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A Quantitative and Qualitative Evaluation of Mass Drug Administration (MDA) program in three districts of Madhya Pradesh (India)

Manohar Bhatia*, Vikash Dwivedi, Leena Bhargo, P C Mahajan

G. R. Medical College, Gwalior, India

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ABSTRACT

Introduction: Lymphatic filariasis (LF) is the world's second leading cause of long-term disability. According to the World Health Organization, India, Indonesia, Nigeria and Bangladesh alone contribute about 70% of the infection worldwide. Mass drug administration of one annual dose of diethylcarbamazine citrate and albendazole is currently advocated by WHO for control of lymphatic filariasis. The state of Madhya Pradesh (MP), India adopted MDA for elimination of LF in 2004. **The aim** of this study was to assess the effective coverage of MDA and to determine the causes of coverage compliance gap. **Methodology:** It was a cross-sectional survey in which both quantitative and qualitative data was collected from the study clusters by house-to-house surveys. Multistage random sampling method was used to select the clusters. 30 household were covered in each cluster, covering 4 clusters per district; so in each district 120 households were surveyed. **Results:** The present study was conducted in three filariasis endemic districts of Madhya Pradesh. The study covered a target population of 1863 from twelve clusters of which 94.09% (1753) were eligible for drug consumption. The overall drug distribution rate (coverage) was 84.59% and the coverage compliance gap was 16.82%. Overall drug ingestion compliance was 80.10%. The overall effective coverage was 67.77% (**Z Score=3.6338, p=0.00014**). The drug distribution rate (coverage) was much better in urban areas (92.55%) as compared to rural areas (82.45%) and therefore the effective coverage was much better in urban areas (75.53%) as against 65.65% in the rural areas. The most important reason of non-compliance was lack of awareness about the disease (47.45%). Understaffing was also reported in all the districts and impact assessment data was not collected in any of the three districts. **Conclusion:** There is need of intensive health education campaigns to increase the level of scientific information about the disease. The coverage activities should be prioritized equally with Behavior Change Communication (BCC) activities. The timings of drug distribution should be properly thought out.

Key words: Filariasis, MDA, DEC, Effective Coverage

Introduction

Lymphatic filariasis (LF) is a parasitic disease, commonly known as elephantiasis which is caused by thread like worms known as filarial parasite. The adult worms (male and female) settle in lymph nodes and the female worm gives birth to millions of young ones known as microfilariae (mf)[1].

*Correspondence
Dr. Manohar Bhatia
126, Sindhi Colony, Kampoo,
Lashkar, Gwalior (M.P.) India, 474001
E-mail: bhatiyamanohar@gmail.com

Lymphatic filariasis (LF) is the world's second leading cause of long-term disability. The current estimate reveals that 120 million people in 83 countries of the world are infected with LF parasites and more than 20% of the world's populations are at risk of acquiring infection[2].

Over 40 million people are severely disfigured and disabled by filariasis and 76 million are apparently normal but have hidden internal damage to lymphatic and renal systems. According to the World Health Organization, India, Indonesia, Nigeria and Bangladesh alone contribute about 70% of the infection worldwide. It has been estimated that approximately 5 million

Disability Adjusted Life Years (DALYs) lost annually, ranking third among the TDR diseases in terms of DALYs after malaria and TB. In addition, the social and psychological impact is enormous - often destroying marriages and family relationships[3].

The Government of India is signatory to the World Health Assembly Resolution in 1997 for Global Elimination of Lymphatic Filariasis. The National Health Policy (2002) envisages elimination of lymphatic filariasis in India by 2015[4].

The Strategy for Elimination of Lymphatic Filariasis includes Annual Mass Drug Administration (MDA) of single dose of DEC (Diethylcarbamazine citrate) and Albendazole for 5 years or more to the eligible population (except pregnant women, children below 2 years of age and seriously ill persons) to interrupt transmission of the disease and Home based management of lymphoedema cases and up-scaling of hydrocele operations in identified CHCs/ Districthospitals /medical colleges[4].

