Mid-term assessment of mass drug administration of DEC for filariasis in Rewa district of Madhya Pradesh

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Abstract

Background: Filariasis has been a major public health problem in India that leads to both medical and social consequences. It causes irreversible chronic manifestations, such as elephantiasis, lymphoedema, and hydrocele, that are responsible for social stigma besides causing considerable economic loss and severe physical disability to the affected individuals.

Objective: Mid-term assessment of mass drug administration (MDA) of diethylcarbamazine (DEC) was carried out with objectives to review the progress of activities of single-dose DEC mass administration with respect to process and outcome indicators and to recommend mid-course correction measures.

Materials and Methods: This study was a cross-sectional study that was carried out in Rewa, one of the filaria endemic affected districts of Madhya Pradesh, India. It was carried out in August 2013. The study was conducted as per the standard guidelines given by National Vector Borne Disease Control Programme. In Rewa district, 120 households from three community health centers and one urban ward were randomly selected. Thereafter, randomly selected 30 households (each from three rural and one urban site) were interviewed for MDA of DEC for filariasis.

Results: Coverage rate of DEC tablets was 91.02% whereas compliance rate was 84.66% in Rewa.

Conclusion: The coverage in the study was 91.02%, but the compliance rate with drug ingestion was 84.66%, which ultimately led to a lower effective coverage (77.06%). The overall coverage was better in rural areas compared to urban areas, whereas compliance was little better in urban areas.

KEY WORDS: Mass drug administration, diethylcarbamazine, mid-term assessment

Introduction

Lymphatic filariasis (LF) is a mosquito-borne, chronically disabling tropical disease caused by infection with thread-like parasitic filarial worms Wuchereria bancrofti, Brugia malayi, and B. timori. It is an ancient disease and was recorded in India as early as 6th century BC by the famous Indian surgeon Susruta in his book Susruta Samhita.[1,2] In AD 7th century, Madhavakara described signs and symptoms of the disease in his treatise Madhava Nidhana, which hold good even today.[1,2] In 1709, Clarke called elephantoid legs in Cochin as Malabar legs.[1] The discovery of microfilariae in the peripheral blood was first made by Lewis in 1872 in Kolkata (Calcutta).[1] The infection is endemic in 83 countries worldwide, with more than 1.2 billion people at risk and 120 million already infected.[3] Of 120 million affected people, 40 million have limb or genital damage recognized as either lymphoedema/elephantiasis (15 million) or hydrocele (25 million) and twice that number with subclinical disease principally of the lymphatics or kidneys.[4] Southeast Asia region contributes to approximately two-thirds of global cases.[3] LF is endemic in 250 districts of 20 states in India and the population at-risk is approximately 600 million.[5]

The Global Programme to Eliminate Lymphatic Filariasis (GPELF) launched by the World Health Organization (WHO) in 2000 with the goal of eliminating LF as a public health problem by the year 2020 is the largest public health inter-vention program attempted till date.[6] It relies on integrated multilevel efforts at the global, national, and local levels to control the neglected tropical disease and focuses on preventive chemotherapy, vector control and morbidity

management and prevention of disability. India launched National Filariasis Control Programme (NFCP) in 1955 and it became a part of the National Vector Borne Disease Control Programme (NVBDCP) in 2003. National Health Policy 2002 envisages elimination of LF by 2015.[7] The strategy for achieving this goal is by annual mass drug administration (MDA) single-dose DEC (6 mg/kg body weight) for at least 5 years to the entire population of an endemic district (excluding children under 2 years, pregnant women, and severely ill patients) and home-based management of lymphoedema cases and hydrocelectomy operations in identified community health centers (CHCs) and hospitals.[8]

The International Task Force (WHO) has recommended that in mass treatment, diethylcarbamazine (DEC) is given to almost everyone in the community irrespective of whether they have microfilaremia or not, disease manifestations or no signs of infection in the area of high endemicity except children <2 years, pregnant women, and very sick patients.[9]

The unofficial reports from field suggested that actual drug consumption was much lower than the reported coverage by district malaria/filaria offices.[10] Mid-term evaluation of MDA activities reviews the progress of activities of single dose of DEC mass administration. Hence, the present survey was conducted for June 2013 MDA campaign with the objective to review the progress of MDA program by assessing coverage, compliance and role of drug distributor in DEC distribution, and to recommend measures for effective implementation of the program.

