

Research Article

Community Perception for Mass Drug Administration Towards Elimination of Lymphatic Filariasis: A Study in Jharkhand

Sagya Shrivastava Singh¹, Avtar Singh Manhas¹, Ganesh Kumar Yadav², S N Sharma³, P K Srivastava³

¹Radha Govind University, Ramgarh, Jharkhand.

²National Vector Borne Disease Control Programme, Jharkhand.

³Ex National Vector Borne Disease Control Programme, Delhi.

DOI: <https://doi.org/10.24321/0019.5138.202424>

I N F O

Corresponding Author:

Sagya Shrivastava Singh, Radha Govind University, Ramgarh, Jharkhand.

E-mail Id:

sagyasingh1@gmail.com

Orcid Id:

<https://orcid.org/0009-0004-9234-4835>

How to cite this article:

Singh S S, Manhas A S, Yadav G K, Sharma S N, Srivastava P K. Community Perception for Mass Drug Administration Towards Elimination of Lymphatic Filariasis: A Study in Jharkhand. J Commun Dis. 2024;56(1):184-191.

Date of Submission: 2024-02-02

Date of Acceptance: 2024-03-10

A B S T R A C T

Introduction: Jharkhand conducts annual mass drug administration (MDA) with diethylcarbamazine citrate (DEC) and albendazole to combat lymphatic filariasis (LF), achieving over 85% coverage in ten rounds. However, no district meets the antigenemia target during Transmission Assessment Surveys (TAS). Independent assessments reveal suboptimal compliance, attributed to unsupervised drug distribution. This study aims to qualitatively explore community perspectives on MDA, compliance factors, reported side-effects, and community awareness of LF and MDA's objectives, seeking insights to enhance the program's effectiveness in LF elimination.

Methods: Two districts in the state were randomly chosen, and from each community health centre (CHC) within these districts, villages were randomly selected. In these chosen villages, 10% of the population participated in the survey after providing written informed consent. The compiled and analyzed data showed that 1,394 individuals were interviewed, representing a total eligible population of 14,675 across both districts.

Results: The drug compliance rate showed that over 75% of the population in both districts took drugs, albeit inconsistently across MDA rounds. In Ramgarh, 359 respondents (84.21%) consumed drugs during MDA, with 191 (44.74%) in one round, 146 (34.21%) in two rounds, and 22 (5.26%) in three or more rounds. In Deoghar, 768 respondents (79.38%) consumed drugs, with 183 (23.82%) in one round, 193 (25.12%) in two rounds, and 392 (51.02%) in three or more rounds.

Conclusion: The study analysed the sources of awareness, reasons for non-compliance, and management of drug-related adverse events. It identified gaps in awareness generation and highlighted key areas requiring focused attention. The article suggests providing incentives to motivate service providers and drug administrators, fostering healthy competition to achieve desired drug compliance during MDA.

Keywords: Coverage, Drug Compliance, Lymphatic Filariasis, Mass Drug Administration

Introduction

Lymphatic Filariasis (LF) for elimination by 2020 was agreed upon in the year 1997 during the fiftieth World Health Assembly Resolution following which the Global Programme to Eliminate LF (GPELF) was formulated in the year 2000.¹ However, it has been aligned with the Sustainable Development Goal to be achieved by 2030. India also started its campaign to eliminate LF in 2004 following a global strategy. The strategic approach of the elimination programme is the Annual Mass Drug Administration (MDA)^{2,3} to progressively reduce and ultimately interrupt LF transmission. Another pillar of the strategy is morbidity management and disability prevention. Jharkhand state was included in the programme and 17 districts were identified to be covered under MDA. There has been variable performance by the districts, blocks, Primary Health Centres and Health Subcentres. The MDA is a community-based programme and its success depends on awareness in the community about the disease, effective social mobilisation, commitment and attitude of service providers and efforts of peripheral-level

health workers. For analysis of the possible reason for continued disease transmission in all LF endemic districts even after multiple rounds of MDA, the questionnaire-based survey on the opinion of the community was undertaken in the selected area.

Methodology

Study Design

A questionnaire was developed to take the opinion of the community based on memory recall. The questionnaire was designed to assess the knowledge and perception of the community about LF, the MDA programme, the source of information, how many times DEC + albendazole was consumed and if not the reason for refusal or reluctance.

Selection of Areas for Survey

As per state data out of 24 districts in the state, 17 districts namely Bokaro, Dhanbad, Deoghar, Dumka, Chatra, Garhwa, Godda, Giridih, Hazaribagh, Lohardaga, Ramgarh, Ranchi, Khunti, Sahibganj, East Singhbhum, West Singhbhum were considered LF endemic and were brought under MDA.

