

Evaluation of Mass Drug Administration with Albendazole against Lymphatic Filariasis in Bidar district, Karnataka

Ravindranath A. Bhovi¹, Vijaykumar Mane^{2,*}

¹Associate Professor, ²Assistant Professor, Dept. of Community Medicine, Koppal Institute of Medical Sciences, Koppal Karnataka, India

***Corresponding Author:**

Email: vijaymane01@gmail.com

Abstract

Introduction: Lymphatic Filariasis is one of the most debilitating and disfiguring disease and is a major public health problem in India. Government of India had set the goal of elimination of disease by 2015 and Mass Drug Administration (MDA) is recognized as the main strategy to achieve it. Albendazole in combination with Diethyl carbamazine proved to have both long-term effectiveness in decreasing microfilaraemia and adult filarial worm antigen levels.

Objective of Study: To estimate coverage and compliance to Mass Drug Administration (MDA) with Albendazole in Bidar District.

Materials and Methods: A cross sectional evaluation survey was conducted in the month of September 2016 in Bidar district using multi-stage cluster sampling technique. A total of 744 subjects were interviewed and information about intake of Albendazole was collected in a predesigned questionnaire after taking an informed consent. Data thus obtained were entered and analyzed using Epi info software version 3.5.4.

Results: The coverage, compliance and effective compliance to Albendazole as a part of MDA in Bidar district were 82.5%, 72.2% and 59.6% respectively. Among those who have received, only 39.3% have taken Albendazole by DOTS (Directly observed treatment).

Conclusion: The present study demonstrates poor compliance to Albendazole during MDA campaign in Bidar district, emphasizing the need to emphasize on DOT method of drug administration for better compliance.

Keywords: Albendazole, Compliance, Filariasis, Mass drug administration.

Introduction

Lymphatic Filariasis, a vector borne tropical disease is an important public health problem in many developing countries including India. Though not fatal, it is one of the most debilitating and disfiguring disease and imposes severe social and economic burden on the affected individuals, their families and communities. It is caused by nematode parasites namely *Wuchereria bancrofti* being responsible for 90% of infections all over the world and the remaining infections are by *Brugia malayi* and *Brugia timori*.¹⁻⁵

Lymphatic Filariasis is endemic in more than 83 countries/territories, with more than a billion people at risk of infection with South East Asian Region alone contributing to 65% of risk. It is one of the world's leading causes of permanent and long-term disability with an estimated 5.1 million disability adjusted life years (DALYs) lost annually. As per recent estimates nearly 550 million people are at risk of infection in 243 districts across 20 states/ union territories of India and an estimated 50 million are already infected with half of them suffering from chronic forms of the disease. Besides causing acute physical suffering it impedes the earning capacity of the individual and leads to mental trauma due to physical disfiguring and the social stigma associated with it.^{2,3,6}

National Health Policy (2002) had set the goal of elimination of Lymphatic Filariasis in India by 2015 and Mass Drug Administration (MDA) was recognized as the main strategy to achieve it. Consequently, India's

National Vector Borne Disease Control Programme has scaled up MDA with Diethylcarbamazine (DEC) to interrupt transmission of Lymphatic Filariasis over the past several years and recently started adding albendazole to therapy with the goal of providing mass drug treatment to all 590 million Indians living at risk of infection.

Albendazole in combination with DEC proved to have both long-term effectiveness in decreasing microfilaraemia and adult filarial worm antigen levels in *Wuchereria bancrofti* infections. Further, combination therapy is also having important additional public health benefits like control of Soil transmitted Helminthic infections and opens the possibility of integrating a geohelminth control programme with a filariasis control Programme, where these nematodes occur concurrently.^{2,3,7-9} With this background, the following study was undertaken.

Objective of Study

To estimate coverage and compliance to Mass Drug Administration (MDA) with Albendazole in Bidar district.

Materials and Methods

The present survey was a cross sectional study conducted as an Independent evaluation to assess coverage and compliance to Albendazole as a part of MDA, Done in the month of September 2016 as per Regional Office for Health and Family Welfare

(ROHFW), Bangalore guidelines, following 13th additional round of MDA in Bidar district in August 2016.

Sampling Technique

Multistage sampling technique was used for sample selection. As per the guidelines, four sites/clusters were selected which included 3 rural and 1 urban sites. Selection of Urban site/cluster: done by simple random sampling from a list of all the urban sites in Bidar district.

Selection of rural site/cluster: As per guidelines, we were supposed to select one cluster each from low, medium and high coverage areas. In order to select these three sites/clusters, all the PHCs were arranged in descending order based on the district reported coverage of MDA. The difference between the highest coverage (108%) and the lowest coverage (70%) was 39%. This difference was divided by 3 to classify all the PHCs into three strata as High (96 – 108), Medium (83 – 95) and Low (70 – 82) coverage areas for MDA. From each stratum, one PHC was selected by Simple random sampling method. Subsequent selection of sub-center in each PHC and village in selected sub-centers was done by simple random sampling.