Mass drug administration of one annual dose of diethylcarbamazine citrate and albendazole is currently advocated by WHO for control of lymphatic filariasis in several endemic countries, since this combination is more effective than either drug administered alone. Reactions induced by diethylcarbamazine citrate such as fever, headache, myalgia, anorexia, abdominal discomfort, and so on, are not uncommon in microfilaraemic patients, the severity and duration of which are directly related to microfilarial density in the host. Although these reactions arise in a small proportion of cases and are easily managed in controlled clinical trials, they can lead to panic reactions among people when the drug is given to millions of patients by health workers, which might jeopardise the control programme[5].

In Madhya Pradesh, the disease has been endemic in eleven districts. The state of Madhya Pradesh (MP), India adopted MDA for elimination of LF in 2004. The endemic districts have been included under NVBDCP and there have been regular distribution of Di-ethyl Carbamazine (DEC) tablets in these districts. The first round of MDA in MP was carried out in June 2004.

Evaluation of the MDA activities has been an integral part of the strategy for filariasis elimination so as make an independent assessment of the program implementation with respect to process and outcome indicators. The evaluation helps to review the progress of activities of single dose of DEC and Albendazole administration in filariasis endemic districts and to suggest mid-course correction and necessary steps for further action.

The aim of this study was to assess the effective coverage of single dose DEC plus Albendazole tablets in the filariasis endemic districts and to determine the causes of coverage compliance gap.

Methodology

In 2012, Mass Drug Administration (MDA) was carried in the three districts included in this study on April 22. This was followed by midterm evaluation of MDA in the three districts from June 09 2012-June 20 2012. It was a cross-sectional survey in which both quantitative and qualitative data was collected by on site observations and detailed interviews in the community.

Selection of the clusters and sample size

The standard guidelines for MDA required that a total of 30 household be covered in each cluster, covering 4 clusters per district. Therefore, keeping in the mind the standard procedure, in each district 120 households were surveyed. Multistage random sampling method was used to select the clusters.

The MDA assessment was carried out in both rural and urban areas in all three districts, as per the standard methodology. For evaluation of MDA activities in a district, all the PHCs in a district were stratified into three groups on the basis of reported MDA coverage of previous year- PHCs with coverage below 50%, between 50-80% above 80%.

In rural areas, a PHC from each category was selected for MDA evaluation; in case there was no PHC in a particular category, two PHCs from the next category were selected. In the next step, from each category of the PHCs, one PHC was selected randomly. Afterwards, from each of the selected PHC one village was selected randomly using currency note for random number generation for household survey. In each village, 30 household were covered using standard questionnaires developed for MDA evaluation.

In the urban areas, the complete list of the wards was arranged. Thereafter, one ward was selected randomly for the evaluation of the programme, using currency note for random number generation. In the next step, in each selected ward 30 household were covered.

The survey teams visited the study clusters and collected both qualitative and quantitative data to make independent assessment. The assessment was carried

out as per the standard methodology and standard proforma developed by National Institute of Communicable Diseases, Delhi.

Data was collected by house-to-house surveys with the use of standard proforma and from district health authorities and it was thoroughly scrutinized and analyzed manually and P value and Z score was calculated using Z test calculator[12].

Results

The present study was conducted in three of the eleven districts of Madhya Pradesh which are known for filariasis endemicity- namely Tikamgarh, Chatarpur and Panna. The study covered a target population of 1863 from twelve clusters of which 94.09% (1753) were eligible for drug consumption. Children below two years age, pregnant women and severely ill patients are ineligible for drug ingestion as per the guidelines.

The survey was conducted to find out the drug distribution rate/coverage (i.e. how many people received the tablets) and the coverage compliance gap (i.e. number of people who ingested sufficient dose of DEC tablets out of total population who had received the DEC tablets) and to find out the effective coverage (i.e. number of people who ingested sufficient dose of DEC tablets out of total eligible population). The survey also sought the reasons for non-compliance.

