Section: Community Medicine

Original Research Article

STUDY OF COVERAGE AND COMPLIANCE OF MASS DRUG ADMINISTRATION (MDA) FOR ELIMINATION OF FILARIASIS IN DURG DISTRICT- A COMMUNITY BASED CROSS-SECTIONAL STUDY

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ABSTRACT

Background: The lymphatic filariasis disease have become a serious and growing public health problem. **Objectives:** 1. To independently get coverage and compliance and to find out the reasons for non-compliance among the households surveyed. 2. To recommend corrective measures to enhance the treatment coverage in future rounds of MDA.
Materials and Methods: The coverage surveys were conducted at the MDA implementation unit level blocks of the Durg district. Data collection was done with the help of standard questionnaire of state program officer.
Results: The post MDA CES assessment of Durg district was carried out by using cross sectional study design. The result are highly significant differences (p-value<0.05) among the locations regarding the consumption of both Albendazole and DEC, prior information about MDA and awareness of Lymphatic Filariasis.
Conclusion: The overall observations about the diseases of LF was considered to be good among the cross sectional study design. Based on present study despite consumption defferences, ther is no statistically significant difference in the proportion of people offered Albendazole or DEC across location.
Keywords: Lymphatic filariasis, Awareness, Coverage, Compliance, Effective Compliance.

INTRODUCTION

Lymphatic filariasis, commonly known as elephantiasis, is a neglected tropical disease (NTD) caused by infection with parasites classified as nematodes (roundworms) of the family Filariodidea.[1] The three species of worms associated with this disease are Wuchereriabancrofti (90% of cases), Brugiamalayiand Brugiatimori. The larval form of the parasite transmits the disease to humans by the bite of mosquito which transfer the larval stage of the organism (micro filariae) from one host to another.[2]

A wide range of mosquitoes can transmit the parasite, depending on the geographic area. In Africa, the most common vector is Anopheles and, in the Americas, it is Culex quinquefasciatus. Aedes and Mansonia can transmit the infection in the Pacific and in Asia.[3] In the early stages of the infection, the patient characteristically complains of fever, chills, headaches and skin lesions. If the disease is left untreated, obstruction of the lymph flow will cause particular areas of the body especially the legs and external genitals, to swell

profoundly. Acute inflammation of the genitalia leading, in males, to pain and swelling of the testes (or chitis), sperm track (funiculitis), and/or sperm ducts (epididymitis). Chronic inflammation may progress to hardening of the lymphatic vessels (fibrosis) and obstruction of the lymph flow leading to accumulation of fluid in the scrotum (hydrocele), the presence of lymphatic fluid in the urine (chyluria), abnormally enlarged lymphatic vessels (varices), progressive edema (elephantiasis) of the female external genitalia (vulva), breasts, and/or arms and legs, progressive edema (elephantiasis) of the female external genitalia (vulva), breasts, and/or arms and legs, "warty"skin.[2] Bancroftian filariasis affects both the legs and the genitals. The Malayan variety affects the legs below the knees.[2] Short-term travelers to areas where it is endemic are at low risk for this infection. People who visit endemic areas for extended periods of time, can become infected. Lymphatic filariasis can be eliminated by stopping the spread of infection through preventive chemotherapy with safe medicine combinations repeated annually.[1]

Filariasis is a public health problem in tropical and sub-tropical countries. The organism W.bancrofti is present throughout Africa, Asia, China, and South America. B. malayiis found in southern and southeast Asia.2 According to WHO stats 1.4 billion are at risk of infection, 120 million infected and need treatment, 40 million are with overt disese,15 million with lymphedema, 25 million men with urogenital swelling (hydrocele etc.). In 2018, 893 million people in 49 countries were living in areas that require preventive chemotherapy to stop the spread of infection. The global baseline estimates of people affected by lymphatic filariasis were 25 million men with hydrocele and over 15 million people with lymphedema. At least 36 million people remain with these chronic disease manifestations.[1]

Lymphatic filariasis is a major public health problem in 8 states of India like Uttar Pradesh, Bihar, Jharkhand, Andhra Pradesh, Odisha, Telangana, Maharashtra and West Bengal.[7] About 650 million people are at risk of lymphatic filariasis infection in 257 endemic districts in 16 states and 5UTs in India. Morbidity surveys revealed 9.21 lakh cases of lymphedema and 3.96 lakh cases of hydrocele till Dec. 2019. Microfilaria survey revealed microfilaria rate of about 0.45%.

In Chhattisgarh the disease has been endemic in 9 districts Ambikapur/surguja, Bilaspur, Dhamtari, Durg, Janjgir, Jashpur Nagar, Mahasamund, Raigarh, Raipur. These districts have been included under NCVBDC and have regular distribution of Albendazole and DEC tablets.

