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Mass drug administration to eliminate lymphatic filariasis in Southern India

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RESEARCH

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Abstract

Background

Lymphatic filariasis is an important public health problem in India. Inspite of National filarial control programme (NFCP) being in place for lymphatic filariasis (LF) elimination, several important issues need to be addressed. There is uncertainty about the coverage and compliance to treatment in order to achieve elimination.

Method

A community based cross-sectional study was conducted as per the National Vector Borne Disease Control Programme (NVBDCP) directions. The study included survey of 200 households of Dakshina Kannada District, South India where the Mass drug administration (MDA) program was conducted. The main objective of the study was to assess the coverage and compliance to MDA.

Results

Out of the total 1050 eligible people, 876 (83%) received the DEC tablets; so, the coverage was 83%. Among those who received the tablets, only 777 (88.7%) received the adequate dose and only 670 (76.8%) people actually consumed the tablets. Hence, compliance rate was only 76.8%.

Conclusion

The planning and implementation of MDA programme needs to be strengthened by efficient micro planning, inter sectoral co-ordination and motivating the community to participate in the MDA programme.

Key Words

Compliance, Coverage, Lymphatic Filariasis, Mass drug administration

Background

Lymphatic filariasis (LF), an infection caused by a mosquito borne parasite, is the second leading cause of disability worldwide, affecting more than 120 million people in 80 countries. It is a major cause of physical and emotional suffering, as well as economic loss. The three species of nematode worm that cause LF are *Wuchereria bancrofti*, *Brugia malayi* and *Brugia timori*. Bancroftian filariasis accounts for 90% of cases worldwide, including all cases of LF in the Pacific.[1] Worldwide more than a billion people in over 80 countries are at risk of LF. About 64% of global population who are at risk of LF infection are living in Southeast Asia region. It is estimated that 554.2 million people are at risk of LF infection in 243 districts across 20 states and union territories in India.[2] Approximately 1/3rd of the people infected live in India, 1/3rd in Africa, the remainder in South Asia, Americas and the Pacific. In tropical and subtropical areas where lymphatic filariasis is well established, the prevalence of the infection continues to increase. Lymphatic Filariasis was classed as one of six infectious diseases to be eradicable by World Health Organization (WHO). The disease was recorded in India as early as 6th century B.C. by the famous Indian physician, Susruta in his book 'Susruta Samhita'.[3] The National Filaria Control Programme (NFCP) was launched in the country in 1955, with the objective of delimiting the problem, to undertake control measures in endemic areas and to train personnel to man the programme. The main control measures were mass diethylcarbamazine (DEC) administration, antilarval measures in urban areas and indoor residual spray in rural areas. NFCP was assessed in 1960 which revealed the failure of mass DEC administration due to community non-cooperation and ineffectiveness of

insecticidal indoor spray due to high resistance in the vector.[4] Currently, the Global Programme to Eliminate Lymphatic Filariasis (GPELF) depends largely on mass drug administration (MDA) to interrupt the transmission of *W. bancrofti*. This strategy is based on the evidence that single annual doses of antifilarial drug DEC with or without ivermectin (IVR) or albendazole (ALB) can suppress microfilaraemia for prolonged periods, and the cumulative effect is expected to lead towards the elimination of lymphatic filariasis.[5, 6] MDA is the most practical and feasible method of controlling lymphatic filariasis. It is now targeted for elimination globally by the year 2020. National Health Policy 2002 aims at elimination of transmission and prevention of disability due to LF by the year 2015. In India, Mass Drug Administration of DEC was started on 5th June 2004. In Karnataka 8 districts are endemic currently, Dakshina Kannada, being one among them. Hence, the study was done with the objective of assessing the coverage and compliance to mass drug administration of DEC in the Dakshina Kannada district.

Method

A community based cross-sectional study was conducted as per the National Vector Borne Disease Control Programme (NVBDC) directions. The study included survey of 200 households of Dakshina Kannada District among which 50 households were from the urban area of Thota Bengre, 150 households were from the 3 rural areas of Alake, Okkettur, Lingapayya Kadu, where the MDA program was conducted. Details were collected as per the proforma designed by NVBDC Program for the country wide survey. Data was collected by faculty members, post graduates and Medico social workers of Department of Community Medicine, Kasturba Medical College, Manipal by house to house visits. The study covered a total of 200 households with a total population of 1090 persons. Adhering to the criteria of NVBDCP, pregnant women, children less than two years of age and seriously ill people were excluded from the study. Therefore, for compliance and coverage a total population of 1055 people was considered. The data obtained was entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 11.5 for windows.

