Original Research

POST MASS DRUG ADMINISTRATION ASSESSMENT OF COVERAGE, COMPLIANCE, AND OBSTACLES IN A LYMPHATIC FILARIASIS ENDEMIC DISTRICT OF CENTRAL INDIA .

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ABSTRACT

Introduction: Lymphatic Filariasis is still a huge problem in the endemic districts as it can cause deprivation in the economic condition of the sufferer, it is linked with stigma, and shame which leads to psychological problems in the individual. The aim was to assess the coverage, compliance, and obstacles post-Mass Drug Administration (MDA) of Filariasis in the Katni District. **Methods:** This community-based study was conducted in selected areas of the Katni district of Madhya Pradesh. Three rural primary health centers (PHCs) and one urban PHC were selected for the study. Afterward, 30 households were randomly selected from these 4 PHCs. The MDA drive was held in late Dec 2020 in the whole katni district. As an external evaluation, this study commenced 30 days after the drive and the data were collected. **Results**: A total of 128 households were surveyed, and 621 people were covered. 607 were eligible for drug administration. The overall coverage rate of MDA in the study was found to be 95.88 %. The overall effective coverage rate was 88.63 %. It was 93.93 % in urban and 86.65 % in rural areas. The overall coverage compliance gap was 7.37 %. The most common reason for the non-consumption of tablets was people busy doing work i.e., 47 %. **Conclusion**: It would be a challenge for the district to sustain this performance in the coming rounds of MDA. Equal Sensitization of the urban and rural populations through IEC activities and proper training for drug distributors is required.

Keywords: Lymphatic Filariasis, Coverage, Compliance, MDA, Obstacles.

Introduction

Lymphatic Filariasis (LF) is a disfiguring and debilitating disease and was ranked as the second leading cause of disability Globally (Ramaiah & Ottesen, 2014). It can cause deprivation in the economic condition of the sufferer, it is linked with stigma, and shame which leads to psychological problems in the individual. Its chronic condition in families will lead to loss of work and opportunities in employment which ultimately increases the treatment cost. Economic loss annually due to lymphatic filariasis in India came out to be huge about US $ 1.0 billion (Ramaiah & Ottesen, 2014). LF is still prevailing in 256 districts of 21 states and union territories (UTs) and, as of 2017,630 million population live in the endemic districts (MOHFW, 2018).

The National Vector Borne Diseases Control Programme (NVBDCP) is an umbrella program in India for the prevention and control of vector-borne diseases namely Malaria, Japanese Encephalitis, Dengue, Chikungunya, Kala-azar, and Lymphatic Filariasis. Out of the three diseases namely, Malaria, Lymphatic Filariasis, and Kala-azar are targeted for elimination.

The single dose of DEC (Diethylcarbamazine) annually as a mass drug administration in all endemic areas of filariasis in the country is the recommended strategy adopted by all the countries facing the problem. Several changes have been done in India's program for filarial control in NVBDCP in the last few years like the addition of the tablet albendazole for treating the countrymen who are residing in endemic areas. The drugs used in the MDA program are a combination of DEC (6 mg/kg body weight) + ALB (Albendazole) (400 mg) in endemic areas (MOHFW, 2018).

To interrupt the transmission of LF in India, essentially there should be five to six rounds of MDA annually. For each round to be effective, there should be an accomplishment of at least 65 % of coverage of the treatment of LF (WHO, 2011).

After the completion of mass drug administration rounds, the first transmission Assessment survey i.e., TAS1 is implemented among the children of 6-7 years of age in that particular district to validate the effectiveness of MDA.

If the infection rate is less than 2% Ag(antigen) or Ab(antibody) in children, then Mass drug administration is stopped. TAS 2 (transmission assessment survey) and TAS 3 rounds are conducted after MDA. The country is considered lymphatic filariasis free only if TAS 3 has been successfully cleared by the districts (MOHFW, 2018; WHO, 2011; Ichimori et.al., 2014).

Much of the success of the filarial elimination in the district depends on the successful completion of MDA. But often it was evident in previous studies and reports based on post-MDA surveillance that consumption of one dose of DEC was below the recommended levels. Many reasons were identified in the post-MDA surveillance based on which many implementations were improvised.

When the countrymen fail to comply with MDA, there arises a situation in which the causative agent is left untreated which results in the resurrection of the filarial cases and ultimately results in poor program success (Esterre et.al., 2001).

