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A CROSS – SECTIONAL STUDY TO EVALUATE MASS DRUG ADMINISTRATION FOR ELIMINATION OF LYMPHATIC FILARIASIS IN BHANDARA DISTRICT OF MAHARASHTRA.

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ABSTRACT

Background- Nationwide mass drug administration for elimination of lymphatic filariasis had been launched by government of India in endemic areas in 2004.Compliance has improved over a period of time but intensive community participation and awareness drive would still be needed to bridge the coverage and actual consumption gap. Bhandara district in Maharashtra is one of the endemic district where mass drug administration (MDA) is undertaken every year to eliminate Lymphatic Filariasis since 2004.

Methods- A community based cross-sectional study in selected four clusters of Bhandara district was conducted through house to house survey and outcome was assessed as the coverage of the mass drug administration.

Results- The coverage for distribution and consumption of Mass drug administration was found as 90.57% and 71.24% respectively. Most common reason being inadequate distribution followed by insufficient and improper counselling.

Conclusion- More intensive efforts are needed to decrease the gap between coverage and consumption rate.

KEYWORDS : Lymphatic Filariasis, compliance, mass drug administration.

INTRODUCTION:

Filariasis is a parasitic disease that causes damage to lymphatic system and lead to lymphedema (Elephantiasis) and hydrocele. It is caused by Wuchereria bancrofti, which is transmitted to man by the bites of infected mosquitoes – Culex quinquefasciatus and Mansonia annulifera / M.uniformis. The global baseline estimate of persons affected by lymphatic filariasis is 25 million men with hydrocele and over 15 million people with lymphoedema. At least 36 million persons remain with these chronic disease manifestations. The disease is endemic in 72 countries. In 2016, an estimated total population of 856 million were living in areas with ongoing transmission of the causative filarial parasites and requiring mass drug administration (MDA)[1].

WHO has published data showing that a total of 465.4 million people were treated for Lymphatic Filariasis during 2017. WHO published a new guideline on alternative MDA regimens and recommended a 3-drug regimen (known as IDA) to accelerate the elimination of Lymphatic Filariasis as a public health problem[2]. In 1997, the Fiftieth World Health Assembly adopted Resolution to eliminate Lymphatic Filariasis as a public health problem and WHO launched the Global Programme to Eliminate Lymphatic Filariasis (GPELF) in 2000[1]. In 2012, the WHO neglected tropical diseases roadmap reconfirmed the target date for achieving elimination by 2020[4].

Lymphatic Filariasis elimination program was launched in India in 2004 covering 202 endemic districts in 20 States /union territories and which extended to cover 255 districts targeting a population of about 600 million. A single dose of DEC for annual mass drug administration was taken up as a pilot project covering 41 million population in 1996-97 to continue for 5 years or more to the population excluding children below 2 years, pregnant women and seriously ill patients in affected areas to interrupt transmission of disease.[2]

During Mass drug administration population coverage has improved from 73% in 2004 to 89% in 2015 which has resulted in the overall reduction of microfilaria rate from 1.2% to 0.3% in 2015[2].

Medical colleges conduct the evaluation of the mass drug administration regularly to suggest and take measures for effective implementation of the program. Such evaluations revealed that there is a gap between coverage and actual consumption.so the present survey was conducted for MDA campaign to review the progress of MDA program by assessing coverage and compliance and to recommend measures. This study is conducted to evaluate the Mass drug administration in Bhandara district, Maharashtra.

MATERIAL AND METHODS

Cross-sectional study was carried out in the Bhandara district of Maharashtra. Mass drug administration was done in Bhandara district of Maharashtra in February 2019 followed by mopping up round for two successive days. A single dose of DEC and Albendazole was distributed by drug distributors who were health workers, anganwadi workers, accredited social health activist (ASHA). Pregnant women, children below two years of age and seriously ill patients were excluded from drug administration. The present study was conducted with the objective to assess the coverage of Mass drug administration of single dose of DEC and Albendazole and to recommend corrective measures. This survey was

conducted by team members of Indira Gandhi Government Medical College, Nagpur independently.