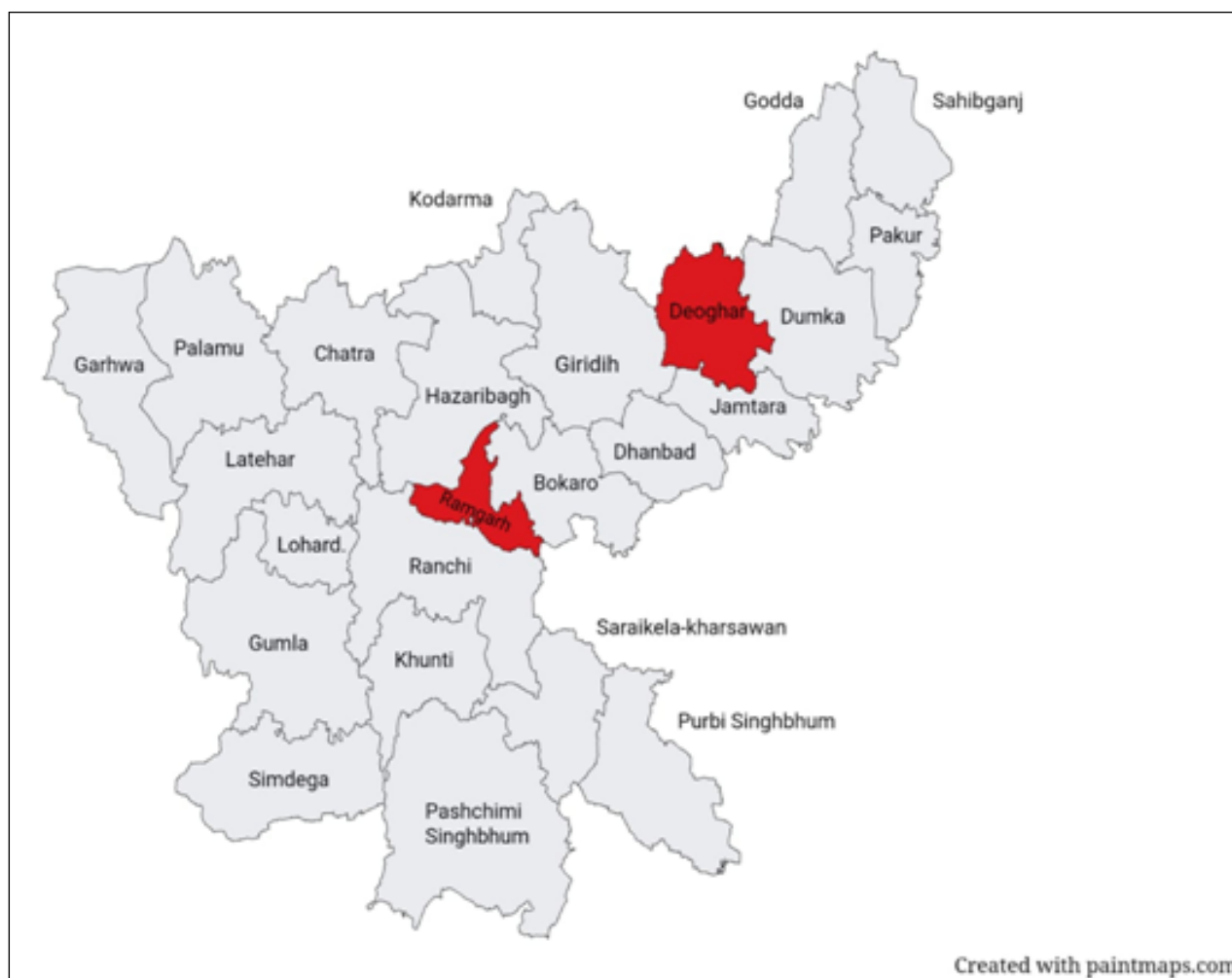


Figure 1. Ramgarh and Deoghar Districts in Jharkhand

The districts were selected randomly by a random number generator for the community-based questionnaire survey. These districts were Ramgarh and Deoghar. Ramgarh district was carved out of erstwhile Hazaribagh District on 12 September 2007. Ramgarh is a mining, industrial and cultural hub which is spread over an area of about 1360 sq. km. with a population of 9,49,443. The Deoghar district is located in the western portion of Santhal Parganas. It shares its boundary with the Banka and Jamui districts of Bihar in the north, Dumka in the east, Jamtara in the south, and Giridih in the west. The district extends from 24.0.03' N to 23.0.38' N and from 86.0.28' E to 87.0.04' E; it has an area of about 2481 km² covering a population of 1,491,879 according to the 2011 Census of India (Figure 1).

