Social Mobilization and Compliance with Mass Treatment for Lymphatic Filariasis Elimination in Kenya

Njomo D.W[1] , Amuyunzu-Nyamongo M[2] , Mukoko D.A[3] , Magambo J.K[4] , Njenga S.M[1].

[1]Kenya Medical Research Institute, P.O. Box 54840-00200, Nairobi, Kenya
[2]African Institute for Health and Development, P.O. Box 45259-00100,Nairobi, Kenya
[3]Division of Vector Borne and Neglected Tropical Diseases, Ministry of Public Health & Sanitation, P. O. Box 56 KNH - 00202, Nairobi, Kenya.
[4]Jomo Kenyatta University of Agriculture and Technology, P.O. Box 62000-00200,Nairobi, Kenya

Corresponding author: Doris W. Njomo.Email: dnjomo@kemri.org or dwairimunjomo@yahoo.co.uk
Telephone: (254) (020) 2722541 ext 3420 Fax: (254) (020) 2720030

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SUMMARY

This study aimed to establish the role of social mobilization in mass drug administration (MDA) uptake during the National Programme to Eliminate Lymphatic Filariasis (LF) in Kenya. MDA for LF based on diethylcarbamazine (DEC) and albendazole using community-based treatment approach has been conducted for three years (2003, 2005 and 2008) in Kwale and Malindi districts.

In each district, one high and one low, compliance locations were selected based on 2008 MDA data. From the four locations, nine villages were systematically sampled and a total of 965 randomly selected household heads interviewed. Sixteen focus group discussions with adult and youth male and female groups and separate in-depth interviews with eighty opinion leaders and eighty LF patients with clinical manifestations, purposively selected were conducted. Semi-structured interviews were held separately with fifteen community drug distributors, five health personnel and four LF coordinators also purposively selected.

The results showed that knowledge about MDA for LF was not significantly associated with compliance (P>0.05). Seventy three percent in low and 78% in high compliance villages knew about MDA. The most common source of MDA information given by 49% of respondents in high and 40% in low compliance villages were the community drug distributors (CDDs). The content of MDA information received influenced compliance (P< 0.001), 71% in high compared to 61% in low compliance villages received correct information. The frequency of receiving MDA information also influenced compliance (P< 0.001), 65.5% in high compared to 50% in low compliance villages received the correct information at least once before treatment. Opinion towards the source of MDA information was also associated with compliance, 46% in high compared to 43% in low compliance villages considered the source as adequate (P< 0.001).

The study results show that for MDA to be successful, information dissemination should be done by all stakeholders with the health personnel taking the lead role so that more adequate and factual content is relayed. Community sensitization and mobilization should be done repeatedly for all to get the information in good time to comply with treatment.

Key words: Compliance; Lymphatic Filariasis; Mass Drug Administration; Social Mobilization

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Introduction

In 1997, WHO passed a resolution urging Member States to strengthen activities towards eliminating LF as a public health problem and requested the Director-General to mobilize support for global and national elimination activities. The principal strategy of LF elimination is annual MDA of single-dose DEC or ivermectin in combination with albendazole. In its first eight years the global elimination programme has delivered 1.9 billion treatments to individuals living in 48 of the 83 endemic countries [1]. Most national elimination programmes in Africa are using the community directed treatment (ComDT) whereby community volunteers known as community drug distributors (CDDs) deliver the drugs to individuals at the homes following a study between Ghana and Kenya that was done to compare Health System Treatment (HST) and ComDT and recommended the latter for LF elimination in Africa [2].

Aggressive community sensitization towards the disease and elaborate social mobilization are required for the elimination programme to be successful. At least 65% of the individuals living in the affected communities must be convinced to take the drugs even when they have no evidence of infection or signs of the disease. No group of persons should remain totally untreated after 4 to 6 rounds of treatment because a group that misses treatment in every round and is infected forms a reservoir of mf contributing to transmission of the infection [3]. However, the global elimination campaign is faced with the challenges of persuading people who have no symptoms of the disease to take the drugs [4].

Kenya joined the GPELF in August 2001. The first MDA using DEC and albendazole was successfully launched in September 2002 in Kilifi District as the first implementation unit. The treatment coverage achieved was 81%. In this MDA, activities of community mobilization, and behavior change communication (BCC) were undertaken with financial and technical assistance of the World Health Organization (WHO). The BCC materials (posters, leaflets and banners) written in Kiswahili, the national language, were used to sensitize the communities about LF. These materials contained basic information on life cycle, causative agent, transmission, pathogenesis and control by chemotherapy. The posters and leaflets were given to the health personnel to sensitize the communities while the banners were posted on major roads. Some of the posters were posted on walls at dispensaries, schools and trading centers. Both print and electronic media were also used for awareness creation.