Aim: To assess the Coverage, Compliance and Consumption of MDA in Durg district andto evaluate the awareness of Lymphatic Filariasis in Durg , Dhamdha and Patan blocks.

Objectives

1. To independently get coverage and compliance and to find out the reasons for non-compliance among the households surveyed.
2. To recommend corrective measures to enhance the treatment coverage in future rounds of MDA.

MATERIALS AND METHODS

Coverage surveys was conducted at the MDA implementation unit (IU) level blocks of durg district after the letter of permission from the state programme officer of National Filaria Elimination Programme of NHM. Implementing Units were selected randomly, wherein three sub-centers were selected from the rural area and one ward from an urban area. In Durg district 3 blocks were selected, Durg, Dhamdha & Patan. In Durg block 3 rural Dhour, Hanoda, Khapri& 1 urban Potiakala was covered. At Dhamdha 3 rural Devri, Rahtadah, Barhapur& 1 urban Sonkarpara, villages were covered. At Patan 3 rural Arasnara, Kashi, Pandar & 1 urban Attari areas were covered. In each implementing unit, 120 households (4*30 HHs) were selected using 30 cluster sampling method and interviewed 30 households from each village/ward were covered. Interview of all family members in the selected houses was done. If some household members were not present at the time of the survey, their drug consumption details was collected from their other family members. Primary outcomes were coverage and compliance of MDA. The survey questionnaire will be used which includes socio-demographic details and information required to assess MDA coverage & compliance. Basic demographic information such as age, sex and presence of family members at the time of interview will be collected. Main indicators were- Coverage Rate, Compliance Rate, & Effective Coverage rate.

Coverage: It is the number of eligible persons who received DEC during MDA campaign. It is calculated as the total no. of persons who received drug divided by eligible population expressed as percentage

$$\text{Coverage Rate} = \frac{\text{Number of individuals who received drugs}}{\text{Total no. of eligible individuals}} \times 100$$

Compliance: It is defined as the proportion of population who ingested the drugs to the number of individuals who received drugs.

$$\text{Compliance Rate} = \frac{\text{Number of individuals who consumed drugs}}{\text{Number of individuals who received the drugs}} \times 100$$

Effective Coverage:-It is defined as the proportion of people received drugs to the total number of eligible individuals.

$$\text{Effective Coverage} = \frac{\text{Number of individuals who ingested the received drugs}}{\text{Total no. of eligible individuals}} \times 100$$

RESULTS

The total population surveyed comprised of 1.60% less than 2 years age, 4.68% between 2 to 5 years, 13.82% in 6 to 15 years age group, 68.70% in 16 to 59 years age group and 11.19% were more than 60 years old.

Table 1: Gender wise distribution of the population

Gender	Durg	Dhamdha	Patan
Male	266(46.80%)	301(48.86%)	292(51.41%)
Female	302(53.20%)	315(51.14%)	276(48.59%)
Total	568(100%)	616(100%)	568(100%)

Durg and Dhamdha had higher percentage of females (53.20%) and (51.14%) while Patan had higher proportion of males at (51.41%) and females (48.59%).

Table 2: Distribution of the population by Education

Category	Durg	Dhamdha	Patan
No formal education	104(18.31%)	134(21.75%)	97(17.08%)
Primary (1-4std)	82(14.44%)	65(10.55%)	49(8.63%)
Secondary (5-10std)	240(42.25%)	239(38.80%)	232(40.85%)
Higher secondary (11,12)	73(12.85%)	95(15.42%)	101(17.78%)
Graduation	47(8.27%)	69(11.20%)	69(12.15%)
Post graduation	22(3.87%)	14(2.27%)	20(3.52%)
Total	568(100%)	616(100%)	568(100%)

Table 3: Distributions and Consumption of Albendazole and Diethylcarbamazine (DEC) Medicines and awareness of Lymphatic Filariasis. (Yes/No)

	Durg	Dhamdha	Patan	Chi-square	P value
Proportion of people offered Albendazole	526 (92.61%)	577(93.67%)	543(95.60%)	4.608	0.100 (NS)
	42 (7.39%)	39(6.33%)	25(4.40%)		
Proportion of population who consumed Albendazole	495 (87.15%)	544(88.31%)	538(94.72%)	21.156	0.000 (HS)
	73 (12.85%)	72(11.69%)	30(5.28%)		
Distribution of population offered DEC	523 (92.08%	571(92.69%)	542(95.42%)	5.859	0.053 (NS)
	45 (7.92%))	45(7.31%)	26(4.58%)		
Distribution of population who consumed DEC	491 (86.44%)	541(87.82%)	537(94.54%)	22.953	0.000 (HS)
	77(13.56%)	75(12.18%)	31(5.46%)		
Population with Prior information about MDA	532(93.66%)	588(95.45%)	554(97.54%)	10.035	0.007 (HS)
	36(6.34%)	28(4.55%)	14(2.46%)		
Percentage of population who had heard about Lymphatic Filariasis	526(92.61%)	602(97.73%)	554(97.54%)	25.342	0.000 (HS)
	42(7.39%)	14(2.27%)	14(2.46%)		