Material and Methods

For mid-term assessment of MDA of single dose of DEC in Rewa district of Madhya Pradesh, a house-to-house survey was carried out.

This was a cross-sectional study that was carried out in this district of Madhya Pradesh in August 2013. Study subjects were all the sampled eligible population in our study area.

Table 1: Distribution of population of surveyed district

District Rewa	Total population surveyed	Eligible Population, *n* (%)	Covered eligible population, *n* (%)
Cluster A	164	159 (95.85)	145 (90.56)
Cluster B	185	182 (96.61)	164 (90.10)
Cluster C	202	198 (95.90)	198 (100)
Cluster D	166	163 (97.82)	132 (80.98)
Total	717	702 (97.90)	639 (91.02)

Exclusion criteria included pregnant and lactating mother, children below 2 years, seriously ill persons, severely debilitated patient, and elderly people. The study was conducted as per the standard guidelines prepared by the NVBDCP.[11] In every district, four clusters (three rural and one urban) of 30 households each were selected. For selection of rural sites, standard guidelines of NVBDCP say that the whole area should be divided on the basis of distribution coverage reported by district health data. It is stratified as follows—depending upon MDA 2013 coverage all CHCs of the districts were first stratified into three groups as: (1) CHC with coverage below 50%, (2) CHC with coverage between 50% and 80%, and (3) CHC with coverage above 80%. In each category of the CHC, one CHC should be selected randomly. In case there is no CHC in a particular category, two CHCs from the next category may be selected. From each of the selected CHC, a list of all villages was obtained and one village was selected randomly for household survey. In each village 30 households were covered. The detailed questionnaire was used for collecting information regarding MDA. Similarly, in urban areas one ward was selected randomly for the evaluation of the program. In the selected ward 30 households were covered. In this way in each district 120 households were surveyed for the purpose of MDA evaluation. Randomly selected CHCs in REWA district were an urban ward and in rural village Silpara, CHC Govindgarh, Village Itora, CHC Raipur Karchuliyan, Village Hardi, and CHC Sirmour. The study clusters have been described as Clusters A, B, C, and D without any specific order or any reference to the actual name of the village/ward in this article.

The predesigned questionnaire (provided by Director, Health Services, State Health Committee, NVBDCP) was used for collecting information regarding MDA. House-to-house field Survey was carried out to collect information regarding consumption of DEC and other aspects of MDA coverage. Field work was completed in 4 days in the district and two faculty members along with two postgraduate students carried out the field work. Data were filtered and compiled, and simple proportions were calculated using a Microsoft Excel sheet.

Results

In the surveyed population, 97.90% individuals were eligible for DEC. The main reasons for noneligibility of DEC was children <2 years followed by pregnancy. Among those who were eligible, 91.02% were covered by DEC [Table 1].

Table 2: Compliance rate, coverage–compliance gap, and effective coverage rate

District Rewa	Eligible population	Dec given by D/D	Consumed (compliance rate, %)	Coverage–compliance gap (%)	Effective coverage rate (%)
Cluster A	159	145	111 (76.55)	23.45	69.81
Cluster B	182	164	140 (85.36)	14.64	76.92
Cluster C	198	198	175 (88.38)	11.62	88.38
Cluster D	163	132	115 (87.12)	12.88	70.55
Total	702	639	541 (84.66)	15.34	77.06

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

Area	Coverage rate (%)	Compliance rate (%)	CCG (%)	Effective coverage rate (%)
Urban (N =163)	80.98	87.12	12.88	70.55
Rural (N =539)	94.06	84.02	15.98	79.03
Total (N = 702)	91.02	84.66	15.34	77.06

Compliance refers to the actual consumption of drug by the community. All the persons who received DEC did not consume it necessarily. Compliance rate was low among the receivers of DEC, making the overall coverage rate even lower [Table 2]. Drug Compliance varied among rural and urban setting. Coverage rate in urban area was lower than that of rural areas, but compliance was little higher in urban area [Table 3].