Selection of Study Sites

In Ramgarh district, there is one subdivision and 6 administrative blocks. The 6 administrative blocks are covered by four Community Health Centre (CHC) viz. Gola, Mandu, Patratu and Ramgarh. The district Deoghar is composed of two subdivisions: Deoghar and Madhupur. The district comprises ten blocks namely Deoghar, Karon, Madhupur, Mohanpur, Palojori, Sarath, Devipur, Margomunda, Sarwan, and Sonaraithari. The site was selected through a random number generator which is a number chosen from a pool of limited or unlimited numbers that has no discernible pattern for prediction. The steps involved in site selection for each identified district were as follows:

- All Health Subcentres (HSCs) of the CHCs were arranged in alphabetical order in an Excel sheet and each HSC was given its serial number.
- Through a random number generator, one HSC was selected randomly.
- After the selection of the HSC, all villages of the HSC were arranged in alphabetical order in an Excel sheet.
- Through a random number generator, one village of the HSC was selected randomly for the questionnaire-based survey.

- The same procedure for selection was applied in all CHCs of both districts and in total 12 villages, four in Ramgarh and eight in Deoghar district were selected for the survey.
- Mass Drug Administration is an ongoing programme under the elimination of lymphatic filariasis in the district. The District Vector Borne Disease Officer of the selected district was informed and consent was taken before conducting the survey.
- The places selected randomly for the survey were inhabited by the General, OBC (Mahto, Prajapati), SC (Harijan) and ST (Bedia, Karmali, Oraon) populations.

Study Duration

After the selection of the site, the study was conducted by making field visits in the selected areas from June 2020 to September 2021.

Sampling Method & Data Analysis

As per the method suggested by Thomas in 2020,⁴ systematic sampling was adopted. The steps involved during sampling were as follows:

- The house of ASHA in the village was selected as the index house in the survey.
- Starting from the right side of the index house, each member of every 10th house was selected for the survey.
- As such 10% of the population living in the area was selected for survey.
- All respondents were above 14 years of age and were local residents of the area.
- The respondents were informed about the purpose of the survey and consent was taken from them.
- The data collected in the field was entered in Microsoft Excel sheets for analysis.

The details of the identified villages in each of CHC and HSC for both the districts are indicated in Tables 1 and 2.

Table 1. Ramgarh Study Sites

S. No.	CHC	HSC	Village	Population	Sample Size	Lymphodema Patients
1	Gola	Khokha	Byang	1600	156	4
2	Mandu	Sandi	Borgabar	1409	148	2
3	Patratu	Siur	Kacchugag	396	40	0
4	Ramgarh	Barlong	Barlong (Manohar Tola)	900	82	1
Total					426	7

CHC: Community Health Centre
 HSC: Health Subcentres

Table 2. Deoghar Study Sites

S. No.	CHC	HSC	Village	Population of Village	Sample Size	Lymphodema Patient
1	Jasidih	Koyridih	Koyridih	920	88	7
2	Mohanpur	Saraiya	Bhagwanpur	7220	503	7
3	Sarwan	Bandajori	Bandajori	1113	98	5

4	Sarath	Sarath	Khairbani	601	55	6
5	Devipur	Mahuatanr	Bandey	300	33	12
6	Madhupur	Noniyad	Balba	483	42	4
7	Palajori	Kunjbona	Ghormara	250	27	4
8	Karon	Bhalgaraha	Belkiyari	1484	122	12
Total				12371	968	57

CHC: Community Health Centre

HSC: Health Subcentres

Observations

Outcome of the Survey in Ramgarh District

A total of 426 respondents were interviewed for the assessment of disease awareness in the community and to know the response of the community in consecutive rounds of MDA in the district. Among them, only 269 (63.16%) were aware of filariasis disease. The major source of information about the disease was ASHA (75%). Other sources of information were Anganwadi workers (4.17%), schools (8.33%) newspapers, books, Gram Sabha (12.5 %) etc. (Figure 2a).

During various rounds of MDA, only 359 respondents (84.21%) reported to have consumed drugs during MDA. Among them 191 (44.74%) consumed only once, 146 (34.21%) twice and 22 respondents (5.26%) consumed thrice or more (Figure 2b). However, it was noted that 67 respondents (15.79%) never consumed anti-filarial drugs in any rounds of the MDA. It was also revealed that out of the persistent defaulters, 45 respondents (66.90%) did not consume drugs as they were not aware of the programme and 22 respondents (32.84%) did not have faith in government programmes (Figure 2c).