Therefore, the midterm assessment must be done by a neutral body who are associated with the district hospital or administration. The assessment should be completed within one month of MDA so that there should not be any recall bias reported. Keeping this in view the current study was undertaken to assess

the coverage, compliance, and obstacles with mass drug administration of filariasis in the katni district India.

Methods

This community-based study was conducted in selected areas of the Katni district of Madhya Pradesh. Primary Health Centres of Katni District were stratified into 3 categories according to their MDA 2013 coverage. Sample size calculation was based on the pre-laid guidelines of the National vector-borne disease control program (Directorate General of Health Services, MOHFW, Government of India, 2009). Primary health centers with below 50 % coverage form 1st category whereas 2nd and 3rd category was formed by PHCs having coverage between 50-80 % and above 80 % respectively. In Rural area, one PHC from each category were selected randomly. From each of the selected PHCs, one village was selected randomly for the household survey. In urban areas, One ward was randomly selected from the medium coverage i.e., 2nd category as per the NVBDCP guidelines (Directorate General of Health Services, MOHFW, Government of India, 2009). In each village and ward, 30 households were covered. MDA Drive was held in late Dec 2020 in the whole katni district. As an external evaluation, this study commenced 30 days after the drive and the data were collected.

We started the survey from the center of the village and ward, one direction was randomly selected, and all the consecutive households in that direction were included. If any household was found locked or the participant refused to take part or was not available at the time of the survey were excluded and next the household was approached. From every household, the interview was taken from the responsible adult member.

Children less than 2 years, pregnant women, and severely ill persons were excluded from the study. The household members were asked to bring the wrappers of consumed medicine to make spot observations. A pre-designed structured questionnaire in google form was used for data collection.

Informed consent was obtained from each participant. Confidentiality was maintained. This study was conducted after getting approval from the institution's ethics committee. For calculating various rates, the following working definitions were used as per NVBDCP guidelines (Ministry of Health and Family Welfare): Coverage rate - The percentage of the eligible population who have received the tablet. Compliance rate - The percentage of the eligible population who have consumed the tablet after receiving it. Effective coverage rate - The percentage of the actual target population who have consumed the tablet among the eligible population, and Coverage compliance gap- The percentage of the covered eligible population who have not consumed the tablets.

Data were entered into Microsoft excel 2016. Epi info version 7.2.5 was used to calculate descriptive statistics including the number and percentages of coverage and compliance of MDA.

Results

A total of 128 households were surveyed during the surveillance, Covering a population of 621. Out of them, 607 were eligible for drug administration as shown in table 1.

Table No. 1: Distribution of the study population concerning eligibility, tablets received and consumed

Village/ward name	Population covered	Eligible population	Tablet received	Tablet Consumed
CLP Ward	167	165	162	155
Bistara	164	160	156	139
Gairtalai	134	129	118	109
Majhgawan	156	153	146	135
Total	621	607	582	538

The overall coverage rate of the study population was found to be 95.88 % as shown in table 2. The coverage was highest in the CLP ward (urban area) and lowest in Gairtalai (rural area). The overall effective coverage rate was 88.63 %. It was 93.93 % in urban and 86.65 % in rural areas. The overall coverage compliance gap was 7.37 %. Effective coverage rate was higher among females and families with 4 or fewer members as shown in table 3.

Table No. 2: Area-wise Coverage, Compliance, Effective coverage, and Coverage Compliance gap

Rates	CLP ward %	Bistara %	Gairtalai %	Majhgawan %	Total %
Coverage rate	98.18 %	97.5 %	91.47 %	95.42 %	95.88 %
Compliance rate	95.67 %	89.10 %	92.37 %	92.46 %	92.43 %
Effective coverage rate	93.94%	86.87 %	84.49 %	86.53 %	88.63 %
Coverage compliance gap	4.33 %	10.90 %	7.63%	7.54 %	7.37 %

Table No. 3: Distribution of the Study Population according to their Eligibility, Consumption of Tablets, and Effective coverage