Table 4: The total coverage, compliance and effective compliance rate of Durg District

Durg District	Coverage	Compliance	Effective Compliance	Total
Yes	1646(93.95%)	1577(90.011%)	(98.03%)	1752 (100%)
No	106(6.05%)	175(9.99%)	(1.70%	

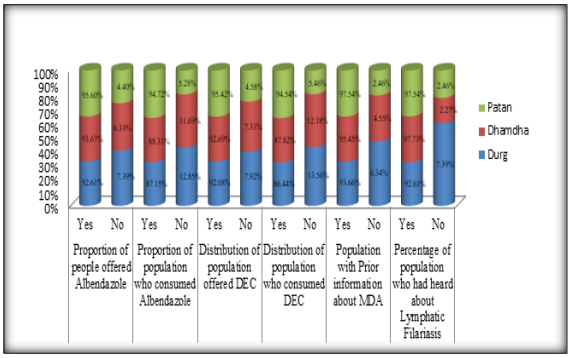

Figure 1: Distributions and Consumption of Medicines and awareness of LF

Albendazole Distribution and Consumption:

Proportion Offered Albendazole- The proportion of people offered Albendazole is high across all three locations (over 92%), with patan having the highest percentage (95.60%). The Chi-square value of 4.608 and P-value of 0.100 (NS) suggest no significant difference in the proportion offered Albendazole among the locations.

Proportion Consumed Albendazole- While a high proportion was offered, the consumption rates are slightly lower. Patan again shows the highest consumption rate (94.72%), significantly higher than Durg (87.15%) and Dhamdha (88.31%). The Chi-square value of 21.156 and P-value of 0.000 (HS) indicate a highly significant difference in Albendazole consumption among the locations.

Diethylcarbamazine (DEC) Distribution and Consumption:

Distribution of Population Offered DEC- Similar to Albendazole, the proportion of people offered DEC is high in all locations (over92%), with patan leading at (95.42%). The Chi-square value of 5.859 and P-value of 0.053 (NS) suggest no significant difference in the proportion offered DEC among the locations.

Distribution of Population Offered DEC- Patan also demonstrates the highest DEC consumption rate (94.54%) compared to durg (86.44%) and Dhamdha (87.82%). The Chi-square value of 22.953 and P-value of 0.000 (HS) indicate a highly significant difference in DEC consumption among the locations.

Prior information about MDA:

A high percentage of the population in all three locations had prior information about Mass Drug Administration (MDA), with Patan showing the highest awareness at (97.54%). The Chi-square value of 10.035 and P-value of 0.007 (HS) indicate a highly significant difference in prior MDA information among the locations.

Awareness of Lymphatic Filariasis:

The percentage of the population who had heard about Lymphatic Filariasis is very high across all locations, ranging from (92.61%) in Durg to (97.73%) in Dhamdha. The Chi-square value of 25.342 and P-value of 0.000 (HS) indicate a highly significant difference in awareness of Lymphatic Filariasis among the locations.

Table 5: Knowledge Attributes regarding how Lymphatic Filariasis is Caused

How Lymphatic FilariasisCaused	Durg	Dhamdha	Patan
Mosquito bite	26%	16%	23.94%
Air	1.61%	0.00%	1.28%
Contaminated water	1.25%	0.00%	0.00%
Don't know	64.87%	81.33%	68.31%
Others	1.97%	0.81%	5.63%
Mosquito bite and dirty water	0.90%	2.11%	0.00%
Mosquito bite and living infectd person	0.90%	0.00%	0.00%
Mosquito bite, air, worms in blood	2.68%	0.00%	0.00%

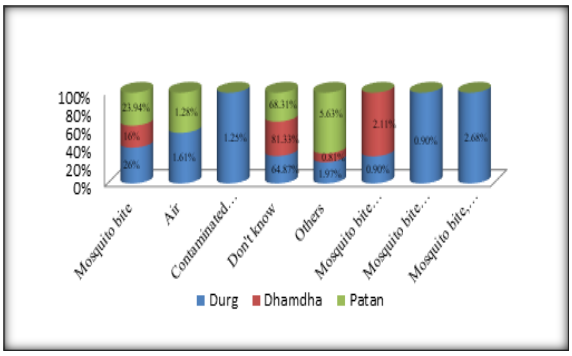

Figure 2: How LF Caused

From the above table 4 **Mosquito bites** are recognized as a cause of LF, but the percentage of people identifying them varies across regions Durg (26%), Dhamdha 16% and Patan (23.94).