District-wise analysis revealed wide variations among districts and between urban and rural areas within same district. Out of 610 people surveyed in the Tikamgarh district, the eligible population was 92.29%. The drug distribution rate (coverage) was 82.01% and the coverage compliance gap was 18.60%. Overall drug ingestion compliance was 77.28% ranging from 82.35 in urban areas to below 80% in rural areas. The effective coverage in Tikamgarh district was 63.41%. (Table 1)

Out of 663 people surveyed in Chatarpur district, the eligible population was 95.17%. The drug distribution rate (coverage) was 90.02% and the coverage compliance gap was 14.11%. Overall drug ingestion compliance was 84.33%. The effective coverage in Chatarpur district was 75.91%. (Table 2)

Out of 590 people surveyed in Panna district, the eligible population was 94.74%. The drug distribution rate (coverage) was 81.03% and the coverage compliance gap was 18.14%. Overall drug ingestion compliance was 77.70%. The effective coverage in Panna district was 62.97%. (Table 3)

As expected, the drug distribution rate (coverage) was much better in urban areas (92.55%) as compared to rural areas (82.45%) and therefore the effective coverage was much better in urban areas (75.53%) as against 65.65% in the rural areas. However the coverage compliance gap was slightly higher in urban clusters (17.02%) as compared to rural clusters (16.77%). (Table 4)

Of the total 1853 population surveyed in this study, 1753 were eligible for drug consumption. The overall drug distribution rate (coverage) was 84.59% and the coverage compliance gap was 16.82%. Overall drug ingestion compliance was 80.10%. The overall effective coverage was 67.77%. (Table 5)

Chatarpur district turned out to be the best performing district with an overall effective coverage of 75.91%. (Table 5)

Table No. 1: District Tikamgarh

Name of Cluster	Total Sampled Population	Eligible Population (%)	Drug Distribution Rate (Coverage) (%)	Drug Ingested (Compliance) (%)
Bhagat Nagar Colony (Urban)	141	132(93.61)	119(90.15)	98(82.35)
Badagaon	178	161(89.94)	121(75.15)	93(76.86)
Baldevgarh	167	150(93.75)	124(82.67)	89(71.77)
Jatara	176	120(92.30)	98(81.66)	77(78.57)
Total	**610**	**563(92.29)**	**462(82.01)**	**357(77.28)**

Table No. 2: District Chhatarpur

Name of Cluster	Total Sampled Population	Eligible Population (%)	Drug Distribution Rate (Coverage) (%)	Drug Ingested (Compliance) (%)
Ayodhya Nagar Basti (Urban)	149	140(93.95)	132(94.28)	105(79.55)
Rajnagar	197	191(96.95)	168(87.95)	153(91.08)
Satai	169	161(95.26)	148(91.92)	135(91.22)
Ishanagar	148	139(93.91)	120(86.34)	86(71.66)
Total	**663**	**631(95.17)**	**568(90.02)**	**479(84.33)**

Table No. 3: District Panna

Name of Cluster	Total Sampled Population	Eligible Population (%)	Drug Distribution Rate (Coverage) (%)	Drug Ingested (Compliance) (%)
Sinchai Nagar/Civil Lines (Urban)	110	104(94.54)	97(93.27)	81(83.51)
Devendranagar	141	134(93.59)	127(94.78)	112(88.19)
Ajaygarh	153	146(90.40)	111(76.03)	75(67.57)
Pawai	186	175(94.37)	118(67.43)	84(71.20)
Total	**590**	**559(94.74)**	**453(81.04)**	**352(77.70)**

Table No. 4 (a): Urban and Rural distribution

Area	Total Sampled Population	Eligible Population (%)	Drug Distribution Rate (Coverage) (%)	Drug Ingested (Compliance) (%)	Coverage Compliance Gap (%)	Effective Coverage (%)
Urban	400	376 (94.00)	348 (92.55)	284 (81.61)	**17.02**	**75.53**
Rural	1463	1377 (94.12)	1135 (82.42)	904 (79.64)	**16.77**	**65.65**
Total	**1863**	**1753 (94.09)**	**1483 (84.59)**	**1188 (80.10)**	**16.82**	**67.77**

Table No. 4 (b): Urban and Rural distribution

Variable	Drug Ingested (Compliance)	Effective Coverage
Z Score	0.802	3.6338
P value	0.4237	0.00014

