


Mass drug administration for lymphatic filariasis elimination amidst COVID-19 pandemic in Odisha, India: A step towards achieving SDG-3

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Abstract

Sustainable Development Goal-3 (SDG) aims to eliminate lymphatic filariasis by 2030 through >65% coverage and compliance of mass drug administration (MDA), the preventive chemotherapy strategy of delivering anthelmintic drugs. However, the ongoing COVID-19 pandemic has disrupted such programmes, yet MDA was administered during February 2021 in Odisha, India. We aimed to assess the coverage and compliance of the present round of MDA amidst the pandemic and explore factors for non-compliance in Cuttack district of Odisha, a filariasis endemic area. Community-based participants enrolled through multistage stratified sampling were administered a semi-structured questionnaire following COVID-19 protocols. The coverage of MDA was 93.2% whereas consumption was 73.7%. Participants reported that healthcare workers were motivated and satisfactorily explained the benefits of MDA but still fear of side-effects was the major cause of non-compliance. Nonetheless, this recent round of MDA was effective, despite challenges posed by the ongoing pandemic.

Keywords

compliance, coverage, COVID-19, lymphatic filariasis, mass drug administration, Odisha

Introduction

Lymphatic filariasis (LF) is a major public health concern in India, often seen among the extreme poor presenting a complex social, economic and healthcare challenge.¹ LF commonly affects marginalized communities with a lack of basic sanitation facilities.² It significantly contributes to disability adjusted life years (DALYs) further leading to economic loss.³ Considering LF as a serious impediment for overall development, India focused on its control since 1955 through its National Filaria Control Programme and subsequently several revised versions. Yet, indigenous cases are prevalent in >257 districts affecting >23 million people.⁴ MDA along with morbidity management and disability prevention have been key strategies for elimination of LF. MDA aims to interrupt transmission through an annual single dose of albendazole with diethylcarbamazine citrate (DEC) to all persons living in endemic areas.⁵ This reduces the density of parasites circulating in the blood of infected persons and thus, decreasing community prevalence to such low levels that further transmission cannot be sustained.⁵

Global elimination of LF was initially targeted for 2020, then by 2021 and has recently been extended to 2030, which still seems a daunting target.⁶ To achieve elimination of Neglected Tropical Diseases by 2030 through Sustainable Development Goal-3, >65% of the population needs to be covered by and compliant to MDA.^{7,8} The COVID-19 pandemic has led to a halt of wide-reaching programmes.⁹ The World Health Organization (WHO) has also advised to postpone NTD surveys.^{10–12} Nonetheless, MDA was administered in Cuttack district, India a highly endemic region for

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LF in February 2021, and our study seeks to generate evidence on its coverage and compliance.

Materials and methods

Our cross-sectional study was conducted in the Cuttack district of Odisha covering a representative population aged two years and above. Pregnant ladies and severely ill patients were excluded from the survey. Based on the geographical location, five out of 14 blocks of Cuttack district namely Bentkar in the centre, Bindhanima in the west, Salepur in the east, Tangi in the north and Niali in the south were selected randomly. Further, two villages were randomly selected from each block with an equal proportion of participants following multistage random sampling. Using direction based systematic random sampling, every fifth household was surveyed from the centre of the village. All eligible members of the household were

included in the study. If any respondent was absent on the day of survey, they were not subsequently interviewed. For children who could not answer, available family members aware of their drug consumption status responded.

The required sample size was calculated considering the previous MDA compliance to be 76% with an absolute precision of 5% at 95% confidence interval.¹³ A design effect of 1.5 and a non-response rate of 10% was added, making a needed sample size of 464, hence a total of 470 participants were enrolled for this study. Data were collected in March-April, 2021 just a month after the recent MDA administration thus reducing recall bias. A pre-validated questionnaire containing open and closed-ended questions on socio-demographic variables, number of tablets received, drugs consumed, side reactions experienced; prior information about filariasis and MDA, and the reasons for compliance or non-compliance was administered to the participants. Data were analyzed using STATA