The total number of respondents who consumed both DEC and albendazole during MDA was 213 (59.38%) while 101 (28.13%) consumed only DEC and 34 (9.38%) consumed only albendazole (Figure 2d). Of the total population who consumed the drug, 336 (93.75%) never experienced any side effects, while 22 persons (6.25%) reported nausea and vomiting (Figure 2e). All respondents who experienced side effects, managed it themselves and the symptoms subsided on the same or the very next day.

The MDA campaign in the state was observed as a booth approach for the first day followed by the door-to-door approach. All Anganwadi centres, Health Subcentre and Office of Ward Parshad were identified as booths. It was observed that out of the 359 respondents who consumed drugs during MDA, 135 persons (37.5%) consumed drugs in booths while 198 persons (53.12%) consumed drugs during door-to-door surveillance (Figure 2f). Among the total respondents, who consumed MDA drugs, 247 (68.75%) claimed to have consumed the drugs in front of ASHA workers while 112 respondents (31.25%) took the drugs from ASHA and consumed them themselves at night.

Outcome of the Survey in Deoghar District

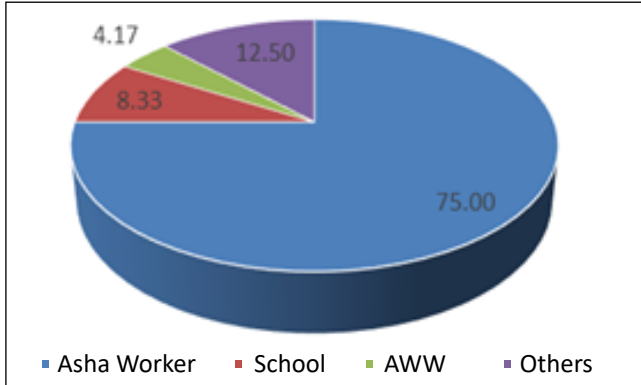
A total of 968 respondents were interviewed in this district to know the response of the community in consecutive rounds of MDA in the district. Among them, only 920 (95%) were aware of lymphatic filariasis (Figure 3a). Out of the total respondents interviewed, 690 (71.25%) reported having knowledge about LF through village-level health workers known as ASHA (Figure 3b). Newspaper was another source of information as reported by 91(9.38%) respondents, while 48 respondents (5.0%) said that they became aware through hoarding and 36 respondents (3.75%) through wall writings. Other sources of information were Anganwadi Workers, and Gram Sabha as responded by 30 persons (3.13%) and through radio by 24 respondents (2.50%).

Out of the persons interviewed, 768 (79.38%) consumed drugs during various rounds of MDA. Among them, 183 (23.82%) consumed in only one round, 193 (25.12%) in two rounds, 392 respondents (51.02%) in 3 or more rounds, whereas 200 respondents (20.63%) never consumed MDA drugs in any rounds of the MDA (Figure 3c). Among them, 48 respondents (5.0%) did not consume drugs as they were not aware of the programme and 6 respondents (0.63%) never consumed as they did not have faith in government programmes. There were 97 respondents (10.0%) who said that nobody gave the drugs during MDA and therefore they did not consume them. There were 24 respondents (2.5%) who believed that they couldn't suffer from filariasis so they did not consume while 24 more respondents (2.5%) said that they were out of town during MDA (Figure 3d). The total number of respondents who consumed both DEC and albendazole during MDA was 508 (52.50%) while 67 (6.88%) consumed only DEC and 194 (20.0%) consumed only albendazole (Figure 3e).

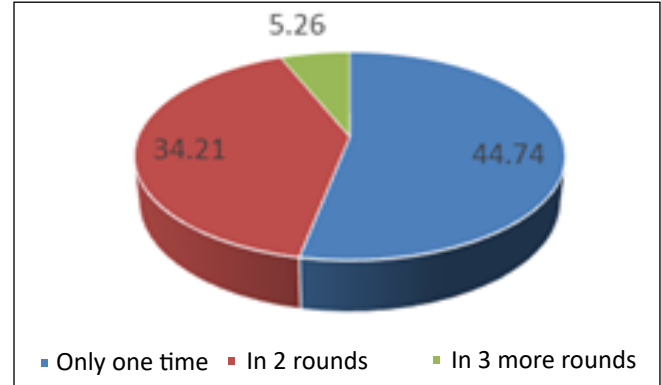
Of the total population who consumed drugs, 629 (65.0%) never experienced any side effects, while 42 persons (4.38%) reported headache, 54 respondents (5.63%) experienced fever, and 30 respondents (3.13%) experienced nausea and vomiting and 12 (1.24%) experienced body ache after consuming the MDA drugs (Figure 3f). Most of the respondents (73, 52.17%) who experienced side effects, managed it themselves, 36 respondents (26.09%) approached either ANM/ ASHA while 30 (21.74%) went to a nearby government hospital for management of side

effects. The symptoms subsided after a few hours or by the very next day. The MDA campaign in the state was observed as a booth approach for the first day followed by the door-to-door approach. All Anganwadi centres, Health Subcentre and Office of Ward Parshad were identified as booths. It was observed that out of the 768 respondents who consumed

