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Original Research Article

Evaluation of coverage and compliance to mass drug administration for lymphatic filariasis elimination in two endemic districts of Karnataka

Anwith H. Shivalingaiah[1], Ravikumar K.[2], Sunil M. Gurupadaswamy[1]*

[1]Department of Community Medicine, Kempegowda Institute of Medical Sciences, Banasankari 2nd stage, Bengaluru, Karnataka, India
[2]Kendriya Sadan, Koramangala, Benagaluru, Karnataka, India

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***Correspondence:**
Dr. Sunil M. Gurupadaswamy,
E-mail: sunnymg9@gmail.com

ABSTRACT

Background: Lymphatic filariasis is a debilitating and disfiguring disease causing significant socioeconomic burden. India is endemic for filariasis which includes Kalaburagi and Yadgir districts in Karnataka. India has the target for filariasis elimination by 2020 and mass drug administration [MDA] is a strategy for elimination. The objective of the study was to evaluate the coverage and compliance of mass drug administration against lymphatic filariasis.
Methods: The study was a cross sectional study conducted during the month of October 2018 in Kalaburagi and Yadgir districts. The study subjects included all the residents of cluster except subjects aged below 2 years and pregnant women. Multi stage sampling was used and three clusters from rural area and one cluster from urban area from each district. Data collection was done by household survey after informed consent using a standard questionnaire.
Results: A total population of 1,963 subjects residing in 399 houses of two districts was included. Majority of the study subjects 1517 (77.27%) were in the age group of more than 15 years with predominantly males 984(50.12%). The coverage rate and compliance rate of MDA was 83.17% and 92.46% in Kalaburagi district and 86.71% and 86.98% in Yadgir district respectively. The effective coverage rate and coverage compliance gap was 76.89% and 7.53% in Kalaburagi district, 75.42% and 13.01% in Yadgir district. Incomplete dose of MDA was consumed by 17 subjects in Kalaburagi district and 21 subjects in Yadgir district.
Conclusions: The effective MDA coverage in both the study districts is below 85% which is not satisfactory.

Keywords: Filaria, Mass drug administration, Coverage, Compliance

INTRODUCTION

Lymphatic filariasis or elephantiasis is the most debilitating and disfiguring disease causing significant social and economic burden to the affected individuals and community. The disease is caused by three species of nematode thread-like worms - Wuchereria bancrofti and Brugia malayi and Brugia timori, known as filariae. In India, 99.4% of infections are caused by Wuchereria bancrofti and rest by Brugia malayi. The transmission of Lymphatic filariasis occurs through mosquitoes namely Culex quinquefasciatus. Humans are the exclusive host of infection with W. bancrofti.[1,2]

Globally 73 countries are at the risk of lymphatic filariasis, the disease is mainly endemic in WHO south East Asian region. Totally 9 of the 11 member countries are endemic for filariasis, which includes nearly 50% of the lymphatic filariasis cases of the world. Srilanka and Maldives both being member states of WHO SEARO successfully eliminated lymphatic filariasis setting an example for other member states. In India 600 million

people are at the risk of infection living in 250 districts of 15 states and union territories which are endemic for filariasis. Karnataka is one of the endemic states for filariasis with disease being endemic in 9 districts of Karnataka. The study sites Kalaburagi and Yadgir are also endemic districts for filariasis.[2-4]

The World Health Assembly adopted resolution WHA 50.29, which called on Member States to initiate steps to eliminate lymphatic filariasis as a public health problem and India is also a signatory for this resolution as lymphatic filariasis was potentially eradicable. In response to this call, WHO launched the global programme to eliminate lymphatic filariasis (GPELF) in 2000 with a goal of elimination of lymphatic filariasis as a public health problem by the year 2020.[5]

In India, programme to eliminate lymphatic filariasis was launched in the year 2004 covering all 250 endemic districts. The strategy involved annual Mass Drug Administration (MDA) of anti-filarial drugs (Diethylcarbamazine + Albendazole) by approaching every individual in the target community thus interrupting the transmission. The National Health Policy (2002) set the goal of Elimination of Lymphatic Filariasis by 2015 but the disease continued to be endemic, subsequently National health policy 2017 had set the deadline of 2017 which was also not acieved.[6-8]

The 15th round of MDA was done from 17th September 2018 to 6th October 2018 with subsequent mop-up activity. An effective surveillance is important to achieve the global elimination of lymphatic filariasis as a public health problem. Hence an Independent evaluation by the team from the medical college was carried out in Kalaburagi and Yadgir districts on request from regional office for health and family welfare, Bangalore.

METHODS

Study area

The study was conducted in Yadgir and Kalaburagi districts which are the filarial endemic districts in Karnataka.

Study design

Cross sectional study.

Study period

The data collection at the field was done in the second week of October 2018.