Air and **Contaminated water** are identified as minor causes with very low percentage, while **others** reasons Patan shows a notably higher percentage (5.63%) in compared to Durg (1.97%) and Dhamdha (0.81%) and Combined causes **Mosquito bite& dirty water, Mosquito bite & living infected person and Mosquito bite, air, worms in blood** are account for small percentages. A significant portion of the population in all regions lacks knowledge about the cause of LF, with Dhamdha showing the highest percentage (81.33%), followed by Patan (68.31%) and Durg (64.87%).

DISCUSSION

This post MDA CES assessment of Durg district was carried out by using descriptive cross sectional study design. A total of 360 households were surveyed which were selected by 30 cluster Sampling method. The areas included were 3 rural areas and 1 urban of 3 blocks viz. Durg, Dhamdha and Patan (120 households from each block. The data on consumption status of households, side effects, awareness about LF were collected.

Coverage rate of Albendazole administration was 92.61% at Durg block, 93.67% at Dhamdha while it was 95.60% at Patan. Compliance of Albendazole consumption was 94.11.% among those offered the drug, while it was 94.28.% at Dhamdha& 99.08% at Patan. Effective compliance to albendazole was 87.15% at Durg, 88.31% at Dhamdha& 94.72.% at Patan. Coverage of DEC administration was 92.08% at Durg block, 92.69% at Dhamdha while it was 95.42% at Patan.Compliance of DEC consumption was 93.88% among those offered the drug at Durg, whileit was 94.75% at Dhamdha& 99.08% at Patan.Effective compliance to DEC was 86.44% at Durg, 87.82% at Dhamdha& 94.54% at Patan. The MDA CES assessment in Durg district revealed high coverage and compliance rated for both Albendazole and DEC administration and consumption across Durg, Dhamdha and Patan blocks, with patan generally showing the highest rates of effective compliance.

In the present study, the overall coverage rate was 93.95% covering 360 households in Durg district of Chhattisgarh. The overall compliance percentage was 90.01%. The Effective Coverage Rate was 98.3% in the total surveyed population (1752) of Durg District of Chhattisgarh. On comparison with evaluation survey conducted by Shivalingaiah et al. in Kalaburagi and Yadgir districts (2018), coverage rate was 83.17% and 86.71%.[8] In comparison with present study Coverage and Compliance was found more in Durg district. In a study conducted by Kulkarni et al, the overall coverage of MDA was 82.3% among 1,022 beneficiaries and compliance among those who had received the tablets was 52.1% with effective coverage rate 42.9% & it is less than finding in our study.[9] The coverage rate of

MDA in the study conducted by Gururaj et al. was 76%. which is far below the coverage rate (93,95%) found in our study.[10] In a study conducted by Bhatia et al, overall coverage rate amongst 590 study population was found to be 91.47% covering 120 households (90 rural and 30 urban) with effective coverage rate 71.1% & it is lower as compared to our study,[11] Effective Coverage Rate (ECR) is a better indicator and the same needs to be taken into consideration during evaluation. The ECR in the present study was 98.3 %. On the contrary, studies conducted by Hoolageri et al. and Mane and Bhovi in Bidar district where ECR was 78.3% and 68%.[12,13] In a study conducted by Hussain et al. found the reasons for non-compliance of MDA which includes mainly the fear of side effects, lack of awareness of the benefits of MDA, and non-attendance of health staff in the villages.[14] Our study mentioned the following difficulties which were - 1) Majority of the people who didn't consume the drugs after receiving is because of fear of side effects. 2) Other reasons like forgetting to take the drugs. 3) Less than 1% reported any side effects after taking the drugs, which included fever, vomiting & weakness. 4) Absenteeism of the beneficiaries during MDA. 5) Lack of awareness of benefits of MDA and 6) Majority not offered the drugs were underage, pregnant ladies or had been absent during MDA.

CONCLUSION

Intersectoral co-ordination with the educational department, to include the drugs given in MDA after mid-day meal programme to improve compliance among school going population (<15yearsage).

Blister packs should be used for distribution to increase acceptability mostly among urban population, and to make it more convenient for drug distributors.

Drugs should be distributed in the **morning time** (preferably before 10am) orco-ordinated with the irrespective **employment sectors** to improve compliance among **working** population.

Ward members should take the medicines in front of the people in ward meetings to gain confidence of local people and improve **effective supervised coverage** and **compliance** among **urban** population.

Awareness programme should be intensified through mass media and IEC to increase acceptability of drug in **urban areas.**

Intensified follow up and catch-up rounds should be conducted to improve- **compliance** and **effective supervised coverage.**

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