurubarahalli Patel in their study found that Approximately 79% in Bagalkot and 39% of the study subjects in Gulbarga district reported that they actually consumed both DEC and albendazole tablets. The remaining were, either who did not consume at all or consumed inadequate dosage of the tablets, the prime reasons for not consuming the tablet was, not received tablet (27.9%), followed by not present at home (18.4%) and drug given at home but no information (9.5%) in Bagalkot district. However, the main reason in Gulbarga district was fear of side effects (51.2%) and did not receive tablets (15.2%). Only 8% of people who consumed tablets in Bagalkot district and 2.3% in Gulbarga district actually experienced side effects¹³.

CONCLUSIONS AND RECOMMENDATIONS

Coverage and compliance were marginally better in rural areas. Coverage-compliance gap was around 11.95% as whole (17.71% in urban and 10.82 % in rural area. There was hardly any resistance in the community for the program and no one refused to accept drug. Similarly, refusal to taking drug for fear of side effects accounted for about ($n = 46$) of noncompliance. Efforts are needed to reduce this gap before increasing the coverage. It needs motivating and sensitizing the community through IEC. Incidence of side effects after MDA was minimal. All side effects were mild and needed no

medical intervention; however, the community was largely unaware of RRT.

DD hardly insisted on supervised “on the spot” administration of drugs; therefore, supervised drug intake was nil or poor and the commonest answer was “will take after meal”. Efforts should be made to insist on “on the spot” consumption. This alone can bring down the coverage-compliance gap considerably. Inclusion criteria were misunderstood. In some clusters DD, by mistake of their own, DEC was not given to persons who were having diabetes or hypertension. In our evaluation, we considered such persons eligible. Therefore, the coverage and effective coverage decreased in our evaluation. Training of DD in future should focus on the point that anybody who is above 2 years of age, non-pregnant and not critically ill (having some acute illness or hospitalization) must receive the drug.

DEC tab should be dispensed in 100 mg, 200 mg and 300 mg single doses that may be color coded for effectively implement in field as per requirement, because there is a misbelieve and fear in person to taking more than one tab on single time and they prefer to take after it at regular interval of about 8 hours. Various modes of pre-MDA IEC can be utilized such as radio, TV, cable, newspapers, recorded messages or SMS (mobile or landline phones) and should be done just few days before the campaign. IEC should focus on the following:

- a. Threat perception of Filariasis was very poor among people as it is not a visible disease, but still it is a threat as many people are at risk, and taking DEC only once in a year can prevent it.
- b. The single-dose DEC once in a year is an effective preventive tool while in treatment a person may have to take it for 21 days. Even many practicing doctors are also not clear about it.

REFERENCES

1. Bhaskar C, Harinath, Reddy MV. Filariasis in India. *J Int Sci Acad* 2000; 13:8-12.
2. WHO. Lymphatic filariasis: Progress of disability prevention activities. *Wkly Epidemiol Rec* 2004; 79:417-24.
3. Zagaria N, Savioli L. Elimination of lymphatic filariasis: A public-health challenge. *Ann Trop Med Parasitol* 2002;96: S3-13.
4. Government of India. Operational guidelines on elimination of lymphatic filariasis. Directorate NVBDCP, 22 Shamnath Marg, Delhi 110054; 2005.
5. Molyneux DH, Zagaria N. Lymphatic filariasis elimination: Progress in global program development. *Ann Trop Med Parasitol* 2002;96 Suppl 2: S15-40.
6. Molyneux D. Lymphatic Filariasis (Elephantiasis) elimination: A public health success and development opportunity. *Filaria J* 2003;2:13.
7. Ramaiah KD, Vijay Kumar KN, Chandrakala AV, Augustin DJ, Appavoo NC, Das PK. Effectiveness of community and health services-organized drug delivery strategies for elimination of lymphatic filariasis in rural areas of Tamil Nadu, India. *Trop Med Int Health* 2001;6:1062-9.
8. Government of India. National Health Policy. New Delhi: Department of Health, Ministry of Health and Family Welfare; 2002.
9. Imonsen PE, Meyrowitsch DW, Mukoko DA, Pedersen EM, Malecela-Lazaro MN, Rwegoshora RT, *et al.* The effect of repeated half-yearly diethylcarbamazine mass treatment on wuchereria bancrofti infection and transmission in two east African communities with different levels of endemicity. *Am J Trop Med Hyg* 2004;70:63-71.
10. Ravish KS, Ranganath TS, Riyaz Basha S. Coverage and Compliance of Mass Drug Administration for Elimination of Lymphatic Filariasis in Endemic Areas of Bijapur district, Karnataka. *Int J Basic Med Sci* 2012;3 81-86.
11. Kumar P. Evaluation of MDA 2006 in Gujarat. *IJCM* 2008;33:38-42.
12. Babu BV, Satyanarayana K. Factors responsible for coverage and compliance in mass drug administration during the programme to eliminate lymphatic filariasis in the East Godavari district, South India. *Trop Doct* 2003;33:79-82.
13. Patel PK. Mass drug administration coverage evaluation survey for lymphatic filariasis in Bagalkot and Gulbarga districts. *Indian J Community Med* 2012;37:101-6.