Data Collection

The households in the villages were randomly selected and all the members of the household present at the time of visit were interviewed using separate predesigned evaluation formats for DEC and Albendazole, after taking an informed consent. The minimum number of persons to be interviewed were 150 per site/cluster as per guidelines, thus making a minimum sample size of 600.

Exclusion Criteria

1. Beneficiaries absent at the time of house visit.
2. Temporary visitors/ guests to the house.

Statistical Analysis

The data were analyzed using Microsoft office excel version 2013 and only the results pertaining to Albendazole are presented in this paper.

Results

The evaluation team visited a total of 182 families in all the four sites/clusters and interviewed 744 subjects during the survey.

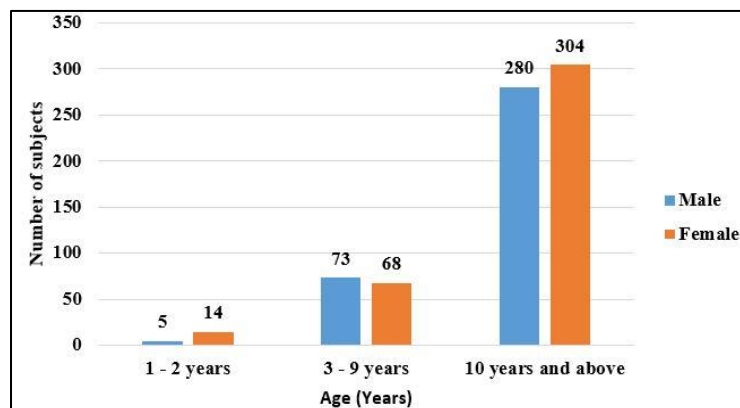


Fig. 1: Age and Gender wise distribution of study population (n = 744)

Fig. 1 shows the age and gender wise distribution of study sample. It is evident from the figure that the overall number of females i.e. 386 (51.8%) was marginally higher than males in the survey. Out of the 744 subjects interviewed, 3 study subjects were not eligible for MDA with Albendazole as they were pregnant at the time of campaign.

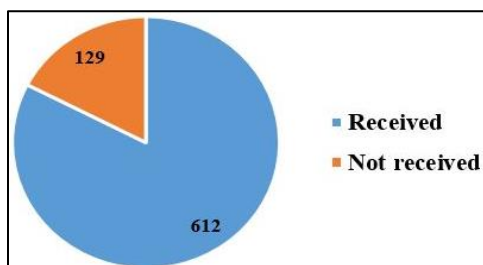


Fig. 2: Distribution of eligible study population according to coverage for Albendazole (n = 741).

Fig. 2 depicts the distribution of eligible study subjects according to coverage for Albendazole as a part of MDA.

Coverage is defined as the proportion of eligible population who received MDA medications and it was found to be 612 (82.5%) in the survey.

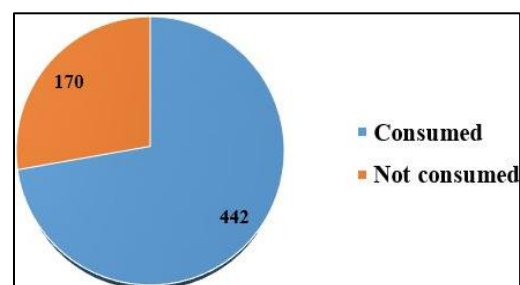


Fig. 3: Distribution of eligible study population according to compliance for Albendazole (n = 612).

Fig. 3 shows the level of compliance for Albendazole in the present survey. Compliance is defined as the proportion of persons who have consumed Albendazole, among those who have received and it was 442 (72.2%). Further, Effective compliance rate which is defined as the proportion of total eligible population who consumed Albendazole considering all the constraints from both the suppliers and consumers during MDA campaign, revealing the actual coverage was found to be 442 (59.6%). Among those who have consumed Albendazole, only 174 (39.3%) agreed to have taken it by DOT method (Directly observed treatment).

Discussion

Control of Lymphatic Filariasis in India had taken a new turn with the introduction of yearly single-dose, two-drug (DEC + ALB) mass administration. A high coverage (>85%) in endemic areas, which is sustained for 5 years, is required to achieve the interruption of transmission and elimination of disease in India.^{1,6,8} A number of studies have been done in the recent years by different authors in different settings and different time periods on evaluation of mass drug administration. The present paper focusing only on the evaluation of MDA with Albendazole however differs from majority of them which have presented results pertaining to intake of both DEC and Albendazole as a whole.^{2-6,10-12}

The coverage in the present survey was 612 (82.5%) similar to the findings of many other studies.^{3-5,10,13-15} The compliance rate to Albendazole however was bit lower i.e. 72.2% in the survey and so does effective compliance rate which is consistent with the findings of few other studies.^{5,11,15} Further, many other authors have found even lower compliance rates in their studies.^{1,2,4,6,10,12-14} When we look at a few studies done in same study setting but during different time periods earlier than this, it was found that the compliance rate has much improved over the years, which is good sign of progress.^{2,6,12,15}

Intestinal helminthic infections are widespread in India, causing nutritional deficiencies and impaired childhood cognitive development. Combination drug therapy with DEC and ALB has been suggested as a comprehensive measure to control both intestinal helminths and Lymphatic Filariasis because of the 'ancillary benefits' of ALB and the resultant enhanced compliance of the population at risk. Further, a number of studies have also found additional benefits of MDA with DEC and ALB in reduction of prevalence as well as transmission of Soil transmitted Helminthiasis.^{8,9,16}

Conclusion

The compliance rate to Albendazole in the study setting was very poor despite good coverage. Mop up sessions should be undertaken to improve coverage besides emphasizing on DOT method of drug administration for better compliance.