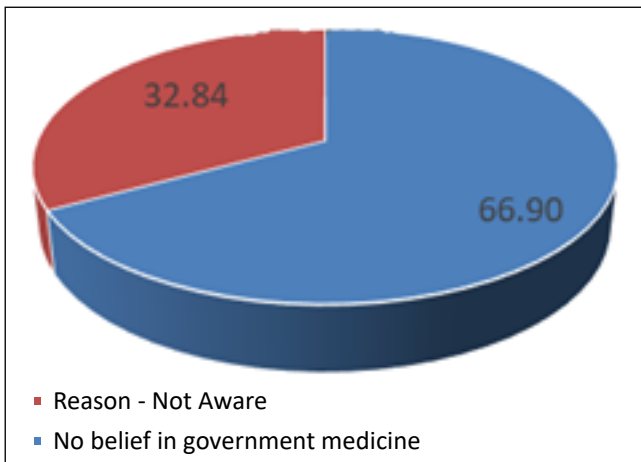
drugs during MDA, 109 persons (11.25%) consumed them in booths while 659 persons (68.13%) consumed them during door-to-door surveillance. Among the total respondents who consumed MDA drugs, 411 (53.54%) claimed to consume the drugs in front of ASHA while 357 respondents (46.46%) took the drugs from ASHA and consumed it themselves at night.



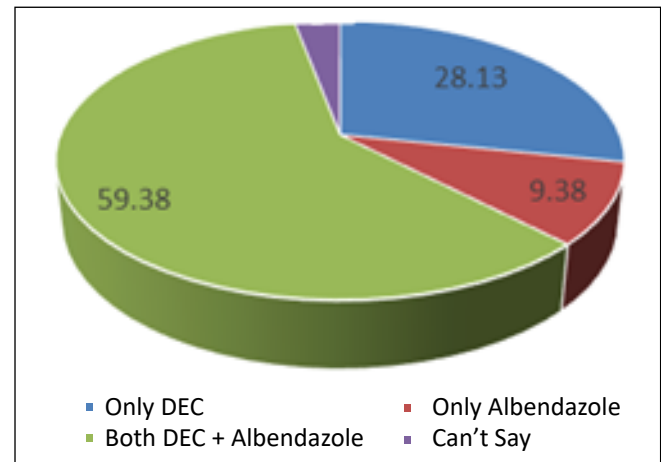
2a. Ramgarh - Different Sources of Awareness (%) Among Community (N=359)



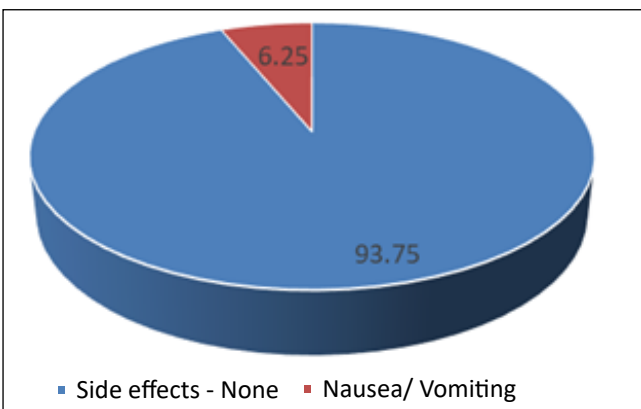
2b. Ramgarh - Community Response (%) on Drug Consumption (N = 356 out of 426(84.21%))