This study was conducted as per the standard guidelines prepared by NVBDCP (National Vector Borne Disease Control Program). In Bhandara district four clusters (three rural and one urban) of 30 households each were selected. Baseline data of the district and coverage rate of MDA distribution and compliance rate was collected from the District Malaria Office, Bhandara. Depending upon MDA 2019 coverage PHCs were stratified into 3 groups. Those with coverage below 50%, between 50-80% and those with coverage above 80%. One PHC was selected randomly in each category. Stratified random sampling technique was adopted for selection of households. From each selected PHC one village was selected randomly. In each village 30 houses were covered. Similarly, 30 houses were covered in urban area after selecting one ward randomly. Total of 120 houses are selected and surveyed from the entire district by the above method. As the reported coverage was above 80% in all PHCs, out of 7 talukas of Bhandara district, three were selected for the survey, namely Mohadi, Pawani and Sakoli. One PHC was selected from each taluka randomly. One subcentre was selected from selected PHC and one village from selected subcentre randomly from the list of subcentres and villages in the PHCs. So the three villages namely Virshi, Borgaon, Ekalari with population 2928, 1276, 2285 respectively and one urban ward namely Lala Lajpatrai ward with the population 3672 was selected randomly. By consulting the local residents of the selected area, central point was located and a pen was spinned to select the direction of travel. Households were numbered along the direction of travel. A number was randomly selected as 1 between total number of houses which was considered as starting household. The pre-designed questionnaire was used for collecting data. All the members of households were interviewed and then total of 30 households were interviewed in that area along the direction of travel. Parents and care givers answered for young children. The coverage survey captured data on a sample of 514 individuals from all four clusters. Total 263 participants were present at the time of survey and were actually interviewed. Data was filled, compiled and simple percentages were calculated by using Microsoft Excel sheet and Epi info. Statistical test chi-square was used for testing significance.

RESULT:

In this cross-sectional study, four clusters (Three rural villages and one urban ward) from Bhandara district resulted in a study population of 10,161 individuals. Data was collected from 514 beneficiaries.

Table 1. Age & gender-wise distribution of beneficiaries in the evaluation survey of MDA.

Age (Yrs.)	Male	Female	Total	%
2-5	15	10	25	4.86
6-14	32	48	80	15.56
15-59	164	177	341	66.34
>60	32	36	68	13.24
Total	243(47.3%)	271(52.7%)	514	100

Table 1 shows the age and gender-wise distribution of the study population. Majority of the respondents were in the age group of 15-59 years. Female and male beneficiaries were 52.7% and 47.2% respectively.

Table 2. Coverage of Mass Drug Administration campaign at Bhandara District

Particulars	Village 1	Village 2	Village 3	Urban	Total
Total no. of beneficiaries in selected houses	139	135	116	124	514
Total no. of beneficiaries received drugs	132	123	109	102	466
Total no. beneficiaries consumed drug	118	118	83	51	370
Total no. of beneficiaries consumed drug in presence of drug distributor	29	28	15	16	88
Percentage of coverage	94.96	91.11	93.96	82.25	90.57
Compliance rate %	89.39	95.9	76.14	50	79.39
Coverage compliance gap%	5.57	4.79	17.82	32.25	15.10
Percentages of consumption	84.89	87.4	71.55	41.12	71.24

Table 2 depicts that total beneficiaries in the evaluation survey were 514. The surveyed coverage for MDA was 90.57%. 466 beneficiaries received drugs and 370 consumed drugs giving compliance rate of 79.39%. Overall surveyed coverage for drug (DEC & Albendazole) consumption for Bhandara district was found to be 71.24% which was much less than the reported coverage by district health authority which was 93.5%.

Table 3. Reasons for not consuming drugs in MDA campaign

Reasons	No. (n= 144)	%
Did not receive tablets	48	33.33
Beneficiaries on empty stomach at time of DD's visit	24	16.6
Felt not necessary	38	26.38
Fear of side effects	7	4.8
No information	21	14.5
Complications of previous year's MDA	6	4.1

Most important reason for not consuming drug was that it was not distributed among 48(33.33%) of them followed by 38(26.38%) who thought it as unnecessary as they don't have the disease especially in urban area. The disparity in the reported coverage by district health authority can be attributed to (i) the drug distributors who left the drugs with the household members for beneficiaries who were absent at the time of visit (ii) those who were empty stomach and assumed them to have consumed the tablets. (iii) Only 21.6% had supervised drug consumption.(iv) Drugs felt unnecessary by 26.38% beneficiaries indicate need for IEC activities.

Table 4. Age, gender & region –specific drugs coverage in the evaluation of MDA campaign

Particulars	Eligible population	Actually consumed tablet	Consumption rate	Chi-square	P value
Age	2-5	20	80	X2 =81.3308	P=0.0001*
	6-14	35	43.75		
	15-59	285	83.57		
	>60	30	44.11		
Gender	Male	177	72.83	X2=0.1671	P=0.682
	Female	193	71.12		
Area	Rural	319	81.79	X2=77.1516	P=0.0001*
	urban	51	41.12		
Total	514	370	71.98		

Indicates high significance*

Consumption rate was significantly better among rural area compared to urban area. Maximum consumption rate was found among the age group of 15-59 years which was found to be statistically significant. And was similar among men and

women.