Variables	Eligible population	Actually Consumed	Effective coverage rate Percentage
Village/ward			
CLP Ward	165	155	93.93%
Bistara	160	139	86.87%
Gairtalai	129	109	84.49 %
Majhgawan	156	135	86.53 %
Age group			
2-5	27	21	77.77%
>5-14	97	79	81.44%
≥15	483	438	90.68%
Gender			
Male	295	258	87.46%
Female	312	280	89.74%
Family size			
≤4	155	147	94.83 %
>4	452	391	86.50 %
Area			
Urban	165	155	93.93%
Rural	442	383	86.65%

Only 42.97% of families had prior information about- mass DEC administration due to earlier rounds of MDA but about the recommended dosage, contraindications, or side effects people were unaware of or didn't receive any information from any source. Most of the families had not read or seen any banner, poster, newspaper advertisement, handbill, mike announcement, drama, street play, television /radio sports, etc., on MDA. Only 21.88% of families gave positive replies mostly from Urban settings and few saw in Health facilities.

The most common reason for the non-consumption of tablets was people busy doing work i.e., 47 %. While 20 % of the people were not present at home when the drug distribution came to their houses. (Figure 1) The most common side effect of drug consumption was abdominal pain and diarrhea i.e.,20.93 % while 16.28 % of the people develop a fever after consuming the drug. (Figure 2).

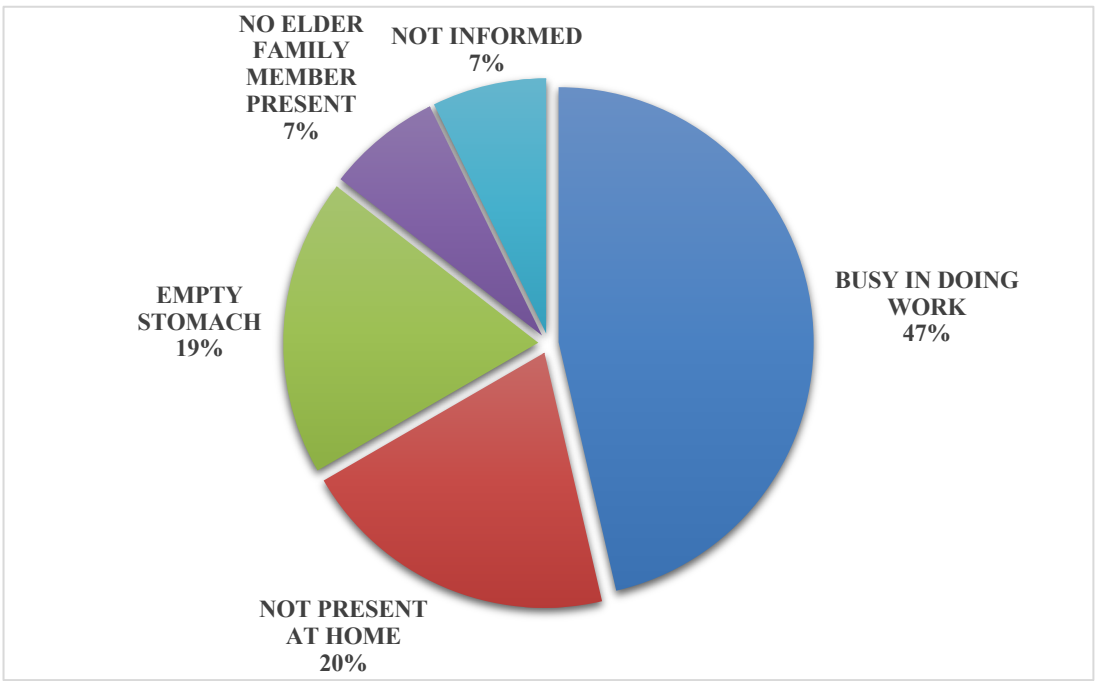

Figure no. 1: Various reasons for non-consumption of the drugs.