The most common reason given by the respondents for nonconsumption of the drug was that they did not receive the drug from drug distributor (8.97%). Next important cause was the fear of side effects (5.32%) followed by the distrust in quality of loose tablets supplied by the government (3.59%). A couple of respondents (2.66%) were not aware about the importance of drug or did not have any information of tablets. A very few respondents did not give any specific reason for not consuming the drug. A very low proportion of respondents did not consume the drug as they were not present at the time of drug distribution and later was either not told by the family members or forgot to take it [Table 4].

As far as role of drug distributors is concerned, drug distributors persuaded for drug consumption in their presence (at least one member swallowed drug) in 25% households

(30 out of 120). The percentage in rural households was 27.77% (25 out of 90) whereas it was 16.67% (5 out of 30) in urban households.

In 64.16% (77 out of 120) households, drug distributors imparted knowledge about disease transmission, importance of drug regarding prevention, and so on. This percentage in rural population was 62.22% (56 out of 90) whereas it was 70% (21 out of 30) in urban households.

In this survey we found 32.5% (39 out of 120) households with prior information regarding MDA, drug dosage, schedule contraindications, and side effects. The percentage of same in rural households was 28.88% (26 out of 90), which was quiet low in comparison to urban percentage of 43.33% (13 out of 30). Most of the respondents who were aware of MDA were so because of the previous rounds held every year.

The percentage of households who saw any kind of advertisements was quite low, 5% (6 out of 120). It was further disappointing when we saw it in rural scenario, only 2 out of 90 households (2.22%) reported that they saw any kind of advertisement, in urban scenario it was little better but not at all satisfactory; it was only 4 out of 30 households (13.33%) [Table 5].

Discussion

In endemic areas, DEC coverage of more than 85% continuously for 5 years is required to achieve the interruption of transmission filariasis and elimination of this disease in India.[11,12] The major challenge with the currently available drugs is to attain this high coverage. The coverage of 91.02%

Table 4: Reasons for not swallowing the drug

Reason	Rural (n = 114)	Urban (n = 47)	Total (n = 161)
Drug not delivered	32	31	63
Fear of side effects	30	4	34
Respondent was out of house (drug was handed over to the family members and later forgotten or discarded)	09	2	11
Distrust on quality of the loose tablets supplied by government	18	5	23
Not perceived importance of drug, not aware	14	3	17
Due to illness	2	1	3
Didn't specify any cause	9	1	10

Table 5: Drug distributor's interest and media approach to reach the households

District Rewa	Drug distributor persuaded swallowing of drug in his presence, N (%)	Drug distributor explained the importance and other details regarding prevention and transmission, N (%)	Prior information of MDA dose, schedule, contraindications, and side effects, N (%)	Any audio or visual media announcement on MDA , N (%)
Cluster A (N = 30)	05 (16.67)	25 (83.33)	8 (26.67)	2 (6.67)
Cluster B (N = 30)	07 (23.33)	14 (46.67)	7 (23.33)	0 (0)
Cluster C (N = 30)	13 (43.33)	17 (56.67)	11 (36.67)	0 (0)
Cluster D (N = 30)	5 (16.67)	21 (70)	13 (43.33)	4 (13.33)
Total (N =120)	30 (25)	77 (64.16)	39 (32.5)	6 (5)

can be said satisfactory but compliance rate of 84.66% makes the effective coverage much lower (77.06%) than the satisfactory level.