Table No. 5: District wise distribution

Name of District (Total Sampled Population)	Eligible Population (%)	Drug Distribution Rate (Coverage) (%)	Drug Ingested (Compliance) (%)	Coverage Compliance Gap (%)	Effective Coverage (%)
Tikamgarh (610)	563 (92.29)	462 (82.01)	357 (77.28)	18.60	63.41
Chatarpur (663)	631 (95.17)	568 (90.02)	479 (84.33)	14.11	75.91
Panna (590)	559 (94.74)	453 (81.03)	352 (77.70)	18.14	62.97
Total (1863)	**1753**	**1483 (84.59)**	**1188 (80.10)**	**16.82**	**67.77**

Table No. 6: Reasons of Non Compliance

Reason	% of Respondents (n=295)
Lack of awareness	47.45
Improper counseling	18.98
Not available at home	11.52
Fear of side effects	08.81
Forgot to consume the drug	07.79
Others	05.42

Very few people had ingested the drug in presence of distributor. Many families reported that the distributors just provided the drugs and no information about timing and method of drug ingestion was given. This appears to be the main reason of coverage compliance gap.

According to our study, the most important reason of non-compliance was lack of awareness about the disease (47.45%). Many people did not know the reason for ingesting the drug. The other important reason was improper counseling (18.98%) as many people complained that they were not explained when and how the drug should be ingested. 11.52% people said that they were not at home when the drug distributors came to their locality. 08.81% people said that they feared side effects of the drugs (some of them had suffered from side effects in previous years after taking these drugs) and 07.79% said that they forgot to take the drugs.

Trainings were organized at all level right from district to sub-centre level in all the three districts for Medical officers, paramedical workers, drug distributors and lab technicians. However there was no system found for the quality check of these trainings.

Understaffing was also reported at all the level i.e. Medical officers, paramedical workers, drug distributors, lab technicians. However it was more prominent in the staff of morbidity management where still large numbers of posts were vacant.

The DEC distribution is a main activity in MDA program. To make drugs available is a significant and integral activity for this work. Moreover record of previous year consumption, balance of drug and calculation of present year demand was properly maintained. However no record on quality check was recovered.

The impact assessment is done by the local authorities to understand the effect of the MDA. The drug distribution rounds to see the effect. Indicators like Mf Rate etc are used to see the before and after conditions. However, no such data was collected in any of the three districts.

The IEC which is instrumental for the awareness generation and active participation of the community forms an important part of the strategy. All three districts offices reported to have spent money on preparation of wall paintings and printing of IEC materials like pamphlets, posters, banners etc. Loudspeakers were also used as IEC mode.

However, at the time of fields visits for verification by the monitoring teams, majority of respondents from both rural and urban area said that they have seen things regarding MDA and filariasis in the form of banner and posters; few of them also reported reading pamphlets and wall paintings were also seen only in few areas.

All the IEC activities provided very limited information to make community aware of the possible side effects. During the field visits it was found that at the time of drug distribution health worker were not adequately giving the health education to the recipients, which if was given then coverage could have been better. Ironically some interesting things were also noticed like, in some villages even the health worker and teacher wasn't fully aware about filariasis and it definitely raises the query regarding their training quality.

A very less proportion of covered populations have reported any side effect after ingestion of drug, and if so it was mostly nausea and vomiting & fever. The one thing, which was missing from all the evaluation areas, was that although drugs were distributed to the population en mass, only a small proportion was told about the side effects and its management. The side effects were properly recorded only in limited number of cases. Very few people were given management for side effects.

The mechanism for management of side effects was grossly missing in the majority of the areas in all three districts. The people had to go to private practitioners and quacks in some cases for the management of side effects, where they had to spent money out of their own pocket as they were not referred to PHC or other medical facility by the health functionaries. The level of awareness about the morbidity management in the community was very low.

Discussion

MDA should be implemented in >85% of the population in endemic areas and must be sustained for 5 years to be successful[9]. In this survey, the effective coverage was 67.77% which was way below the standard target. Ideally the coverage compliance gap should be zero but in our survey it was higher than 14% in all the districts.

In our study, the effective coverage rates were higher in urban areas in all the districts. In a study done in West Bengal, the effective coverage rate was significantly lower in urban than in the rural clusters (87.4% vs. 95.3%; **z** = 3.57, **P** < 0.01)[6].