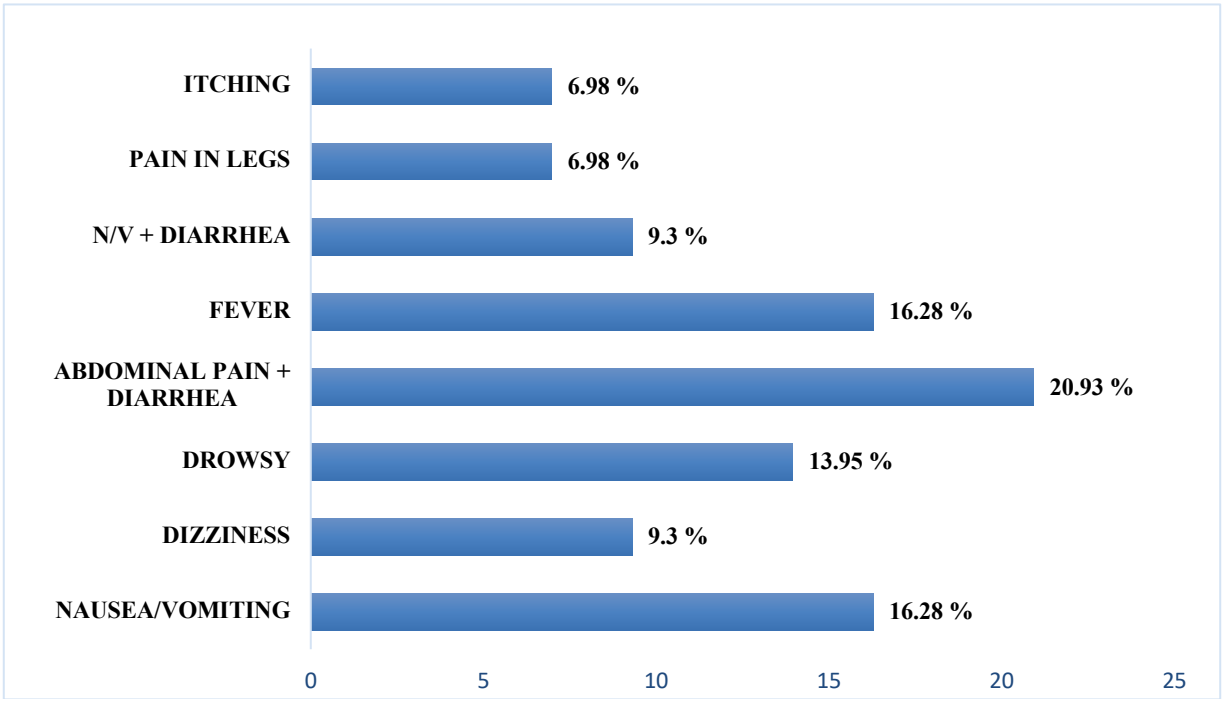

Figure no. 2: Distribution of the most common side effects after drug consumption.

Discussion

In Katni District 97.74% of the total population was eligible population as per Programme criteria for receiving MDA tablets i.e. 607 people were eligible out of a total of 621 surveyed populations. It was found that more females (89.74%) swallowed tablets compared to males (87.46%) reason for more compliance among women due to availability at home during MDA. But Gunasekran et al.,2015 and Hussain et al., 2014 found overall coverage of drug distribution is lower in females than males. The reason they quoted was the better literacy rate in males as compared to females.

Overall 88.63% of the eligible population swallowed tablets. The percentage of people who swallowed tablets was observed in increasing order with age as highest in the age group more than 15 years and lowest in 2 to 5 years. Similarly, Gunasekran et al.,2015 also reported lower coverage among children in the age group 2-5 years. The reason may be due to parents' concerns regarding their children and the lack of IEC and interpersonal communication between Drug distributors and beneficiaries.

A high coverage (>85%) in endemic areas, which is sustained for 5 years, is required to achieve the interruption of transmission and elimination of filariasis in India (MOHFW, 2018; Ministry of Health and Family Welfare," n.d"). In the present study, the coverage rate was found to be 95.88 % which was above the recommended level for the endemic area. In previous studies were done by Bhue et al.,2021 in Western Odisha and Panika et al.,2019 in Madhya Pradesh, the coverage rates were 87.2% and 86.54 %. While Hussain et al., 2014 found 99 % of the surveyed population had received the drug but only one-third of them had consumed it. There was a huge drop in compliance. Similarly, in our study, there was a drop observed in the effective coverage rate which was ranging from 84.49% to 93.93%. The effective coverage rate was higher in urban than in rural areas. Singh et al., 2013 reported 89% to 99% effective coverage, which was higher in proportion than our findings.

The compliance rate was 92.43 % in the current study which is also above the recommended level, it was higher in an urban area. Similar studies were done by Bhue et al.,2021 and Bhavani et al., 2022 where the compliance rate was higher, they stated that the higher compliance rate was because the people were compelled to take drugs in front of the drug distributors. Their finding was at a satisfactory level for effective coverage.