Study population

All the sampled eligible population residing in the study area.

Exclusion criteria

The pregnant women and children aged less than two years were excluded from the eligible study population.

Investigators

The team of investigators comprised of an assistant professor and a tutor from the medical college who were informally trained at the regional office for health and family welfare in all aspects of the coverage survey.

Sampling

Multi stage sampling technique was used to ensure randomness. The two districts were visited on succession. Totally four clusters (Three in rural area and one in urban area) were selected from each district. During the visit to each district the data regarding the total number of taluks, total number of primary health centres and reported MDA coverage in each primary health centre area were obtained from the district vector borne disease control office. The rural clusters in the district were selected after line listing all the primary health centres in rural area and classification based on the coverage as low coverage (<50%), medium coverage (50–80%) and high coverage (>80%), subsequently one cluster was selected in each of the three classes thus a total of three clusters were selected from rural area of each district. The cluster in the urban area was selected after line listing of all the primary health centres in urban area and one urban primary health centre was chosen randomly. After the selection of the clusters respective primary health centre was visited and one village/ one ward was chosen randomly and fifty houses were selected randomly from each cluster.

Survey

After selecting the cluster with the help of the local health worker, centre of the village/ ward was identified, using a currency note one of the street was selected in random and a walk through survey was done. Subsequently using a currency note one house in the selected street was chosen randomly and this became the first house for data collection in the respective cluster. Subsequently a coin was tossed and the direction of selection of household was decided. Subsequently data collection was continued until 50 houses were interviewed in each cluster. Data collection was by interview method using a pre-tested semi structured questionnaire after obtaining informal consent from a responsible adult family member.

Analysis and statistical methods

Data was computed in Microsoft excel and analysed using statistical software SPSS-16. Descriptive statistics like frequencies, percentage, mean and standard deviation was used. Analytical statistics like chi-square test was used to calculate the difference in proportions. The

results were computed in terms of coverage rate (the proportion of eligible surveyed population who have actually received the drug), compliance rate (proportion of the eligible population who have actually consumed the drug after receiving it), effective coverage rate (the proportion of the actual target population who have actually consumed the drug among the eligible population), coverage compliance gap (proportion of covered eligible population who have not consumed the tablets).

RESULTS

The present study included eight clusters (three rural and one urban in each district) covering a total population of 1,963 individuals in residing in 398 houses of two districts were surveyed. Majority of the study subjects 1517 (77.27%) were in the age group of more than 15 years and were predominantly males 984 (50.12%) (Table 1).

Table 1: Socio demographic profile of the study subjects.

Variables	Kalaburagi district (n=909)	Yadgir district (n=1054)
Age (years)		
<15	200 (22)	246 (23.34)
>15	709 (78)	808 (76.66)
Sex		
Males	468 (51.48)	516 (48.95)
Females	441 (48.52)	538 (51.05)
Houses visited	201	198

Figures in parenthesis indicate percentage

Table 2: Distribution of study subjects based on the tablet consumption.

Variables	Kalaburagi district (n=909)	Yadgir district (n=1054)
MDA coverage	756 (83.17)	914 (86.71)
MDA compliance	699 (92.46)	795 (86.98)
Effective coverage rate (%)	76.89	75.42
Coverage compliance gap (%)	7.53	13.01
Drug consumption by DOT	509 (72.81)	637 (80.12)
Divided dose	35 (3.85)	60 (5.69)
Incomplete dose	17 (1.87)	21 (1.99)

Figures in parenthesis indicate percentage

The coverage rate of mass drug administration (MDA) was 83.17% in Kalaburagi district and 86.71% in Yadgir district. Of the eligible subjects who were covered under MDA the compliance rate was 92.46% and 86.98% in Kalaburagi and Yadgir districts respectively. Hence the effective coverage rate in Kalaburagi district was 76.89% and 75.42% in Yadgir district.

As per the programme guidelines though it is mandatory to administer MDA under direct observation [DOT] only 509 (72.81%) subjects in Kalaburagi and 637 (80.12%) subjects in Yadgir were administered MDA by DOT. As a result of non DOT 35 (3.85%) subjects in Kalaburagi and 60 (5.69%) subjects had taken divided dose of MDA, also 17 (1.87%) subjects in Kalaburagi district and 21 (1.99%) subjects in Yadgir district had taken incomplete dose of MDA. The coverage compliance gap was 7.53% and 13.01% in Kalaburagi and Yadgir districts respectively (Table 2).

Table 3: Distribution of study subjects based on the reasons for not consumption of tablets.

Reasons#	Kalaburagi District n=57	Yadgir District n=119
Drug distributor not visited	11 (19.29)	2 (1.68)
Out of station	24 (42.10)	43 (36.13)
Suffering from chronic disease other than filaria	7 (12.28)	14 (11.76)
No faith in tablets	2 (3.50)	4 (3.36)
Usually not taking any drug	2 (3.50)	9 (7.56)
Others	21 (36.84)	33 (27.73)
No specific reason	10 (17.54)	14 (11.76)

- indicates more than one response; figures in parenthesis indicate percentage.