In the same study, Coverage compliance gap was higher in urban (5.7%) than in rural cluster (3.9%). In our study, the coverage compliance gap was slightly higher in urban areas (17.02% vs. 16.77%)[6].

In a study done in Gujarat, the coverage rate was 85.2% with variation across different areas. The compliance with drug ingestion was 89% with a gap of 11%. The effective coverage (75.8%) was much below the target (85%)[11].

In the present study, lack of awareness was the most important cause of non-compliance. In a study done in Karnataka, 55% non compliant population said they were not at home during MDA activity and 19% did not consume the drug because of fear of side effects. This compliance rate was poor in urban area (46%) compared with rural area (74%). In a study done in West Bengal, fear of side-effects was the main reason for non-compliance [6-7]. In a study done in Kenya, the most prominent reasons given for not taking drugs were not being aware of the MDA and drug distributors not visiting the household [8]. In a study done in Kerala, the important reasons of non compliance were client attitude of not perceiving the need and low acceptability of drug administrator [10].

Conclusion

The awareness about the Lymphatic Filariasis in the population studied is limited to knowing about the presence of the disease in the community and most of this has generated due the cases in their neighborhood and the community. There is need of intensive health education campaigns to increase the level of scientific information about the disease amongst the affected populations. The coverage activities should be prioritized equally with Behavior Change Communication (BCC) activities as the goal of this program is effective coverage and not the actual coverage. The timings of drug distribution should be properly thought out so that atleast absenteeism part of non-compliance can be eliminated. There is a need for quality assurance of the activities on MDA by monitoring teams in the field so as to eliminate the coverage compliance gap.

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References

1. New Delhi: DGHS, Ministry of Health and Family Welfare, Government of India; [Last accessed on 2014 Aug 10]. NVBDCP. Available from: http://nvbdcp.gov.in/Doc/drug_distrib_manual_LF_pg1.pdf
2. Global programme to eliminate lymphatic filariasis. Wkly Epidemiol Rec. 2007; 8(2): 361–80
3. New Delhi: DGHS, Ministry of Health and Family Welfare, Government of India; [Last accessed on 2014 Aug 10]. NVBDCP. Available from: http://nvbdcp.gov.in/Doc/Guidelines-Filariasis-Elimination-India-pg 6.pdf
4. New Delhi: DGHS, Ministry of Health and Family Welfare, Government of India; [Last accessed on 2014 Aug 10]. NVBDCP. Available from: http://nvbdcp.gov.in/mda.html
5. Balachandran Ravindran Mass drug administration to treat lymphatic filariasis The Lancet June 2002: 359; (9321) 1948.
6. Santanu Ghosh, Amrita Samanta, and Seshadri Kole. Mass drug administration for elimination of lymphatic filariasis: Recent experiences from a district of West Bengal, India Trop Parasitol. 2013 Jan-Jun; 3(1): 67–71.
7. TS Ranganath, N Ramakrishna Reddy. Elimination of Lymphatic Filariasis: Mass Drug Administration in Endemic Areas of (Bidar District) Karnataka-2008. Indian J Community Medicine: 2012 : 37(4):219-222
8. Njomo DW, Mukoko DA, Nyamongo NK, Karanja J Increasing Coverage in Mass Drug Administration for Lymphatic Filariasis Elimination in an Urban Setting: a Study of Malindi Town, Kenya. PLoS ONE 2014);9(1): e83413.
9. New Delhi: Department of Health, Ministry of Health and Family Welfare, Government of India; [Last accessed on 2014 Aug 10]. National Health Policy 2002. Available from: http://fpload_b.nic.in/NRHM/documents/National_Health_Policy_2002.pdf

10. Zinia T Nujum, S Remadevi, C Nirmala, K Rajmohanan, PS Indu, S Muraleedharan Nair. Factors determining noncompliance to mass drug administration for lymphatic filariasis elimination. Tropical Parasitology 2012; 2(2): 109-115.

11. Kumar P, Prajapati P, Saxena D, Kavishwar AB, Kurian G. An evaluation of coverage and compliance of mass drug administration 2006 for elimination of lymphatic filariasis in endemic areas of Gujarat. Indian J Community Med 2008;33:38-42.

12. http://www.socscistatistics.com/tests/ztest/Default2.aspx

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