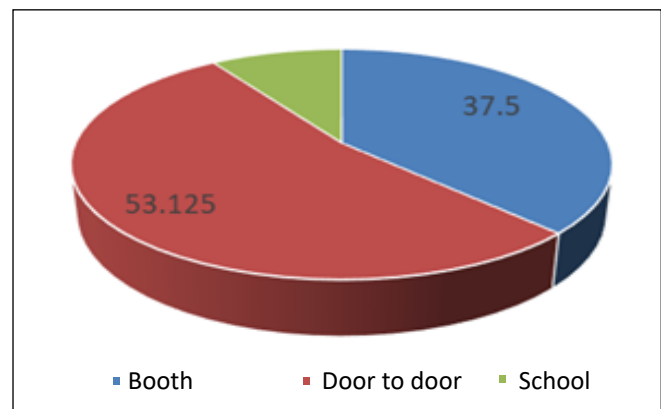
2c. Ramgarh - Community Response (%) on Non-Compliance (N=67)



2d. Ramgarh - Types of Drugs Consumed (%) During MDA in Ramgarh

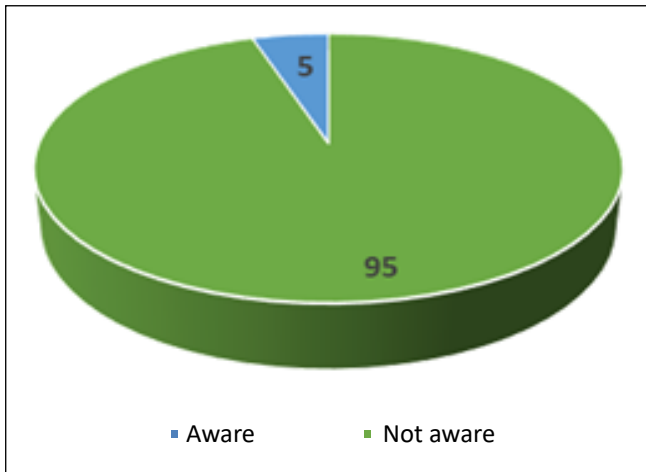


2e. Ramgarh - Community Perception (%) on Experience of Adverse Effects of Drugs (N=359)

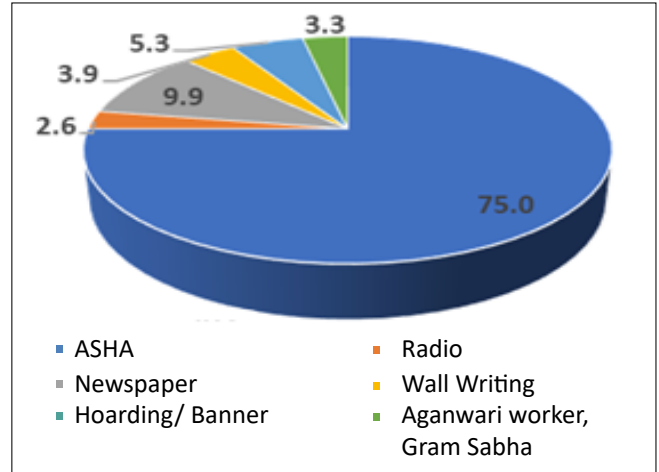


2f. Ramgarh - Different Sources (%) of MDA Drugs in the Community (N=359)

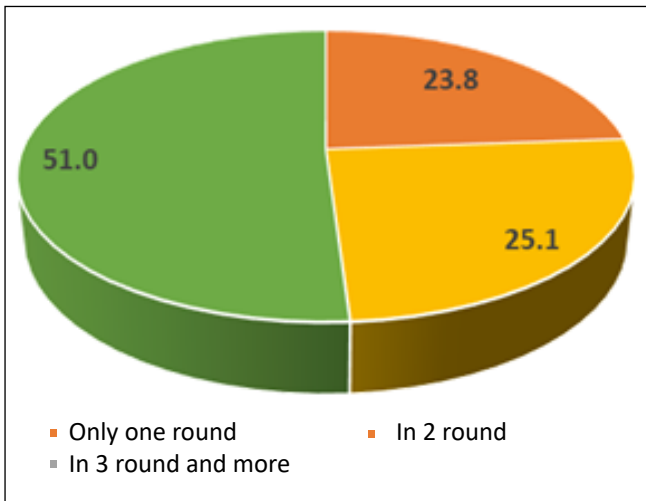
Figure 2. Outcome of Survey in Ramgarh District of Jharkhand