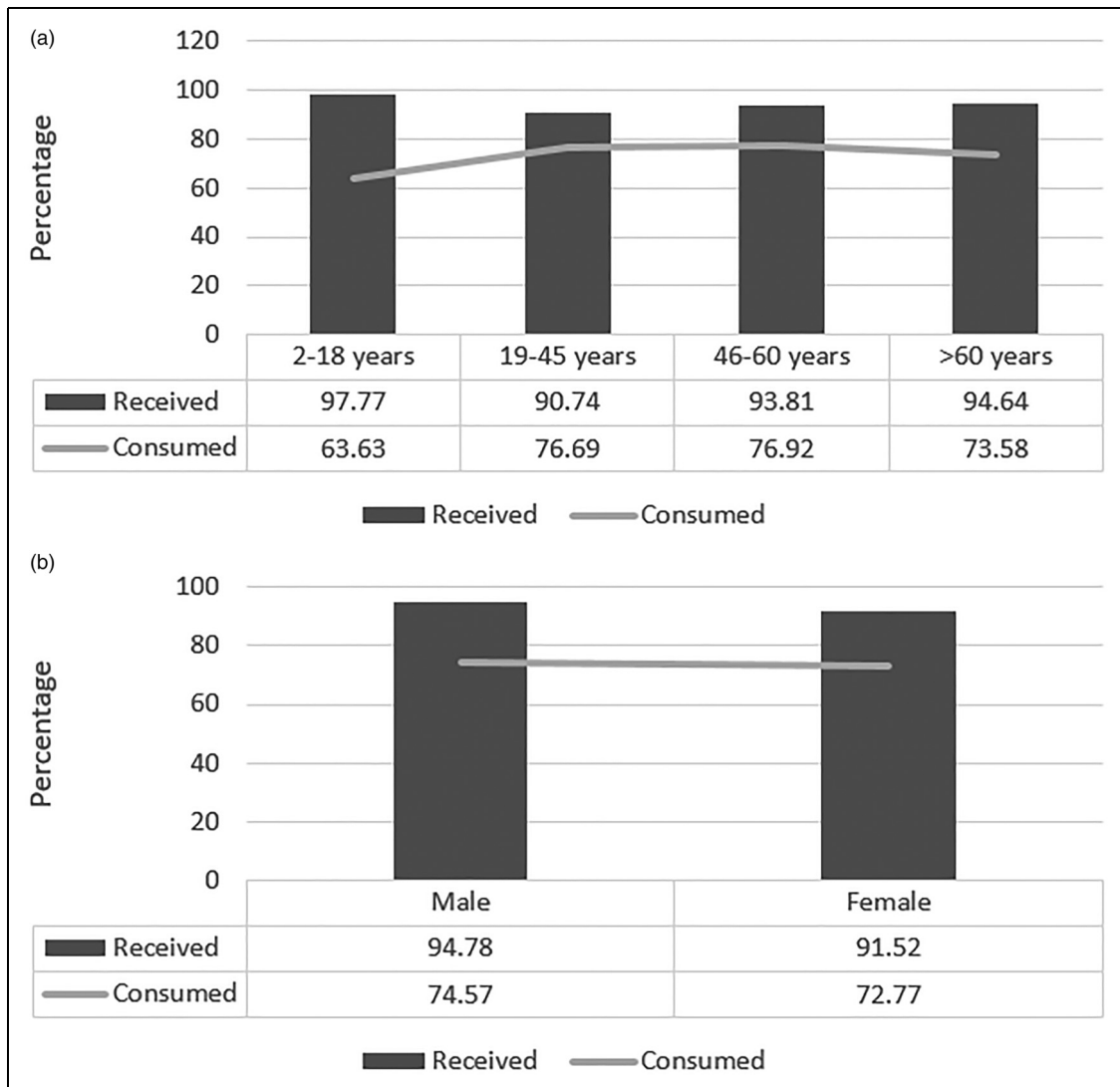


Figure 1. Coverage and compliance of MDA drugs across (a) age groups; (b) gender.

v.17 (STATA Corp, Texas) software. Coverage and compliance were calculated as percentage and graphical displays. Mean and SD were the measures of central tendency for continuous variables.