Table 4: Distribution of study subjects based on the side reactions experienced following consumption of tablets.

Side reactions	Kalaburagi district n=699	Yadgir district n=795
Fever	1 (0.14)	-
Vomiting	2 (0.28)	-
Nausea	2 (0.28)	2 (0.25)
Others#	6 (0.85)	11 (1.38)

Figures in parenthesis indicate percentage; # - Others included diarrhoea, pain abdomen, Headache etc.

Most common reason for non-consumption was that the subjects were out of station at the time of visit by drug distributor 24 (42.10%) in Kalaburagi district and 43 (36.13) in Yadgir district.

Only 13(1.23%) subjects in Yadgir district and 7 (0.66%) subjects in Kalaburagi district were aware regarding the presence of filariasis case in the neighbourhood (Table 3).

DISCUSSION

Lymphatic filariasis is a disease causing significant morbidity which is largely endemic in South East Asia region of WHO. Over the years significant efforts have been made at national and international levels to eliminate lymphatic filariasis. The operational guidelines for elimination of lymphatic filariasis in India prescribes, mass drug administration (MDA) of single dose of two drugs (Diethylcarbamazine + Albendazole) in endemic areas, with a coverage of >85% administered over 5years as an effective strategy to interrupt the transmission and eliminate the disease.[9]

The team of investigators conducted evaluation of 15th round of mass drug administration in two endemic districts in Karnataka. The coverage rate of MDA was 83.17% in Kalaburagi district and 86.71% in Yadgir district which is almost in par with the recommended standards for filariasis elimination but effective coverage rate is better indicator and the same needs to be taken into consideration during evaluation. A study conducted in 2014 and 2015 in same districts showed a coverage of 93.42% in Kalburagi district and 74.12% in Yadgir district indicating a significant improvement in coverage at Yadgir district but a deterioration in coverage in Kalaburagi district. However there is a significant improvement in the coverage at Kalaburagi district compared to 2010 i.e. 51.26% to the current coverage rate of 83.17%.[10,11]

More important aspect in MDA is compliance to distributed drugs which was 92.46% in Kalaburagi district and 86.98% in Yadgir district. There is a significant improvement in compliance compared to the year 2014 and 2015 which happened to be 86.35% and 75.78% in Kalaburagi and Yadgir districts respectively.[10] Similarly an Independent evaluation survey conducted in the year 2011 showed a compliance of 77.77% and a study conducted in the neighbouring Bidar district in the year 2016 showed a much lesser compliance rate i.e. 72.3% thus showing an improvement in compliance rate compared to previous years.[12,13]

The effective coverage rate in the present study was 76.89% in Kalaburagi district and 75.42% in Yadgir district, indicating an increased effective coverage in Yadgir district compared to the 2015 survey i.e. 56.17% and decreased effective coverage in Kalaburagi district i.e. 76.89% as on 2014.[10]

On comparing the coverage compliance gap there is a significant reduction in the coverage compliance gap in both the districts when compared to 2014 and 2015 survey i.e. 7.53% from 13.65% in Kalaburagi district and 13.01% from 24.22% in Yadgir district.[10]

Better compliance to MDA can be achieved by emphasising the treatment consumption by DOT i.e MDA (consumption in presence of drug distributor) as per guidelines which also prevents the consumption of divided dose and incomplete dose.

The most common reason for non-compliance in the present study at both districts was that the subjects were out of station in contrary to the study results of 2010 at Kalaburagi district was mainly attributed to the fear of side reactions, thus indicating an improvement in the awareness by improved IEC activities.[11]

Only 1.60% of the study subjects had minor side reactions following consumption of MDA which was a similar observation made in a study conducted at Bidar district in the year 2014 which was 1.3%. Subsequently a study conducted in the year 2015 at Raichur district revealed that 1.1% of the subjects had one or the other side effect.[14,15]

Though MDA is an effective strategy, it is incomplete without incorporating integrated vector control measures which is necessary to achieve the target of elimination of lymphatic filariasis by the year 2020.[16]

CONCLUSION

The coverage rate of MDA in both the districts is more than 85% which is the recommended standards for achieving filariasis elimination, but the effective coverage rate which is the end product to achieve elimination was less than 85% which is not satisfactory. The proportion of consumption of MDA by DOT is much less compared to the coverage in both districts. Thus by ensuring consumption of MDA by DOT the effective coverage rate, compliance rate can be improved and the proportion of subjects consuming divided dose and incomplete dose can be reduced along with reduction of coverage compliance gap ultimately achieving the disease elimination from India.

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