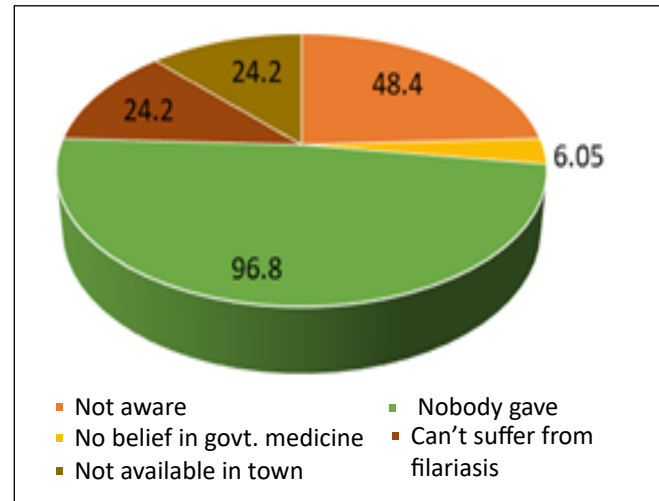
3a. Deoghar - Community Response (%) on LF Awareness



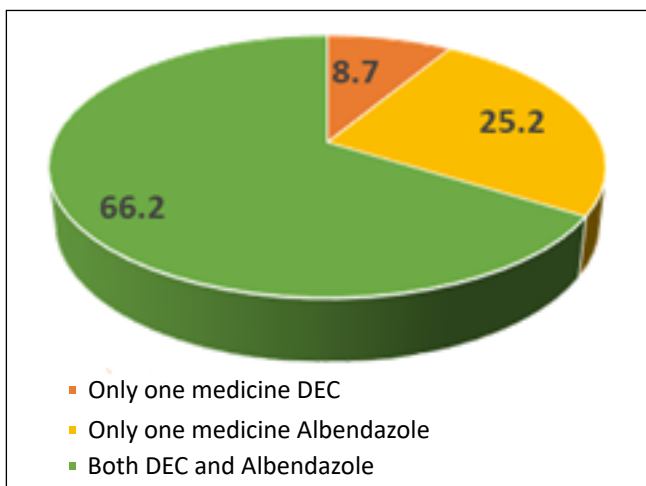
3b. Deoghar - Sources of Awareness (%) Among Community



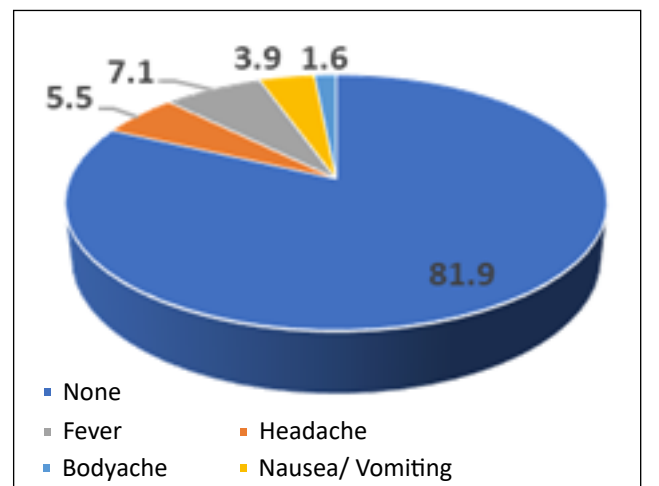
3c. Deoghar - Community Response (%) on Drug Compliance in Deoghar (N = 768)



3d. Deoghar - Community Response for Non-Compliance of Drugs among defaulters (N = 200)



3e. Deoghar - Community Response on Type of Drugs Consumed in Deoghar (N = 768)



3f. Deoghar - Community Response on Experience of Adverse Effects of Drugs in Deoghar (N = 768)

Figure 3. Outcome of Survey in Deoghar District of Jharkhand

Discussion

The places selected randomly for the survey were mainly inhabited by the general population of 317 (22.74%), other backward class (OBC) population of 361 (25.9%) including Mahto, Prajapati, Scheduled Caste (SC) including Harijan population of 229 (16.42%) and Scheduled Tribes (ST) including Bedia, Karmali, Oraon, Marandi, Baskey, Soren population of 487(34.93%). From the survey in both districts, it was clearly indicated that there has been a gap in knowledge about LF and its associated risk among the community targeted for the survey which led to their perception of service delivery under the programme, though the maximum people responded that ASHAs have been the main source of awareness generation. The reason for continued transmission and the districts not qualifying for TAS may be attributed to the existence of many persistent defaulters who have not taken DEC + albendazole during various rounds of MDA. Partial drug intake like consuming only albendazole or DEC was also recorded in many people. Similar observations were highlighted during earlier studies.⁵⁻¹¹ The defaulters might harbour microfilaria and be responsible for LF transmission which would have been captured during the pre-transmission survey or even the presence of circulating antigenemia due to the presence of adult worms detected during TAS.^{12,13} The study indicates a robust and sustained plan for an effective social BCC campaign as has also been emphasised by Vaishnav and Patel¹⁴, Showkath Ali et al.,^{15,16} and Srivastava and Dhillon.¹⁷

Conclusion

It is suggested that incentives for better-performing service providers and their retention policy need to be considered to encourage drug administrators and generate a healthy but progressive competition to achieve the desired drug compliance during MDA.