Coverage was defined as the percentage of eligible population who received MDA drugs distributed in January-February 2021, whereas compliance was defined as the percentage of population who self-reported drug consumption among those who received the drugs.

Ethical clearance was obtained from human ethics committee of ICMR-Regional Medical Research Centre, Bhubaneswar. Prior written informed consent was obtained from all study participants.

Results

Out of total 470 participants enrolled in our study, 249 (53.0%) were male. The mean age of respondents was 36.8 (2–92) years. The total coverage of MDA drugs was 93.2% which varied from 81–100% across different blocks. The coverage and compliance of MDA drugs across various age groups and gender is depicted in Figure 1. The highest coverage (97.8%) was observed amongst participants aged 2–18 years who showed least compliance (63.6%) to drugs (Figure 1(a)). Males had a better compliance (74.6%) than their female counterparts (Figure 1(b)). A portion of respondents (6.8%) reported that they did not receive drugs. Amongst those who did, 73.7% told that they had consumed them. The drug compliance varied from as low as 27% to as high as 91% across different blocks. The total respondents who did not consume medicines included: (a) eligible but medicines not given 32/470 (6.81%) and (b) medicines given but not consumed in 115/438 (26.3%). Only one person reported headache as a side effect of the MDA drugs, which was managed at the nearby facility. Almost all participants who complied with the drugs (87.3%), reported that healthcare workers were motivated and satisfactorily explained the benefits of MDA. The major reasons for non-compliance of drugs were fear of side effects (67.8%), not suffering from filariasis (15.1%), taking other medications (8.6%), not trusting publicly available free drugs (3.3%), being a small child unable to swallow tablets (1.3%) and other reasons (4%).

Discussion

Our study observed a high coverage but relatively lower compliance of MDA drugs in the community. While a small portion of respondents did not receive drugs, compliance varied widely. Although, few side effects were reported, the main reason for non-compliance was fear of such side-effects.

We observed a significantly high coverage of MDA drugs with regard to the required coverage rate of >65% for elimination of LF.^{7,8} Despite a lack of human resources

and having to follow Covid19 protocols significant coverage was achieved. However, lesser compliance was reported as compared to coverage. A major drawback contributing to non-compliance was the lack of supervised consumption, aggravated by social-distancing norms during the pandemic.

The WHO strategy to eliminate lymphatic filariasis (GPELF), launched in 2000, is based on two major key components: halting the infection spread through mass scale annual treatment of all eligible individuals in endemic areas and morbidity management of lymphatic filariasis cases through a recommended package of care.¹⁴ WHO reports of 81 countries which were endemic for LF at the start of GPELF, >10 no longer require MDA. The at-risk population requiring MDA has reduced by 43% from 2000 to 2019. However, even after a broad decline in the global LF prevalence, focal areas of south-east Asia could not attain the desired threshold to achieve elimination.¹⁵

Following the recommendations of WHO, India adopted the proposed two key strategies to combat LF. India achieved around 87% coverage of MDA in 2019 as compared to 72% in 2004 (the initial years of MDA in India).¹⁶ In 2018, an accelerated plan was launched which included triple drug therapy provided in 21 districts in the year 2020.¹⁶ The findings suggest a need for supervised consumption of drugs, which can be achieved with the help of frontline workers. This will support in increasing compliance of MDA. Frontline workers need to be motivated to achieve maximum compliance. Furthermore, information education and communication (IEC) campaigns need to be strengthened so as to gain people's trust in publicly distributed medicines.

Authors contributions

PKS and SP conceived the study. AS, SM1, SM2 and PKS collated data and drafted manuscript. AS and PKS did the statistical analysis. SP edited manuscript and provided overall guidance and support.

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Ethical approval

Ethical clearance was obtained from ICMR-RMRC, Bhubaneswar. Prior written informed consent was taken from all study participants. This is an observational study and hence, minimum participant risk is involved.

Data availability

The data underlying this article will be shared on reasonable request to the corresponding author.


Declaration of Conflicting Interests

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