Results

Of the 1090 individuals, 278 (24.5%) were from urban area and 812 (74.5%) were from rural areas. Table 1 shows that among the study subjects 51.8% were males and 48.2% were females. Majority (69.4%) belonged to the age group of 15-60 years. The study subjects also included 25 children below 2 years and 10 pregnant women, who were excluded from the analysis. About 181 (90.3%) respondents were aware of filariasis and 130 (64.8%) people were aware about the MDA program. The most frequent source of information about the MDA program were health workers 322 (61.3%) and media 99 (18.9%). Our study showed that of the total 1050 eligible people 876 (83%) received the DEC tablets; accounting for 83% coverage rate. Among those who received the tablets, only 777 (88.7%) received the adequate dose and only 670 (76.8%) people actually consumed the tablets. Hence, the compliance rate was 76.8%. Compliance refers to actual consumption of the drug by the community. Around 179 (16.9%) did not receive the tablets. Out of the 664 (62.9% of the eligible population) who received albendazole tablet, only 498 (75%) consumed the tablet. None of the subjects experienced any side-effects. In our study 93 (22.6%) people did not perceive filariasis as a serious health problem and felt that they will not be affected by the disease. It was the most common reason for not taking the drug. Presence of medical disorders 38 (9.2%) was the other reason for non-compliance.

Table 1: Age and gender-wise distribution of study population (N=1090)

Variables	N (%)
Age (Years)	
< 2	25 (2.3)
2-5	80 (7.3)
6-14	174 (15.9)
15-60	756 (69.4)
> 60	55 (5.1)
Gender	
Male	526 (48.2)
Female	564 (51.8)

Discussion

One of the strategies for elimination of lymphatic filariasis is to achieve 90% coverage in the MDA campaign which is conducted every year in the endemic districts for four to six years. The major challenge with the MDA programme is to sustain this high coverage for a period of at least five years. However, studies have shown that the main limitation in this programme is a comparatively poor coverage of drug distribution and consumption.[7] In our study the coverage rate was 83%, however the compliance rate was only 76.8%. In a study conducted by B.G.Ranganath[8] the coverage rate of DEC was 37.3%. In a study conducted by Awasthy et al [9] the coverage of the last MDA was estimated to be 77%

which is similar to study conducted by Ashwini et al[7] however the compliance was only 39.6%. A study conducted by Babu et al[10] in the year 2003, noted that in the East Godavari district of Andhra Pradesh, 77% population received DEC in MDA programme of which 64% consumed the medicine, however in a study conducted in East Godavari by Mukhopadhyay et al[11] in the year 2008, the maximum coverage and consumption of DEC tablets during MDA programme was noted to be 94.5% and 76.1% respectively. The reason for higher coverage and better compliance in the region were due to the good surveillance and supervisory mechanisms. In another study conducted by Cantey PT[12] et al the compliance was 90%. In order to increase the compliance, the drug distributors must ensure that the drugs are swallowed in their presence (directly-observed treatment) and mopping-up activities must be undertaken by them in the households where there are absentees on the campaign day.[13] In our study information regarding MDA program was obtained by health workers 322 (61.3%) and media 99 (18.9%). Media was reported to be the most common source of information (62.3%) even by Awasthy et al.[9] In a study conducted by Ashwini et al [7], 73 (31.7%) respondents had come to know about MDA from health personnel, 128 (55.6%) through media (TV, radio and miking) and 42 (18.2%) from Non Governmental Organisations(NGOs). Mukhopadhyay et al[11] reported that 77.8% respondents came to know about MDA from health personnel and 20.8% through media whereas NGO's had very little involvement.

Conclusions

A high level of coverage (>85%) in endemic areas is essential for achieving elimination of lymphatic filariasis. The major challenge with MDA programme is to sustain this high coverage for a period of at least five years. However, studies have shown that the main limitation of this programme is a comparatively poor coverage of drug distribution and consumption. Hence, the need of the hour is improvement in the drug delivery strategies. Our study shows that the coverage of MDA program is 83% which is less than the national goal of 90% coverage. The planning and implementation of the MDA programme needs to be strengthened by spreading the information regarding MDA via locally available means, much before the beginning of the program. Emphasis needs to be given on service, good micro planning, inter sectoral co-ordination, teaching and training of health work force and more importantly on the community participation. The intensive health education campaigns about MDA should be conducted in the villages organised by Panchayath raj institutions, private hospitals, and district health authority. The private practitioners should get involved in MDA programme and in regular Indian Medical Association (IMA) meeting the importance of MDA need to be emphasized. These are the key elements for improving coverage and compliance.

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PEER REVIEW

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests

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