Acknowledgements

The authors are thankful to the state and district officials for their help during the study. The acknowledgement is also due to State Programme Officers (SPOs) whose continuous encouragement and support have been instrumental in completing the study. The authors are also thankful to NVBDCP for providing technical guidelines and materials on ELF and its monitoring.

Source of Funding: None

Conflict of Interest: None

References

1. Ottesen EA, Duke BO, Karam M, Behbehani K. Strategies and tools for the control/elimination of lymphatic filariasis. *Bull World Health Organ.* 1997;75(6):491-503. [PubMed] [Google Scholar]
2. National Vector Borne Disease Control Programme. Operational guidelines on elimination of lymphatic filariasis, India. Directorate of National Vector Borne Disease Control; 2005.
3. National Vector Borne Disease Control Programme. Guidelines on elimination of lymphatic filariasis, India. Directorate of National Vector Borne Disease Control; 2009.
4. Thomas L [Internet]. Systematic sampling. A step-by-step guide with examples. Scribbr; 2020 [cited 2024 Feb 22]. Available from: <https://www.scribbr.com/methodology/systematic-sampling>
5. Dhariwal AC, Srivastava PK, Bhattacharjee J. Elimination of lymphatic filariasis in India: an update. *J Indian Med Assoc.* 2015;113(12):189-90. [Google Scholar]
6. Lahariya C, Mishra A. Strengthening of mass drug administration implementation is required to eliminate lymphatic filariasis from India: an evaluation study. *J Vector Borne Dis.* 2008;45(4):313-20. [PubMed] [Google Scholar]
7. Singh S, Kulkarni N, Khanna VN, Sinha PK, Kumar S. Mass drug administration with triple drug therapy for elimination of lymphatic filariasis - first exposure in Simdega, a tribal district of Jharkhand, India. *J Med Arthropodol Public Health.* 2021;1(1):79-91. [Google Scholar]
8. Mukhopadhyay AK, Patnaik SK, Satya Babu P, Rao KN. Knowledge on lymphatic filariasis and mass drug administration (MDA) programme in filaria endemic districts of Andhra Pradesh, India. *J Vector Borne Dis.* 2008;45(1):73-5. [PubMed] [Google Scholar]
9. Aswathy S, Beteena K, Leelamoni K. Mass drug administration against filariasis in India: perceptions and practices in a rural community in Kerala. *Ann Trop Med Parasitol.* 2009;103(7):617-24. [PubMed] [Google Scholar]
10. Srivastava PK, Dhariwal AC, Bhattacharjee J. Status of lymphatic filariasis in India. *Health Action.* 2013:19.
11. Srivastava PK, Bhattacharjee J, Dhariwal AC, Krishnamoorthy K, Dash AP. Elimination of lymphatic filariasis – current status and way ahead. *J Commun Dis.* 2014;46(2):85-94. [Google Scholar]
12. World Health Organization. Monitoring and epidemiological assessment of Mass Drug Administration. A manual for National elimination programmes. WHO/HIM/NTD/PCT/2011.4. Geneva: World Health Organization; 2011.
13. Srivastava PK, Sharma SN, Bhattacharjee J, Dhariwal AC, Krishnamoorthy K. A tool for monitoring epidemiological impact of Mass Drug Administration (MDA) in the elimination of lymphatic filariasis - an Indian experience. *J Commun Dis.* 2014;46(2):1-6. [Google Scholar]

14. Vaishnav KG, Patel IC. Independent assessment of Mass Drug Administration in filariasis affected Surat city. *J Commun Dis.* 2006;38(2):149-54. [PubMed] [Google Scholar]
15. Showkath Ali MK, Rajendran R, Regu K, Mohanan MK, Dhariwal AC, Lal S. Study on the factors affecting the MDA programme in Kerala state. *J Commun Dis.* 2007;39(1):51-6. [PubMed] [Google Scholar]
16. Showkath Ali MK, Regu K, Rajendran R, Mohanan MK, Ganesh B. Awareness of health personnel about lymphatic filariasis and mass drug administration in Kerala state. *J Commun Dis.* 2008;40(1):37-40. [PubMed] [Google Scholar]
17. Srivastava PK, Dhillon GP. Elimination of lymphatic filariasis in India--a successful endeavour. *J Indian Med Assoc.* 2008;106(10):673-4. [PubMed] [Google Scholar]