Acknowledgement

We express our sincere and heart felt gratitude to the Senior Regional Director Dr K Ravi kumar, ROH & FW, Bangalore for giving us the opportunity to carry out evaluation survey. We express our sincere gratitude for the support and cooperation provided by DHO, Bidar and NVBDCP Officer, Bidar, Karnataka.

References

1. Patel PK. Mass drug administration coverage evaluation survey for lymphatic Filariasis in Bagalkot and Gulbarga Districts. *Indian J of Community Med.* 2012;37(2):101-106.
2. Dharukaswami, Mallayya, Koradhanyamath, Kulkarni P, Holla R. Coverage and compliance MDA programme for lymphatic filariasis in Bidar District, Karnataka, India. *Asian Pac J Trop Dis* 2012;2(4):290-292.
3. Gudegowda KS, Duraisamy S, Narayanappa RR, Sobagiah RT. Evaluation Of Mass Drug Administration For Lymphatic Filariasis In Bagalkot District, Karnataka, Cross Sectional Study. *National Journal of Research in Community Medicine* 2017;6(1):71-76.
4. Mishra A, Kar K, Satapathy D. Mass Drug Administration against Filariasis - A study on Coverage and compliance, in a coastal district of Odisha. *J. Commun. Dis.* 2015;47(4):13-18.
5. Anil NS. Assessing Coverage of Mass Drug Administration against Lymphatic Filariasis in Gulbarga District, Karnataka. *International Journal of Medicine and Public Health* 2012;2(3):25-28.
6. Gowda P. Post mass drug administration evaluation survey for Lymphatic Filariasis in Bidar district. *Int J Med Sci Public Health* 2013;2:235-238.
7. Cantey PT, Rout J, Rao G, Williamson J, Fox LM (2010) Increasing Compliance with Mass Drug Administration Programs for Lymphatic Filariasis in India through Education and Lymphedema Management Programs. *PLoS Negl Trop Dis*4(6):e728.doi:10.1371/journal.pntd.0000728
8. Mani TR, Rajendran R, Munirathinam A, Sunish IP, Abdullah M, Augustin DJ et.al. Efficacy of co-administration of albendazole and diethylcarbamazine against geohelminthiasis: A study from South India. *Trop Med Int Health* 2002;7(6):541-548.
9. Mani TR, Rajendran R, Sunish IP, Munirathinam A, Arunachalam M, Satyanarayana K et.al. Effectiveness of two annual, single-dose mass drug administrations of diethylcarbamazine alone or in combination with albendazole on
10. Soil-transmitted helminthiasis in Filariasis Elimination. *Trop Med Int Health* 2004;9(9):1030-1035.
11. Ranganath BG. Coverage survey for assessing mass drug administration against lymphatic Filariasis in Gulbarga District, Karnataka, India. *J Vector Borne Dis* 2010;47:61-64.
12. Havale NG. Evaluation of coverage and compliance of elimination of lymphatic filariasis by Mass Drug Administration campaign in Gulbarga and Yadgiri districts of Karnataka state. *Int J Res Med Sci* 2015;3(8):2105-8.
13. Rohith M, Angadi MM. Coverage and compliance of mass drug administration for elimination of Lymphatic Filariasis in endemic areas of Bidar district, Karnataka. *Int. J. of Pharmacy and Analytical Research* 2016;5(2):276-280.
14. Kulkarni P, Kumar R, Rajegowda RM, Channabasappa HG, Ashok NC. MDA Program against Lymphatic

- Filariasis: Are we on the path to success? Experience from Uttara Kannada District, Karnataka. *Int J Med Public Health* 2014;4:243-6.
16. Ravish KS, Ranganath TS, Riyaz BS. Coverage and Compliance of Mass Drug Administration for Elimination of Lymphatic Filariasis in endemic areas of bijapur district, Karnataka. *Int J Basic Med Sci* 2011;2(2):86-89.
 17. Ranganath TS, Reddy NR. Elimination of Lymphatic Filariasis: Mass Drug Administration in Endemic Areas of (Bidar District) Karnataka-2008. *Indian J Community Med* 2012;37(4):219-222.
 18. Rochars MBD, Direny AN, Roberts JM, Adiss DG, Radday J, Beach MJ et.al. Community-wide reduction in prevalence and intensity of Intestinal Helminths as a collateral benefit of Lymphatic Filariasis elimination programs. *Am J Trop Med Hyg* 2004;71(4):466-470.