In the present study, the tablets were recovered from 19 (14.84%) families. It could be due to a lack of information about its benefits given to families and the unavailability of members during drug distribution. They had fear of side effects as well. The absence of elderly people at home, being busy at work, and empty stomach were the reasons given by the family members for noncompliance. Singh et al.,2013 reported the reasons behind noncompliance were forgetfulness regarding where they did keep the drugs or to eat, fear of side effects, and even without reason too.

In the population of 621, 8.73% of individuals did not swallow the DEC tablets. In 79.69% of families, at least one member swallowed drugs in the presence of drug distributors. In only 26 families, none of the family members swallowed the drug in front of the drug distributor. It was found that there was a lack of Interpersonal communication by drug distributors. Though drug distributors visited most of the families i.e. 96.1% and explained to more than 75% of families the purpose of DEC administration, about lymphatic filariasis and its transmission even then not all consumed tablets in the presence of Drug Distributors. It was also observed that no one favors the collection of DEC tablets from the booth. 100% of people in Katni preferred house to house approach for MDA.

Major Obstacles in Lymphatic filariasis elimination

1. Dearth of Entomological data

Indices like Mosquito density, infection rate, infectivity rate, and the mean number of L3/ infective mosquitoes were unavailable in the district as there was no entomological survey carried out in recent times. There was no entomologist appointed at the endemic district level. Also, we observed that the district which is endemic to filariasis for so long should be a good opportunity for research in the field like Vector-parasite compatibility, Vector control, Monitoring and implementation, Techniques, etc.

One thing that must be ongoing in practice is xenosurveillance, “it is the direct assessment of worms in vector mosquitoes with polymerase chain reaction (PCR) techniques used to detect recurrence of new infections during post-MDA surveillance" (MOHFW, 2018).

2.No impact assessment post-MDA by the district

As per the district nodal officer, there was no assessment by the district health team regarding the effectiveness of the mass drug administration. At the district level, there was no data on how many Remaining tablets of albendazole and DEC are left are the peripheral health facilities. Although a balance of about 54000 DEC tablets is left at the district hospital, that had been unused in the urban areas.

3.No IEC activity at the Village level.

There was a huge difference in IEC activity done in rural and urban areas. We found a lack of IEC activities in villages. Interpersonal communication has not been done adequately, no Mike announcement or drum beating at the village level was done, and no group meeting regarding the MDA was done in the village as it was validated by the villagers during our survey. So, there should be intensive IEC activity mainly in the form of large group meetings, public announcements, and personal Communication. But specifically in the low coverage area reported in the last MDA and should be completed at least 2- 3 days before MDA. there should also be an increase in the number of the poster and wall paintings. we appreciate the efforts in the Urban area where many innovations like Filaria rath (chariot), Voice messages for Filariasis, and Bags with messages for drug distributors were executed.

4. Lack of Proper training for Drug Distributors

It was found at most of the places that drug distributors had not persuaded the family members to swallow the drug in front of them. Which resulted in an increased compliance gap in the villages. During the training of the drug distributors, more emphasis should be given to age-wise doses of tablets given to patients. Drug distributors should be well-trained to encourage all the family members to swallow tablets in his/her presence. Must not exclude elderly people as we found that elderly people with Diabetes and hypertension were not given the drugs. Only people with very sick conditions should be excluded from MDA. The drug distributor should Stress the importance of drug swallowing, and the purpose & dose schedule of the drug mandatory.

To overcome the hindrances, the Filariasis elimination program must need a proper address from the District and state authorities on how to overcome these obstacles in the program with an appropriate roadmap guiding towards filariasis elimination in the district.

Limitation of the study- The study might have recall bias occurred in the study participant as the time duration between the Mass Drug Administration round and the Assessment of MDA Implementation round was one month. Ideally, it should be 2-3 weeks so that the community can recall the events without memory lapse.

Conclusion

Although the effective coverage rate in our study was above the recommended level, it would be a challenge for the district to sustain this performance in the coming rounds of MDA. Equal Sensitization of the urban and rural populations through IEC activities and proper training for drug distributors is required. Supportive supervision and monitoring of activities need to be strengthened in the program. An all-around approach should be needed by the district to break all the obstacles reported in the study to achieve a filairiasis-free status.

Conflicts of Interest

The author declares no conflicts of interest.

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