Eligibility Rate

Eligibility Rate in the surveyed district was found to be 97.90%, which was similar to the study by Nirgude et al. (96.2%).[13]

Coverage and Compliance

In this study, DEC coverage in surveyed district was 91.02% and consumption rate was 84.66%. Nirgude et al.[13] in their study found the coverage rate to be 79.7% and consumption rate was merely 43.04% whereas Godale Lata and Ukarande Balaji[14] found coverage rate to be 89.37% and consumption rate was merely 73.1%. Karmakar et al.[15] reported the coverage rate to be 90.44% and consumption rate 69.43%. The coverage rate is in concordance with the other similar studies whereas the consumption rate found in our study is little higher in comparison.

Spot swallowing rate and role of drug distributor

In our study, drug distributors could convince only in 25% of households for spot consumption so that at least one member swallowed drugs in their presence. Nirgude et al[13] in their study found that drug distributors ensured swallowing in 22.91% of households. These findings are consistent with the findings of our study.

In our study, drug distributors explained about LF, mode of transmission and why DEC was administered in 66.14% families. Above findings clearly explains the reasons for low spot swallowing.

In this survey we found that 32.5% (39 out of 120) households had prior information regarding MDA, drug dosage, schedule, contraindications, and side effects. The percentage of same in rural households was 28.88% (26 out of 90), which was quite low in comparison to urban percentage in which it was 43.33% (13 out of 30). Out of the respondents who were aware about MDA majority had information because of previous rounds held every year. The lack of awareness clearly shows that sufficient advertisement activities regarding the purpose and importance of MDA were not carried out in the surveyed district, which ultimately led to low compliance.

Recommendations

In the surveyed area although coverage is satisfactory but still there is a scope for improvement. The most common reason stated by people for not consuming the drug was that they did not receive it. To address this problem more manpower can be used. Compliance for intake of given tablets was also considerably low. If we are able to fill this gap effectively, only then we can think about the success of the program. The most common cause of noncompliance was the fear of side effects. People have hearsay information that the drug is harmful, and they are preoccupied with the fact that someone in their acquaintances experienced some kind of side effects or discomfort. For a successful program, all these notions need to be addressed and rectified by drug distributors. Patient efforts should be made to assure people about the safety of drug. Health education camps should also be organized in the leadership of a doctor with special focus on disease transmission, parasite cycle, and importance of drug in breaking of that cycle. The role of IEC in success of any health program cannot be ignored; the more the awareness among the community about the disease, its complications, and methods of prevention, the higher are the chances of success of any program. The drug distributors should emphasize on the importance of drug swallowing, purpose, and schedule of drug dosage. They should be properly trained and motivated for the same. DOTS (Directly Observed Treatment Strategy) can be followed for the administration of DEC by promoting "on the spot" swallowing of the drug in the presence of drug distributor. Coverage evaluation should be done strictly within 2 weeks after MDA as delayed evaluation can limit the results because of recall bias. Very specific, targeted training should be conducted for all stakeholders. The last but not the least thing to lay emphasis upon is the implementation of vector control measures. The chemoprophylaxis program should work as an adjunctive to the Vector Control program and not as a substitute. The proposed recommendations are based on an assessment conducted in a small geographical area (a single district). They can be collaborated with other extensive researches conducted at regional and national levels for achieving better coverage and compliance in MDA programs and eventual elimination of LF.

Conclusion

The risks of insufficient compliance include the possible emergence of drug resistance, the potential need for additional rounds of treatment with their associated costs, and the risk of program fatigue at the community and health service levels. MDA program should not be restricted to tablet distribution only and due importance should be given to achieving improved and sustained compliance, promoting health education, and managing side effects. Every effort should be made by drug distributors to convince the people to consume drug in their presence. Efficient microplanning, intersectoral coordination, interpersonal communication, educating the community people about LF and the purpose of MDA, and motivating the community to participate in the MDA program can strengthen the MDA program planning and implementation.

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