DISCUSSION

Mass drug administration (MDA) is the WHO recommended preventive chemotherapy strategy to stop transmission of Lymphatic Filariasis. WHO recommends multiple rounds of MDA with effective coverage (more than 65% coverage of the total population consuming the medicines) prior to assessing impact on infection levels[6].In order to assess the extent to which treatment was directly observed, coverage surveys are a basic tool of programme management permitting the identification and correction of problems.[5]The surveyed coverage for Bhandara district for DEC and Albendazole tablets consumption was 71.24% which was much less than the reported coverage by district health authority. Drug coverage indicator as defined by WHO is the proportion of individuals who actually ingested the medicines. The proportion of eligible population who were distributed drugs were reported as the coverage ratesby drug distributor[5].

The present study revealed that population covered by the drug distributor was 90.57% which is similar to a study conducted by **Mishra n et al** in Rewa district of Madhya Pradesh where coverage rate was 91.02%.[(8)] Compared to our study ,another study conducted by **Verma A et al** in Valsad district of Gujarat showed higher coverage rate of 94.81%[(9)].In our study, significantly higher coverage rate (p value = 0.0001) was found in rural villages (81.79%) as compared to urban areas (41.12%)[(8)]. Similar findings were observed by **Priya D et al** in Bhandara district of Maharashtra showed a significantly higher coverage in Rural area as compared to urban ward[5].This might be due to better response from the people as they are aware of these MDA rounds which are happening since few years as well as the drug distributor being the resident of the village had good rapport with the villagers.

This study revealed that actual MDA compliance was 79.39%.In rural area it was found to be 87.14% while in urban area it was 50%.Similarly total compliance observed was 66.66% by the study conducted by **Sharma A et al** in Damoh districts of Madhyapradesh[10]. Compared to our study, study conducted by **Verma et al** in Valsad district of Gujarat showed the higher compliance of 96.09% in rural area and 100% in urban area.[9]

Coverage compliance gap is a better indicator to assess the effectiveness of MDA program as actually reflect the proportion of people who do not consume the drug but drug is distributed to them and it gives the possible determinants for nonconsummation of drugs. The present study revealed a CCG of 15.10 % (32.25% in urban and 9.39 % in rural). Similar findings were observed the study conducted by **Marathe N et al** found much higher CCG of 23.48% (urban = 24.35%, rural= 23.22%)[(7)]. This can be improved by effective Behavioral change communication and community participation as well as supervised drug consumption.

Most common reason for non-compliance was inadequate distribution of drugs (33.33%) especially in urban areas that was mostly attributed to beneficiaries not at home indicating the inadequate conduction of mop up rounds. Similar finding were obtained in the study conducted by **Babu et al**[11] in Orissa. Other reasons for non-compliance were drugs not felt necessary (26.38%) followed by no information about Lymphatic Filariasis and MDA(14.5%).It was observed that inadequate IEC activities and improper counselling led to the beneficiaries to think drugs unnecessary. Different explanations were found in different studies for non-compliance.

In this study, only 6 persons (1.1%) had mild adverse reactions like nausea, vomiting, mild fever etc. after consuming DEC. Similar results were reported by **Dr.Jadhao A et al,Prasad V G et al** found 1.38%, 1.81% of adverse effects after consuming DEC.[(12,13)]

CONCLUSION AND RECOMMENDATIONS:

Coverage rate and consumption rate in this study was 90.57% and 71.24% respectively. Rural areas had better coverage and compliance than urban areas. So there is urgent need to strengthen MDA programme in urban areas in terms of increased compliance by supervised drug consumption as supervised drug intake was very poor. Mopping up activities must be under taken by health worker for the person who does not receive drug, who not present at the time of drug distribution or the house was locked on the campaigning day. This study shows the urgent need of strong guidelines and comprehensive implementing strategy as well as inter-sectoral co-ordination so as to reduce the non-coverage of beneficiaries and effort should be made to ensure supervised drug consumption. Involvement of local politicians and local health volunteers should be helpful for future rounds of MDA.

Refusal to take drugs as not felt necessary was the second most common reason for non- compliance. Efforts are needed to bridge this gap by proper counselling and IEC activities emphasizing the importance of drug consumption. All possible channels such as TV, Radio, recorded messages, WhatsApp messages and various mobile applications should be used for IEC activities. It should be done few days before the campaign for greater impact. Packed drugs can have better acceptability especially in urban areas that should be taken into consideration. Awareness programs and involvement of local leaders can bring about the expected change in the drug consumption attitude of the people. Tremendous efforts need to be taken to have efficient supervision of the drug distribution and consumption. Big celebrities, religious leaders, administrators, entrepreneurs and public health specialist should be asked to endorse this program. Adequate support from private practitioners and locally working NGOs can help make this programme a great success.

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