Public meetings, *barazas* were used as the main forum for sensitizing and mobilizing the communities and the peripheral health staff at the dispensaries. The CDDs after being adequately trained were used to sensitize the communities about the campaign. School children were also sensitized and used as agents to take the message back home.

In October 2003, two additional Districts, Kwale and Malindi undertook MDA in addition to Kilifi, which was undergoing its second round. In March 2005, Kwale and Malindi received the second and Kilifi the third round and in December 2008, Kwale and Malindi received the third and Kilifi the fourth round. Data available from the National Programme for the three rounds of MDA, 2003, 2005 and 2008 for Kwale and Malindi Districts show a drop in the treatment coverage, 85% to 71% to 64.3% and 77% to 76% to 62.8% respectively. The present study aimed to establish the role of social mobilization in MDA uptake in the National programme to eliminate lymphatic filariasis (LF) in Kenya.

Materials and Methods

Study area

This study was conducted in Kwale and Malindi Districts, Coast Province, which are both endemic of LF caused by *Wuchereria bancrofti*. Kwale District, 40 km south of Mombasa the second largest city in Kenya has an area of 8360km^2 with a projected population of 649,931 persons [5] and lies at an altitude of between 60 and 135 meters above sea level. Malindi District is located 120 kilometers northeast of Mombasa, and lies between latitudes 2.2º and 4º south and between longitudes 39º and 41º east. It covers a geographical area of 7, 605 square kilometers with a total population of 384,643 [5]. The prevalence of infection in Kwale is between 10-25 % [6; 7; 8; 9; 10]. The villages along River Sabaki in Malindi District have a prevalence of 7.1% [11].

Study design and data

The study design was retrospective cross-sectional. In each districts, two locations were selected: one with high and the other with low treatment compliance. In Kwale, Tsimba location represented high and Gadini, low and in Malindi, Goshi represented high and Gongoni, low compliance. Using systematic sampling technique, a total of nine villages were selected from the four locations and then a total of 965 household heads or adult representatives randomly selected. Interviewer-based questionnaires were administered to the household heads or adult representatives for quantitative

data. The details of the number of households covered are shown in Table 1.

Table 1 Study population by district and MDA coverage in 2008

District	Location	Village	Number of Households Interviewed	MDA Coverage Status (2008)
Kwale	Gandini	Takawa	56	Low
	Gandini	Dzivani	84	Low
	Gandini	Tsunza	140	Low
	Tsimba	Patanani	100	High
	Tsimba	Mbengani	101	High
Malindi	Gongoni	Zhogato	140	Low
	Gongoni	Midodoni	142	Low
	Goshi	Kavunyalalo	102	High
	Goshi	Magongoloni	100	High

For the qualitative data, in-depth interviews were conducted with eighty LF patients with clinical signs and eighty opinion leaders all purposively selected to identify their opinion of MDA. To elicit more information on perceptions of MDA, sixteen focus group discussions (FGDs) were carried out with adult and youth male and female single-sex groups and moderated by the lead author assisted by trained field assistants using *Kigiriama* and *Kiduruma*, the local languages. Semi- structured interviews were administered to the fifteen community drug distributors who served the study villages in 2008 MDA, to the five health workers of the health facilities serving the selected villages and to the four District LF coordinators.

The study received ethical clearance and approval from Kenya Medical Research Institute (KEMRI)/National Ethical Review Board (Protocol Number 1077) and World Health Organization, Ethical Review Committee (Tropical Diseases Research ID No. A61106). Informed consent was sought from the study participants. The hard copies of the raw data were stored in secure cabinets and the soft copies in computers with passwords with authorized access by the lead author for quality control**.**

The responses to open-ended questions were coded before entry. Equivalent responses were pooled and arranged in different categories. The quantitative data were analyzed using SPSS version 16. Categorical variables were summarized with frequencies and proportions and comparisons done using χ^2 test. The statistical significance was set at $P \leq 0.05$. The qualitative data were analyzed manually according to the core themes of the study. The data were examined separately for clusters that recorded high and low coverage and compliance.

The dependent variable, compliance with treatment, was assessed through verbal interviews with eligible household heads or adult representative. The independent variables were knowledge about MDA for LF, sources and content of MDA information, frequency of receiving the information and opinion towards the source of the information.

Background Characteristics of the Respondents

A total of 965 household heads or adult representatives with a mean age of 39.5 years (SD= 15.6) participated in the study. Most (62.6%) respondents were female, (80.4%) were in marital unions, 9.4%, single or divorced and 10.3%, widowed. Two-fifths (40.5%) were Christians, 35.8%-Muslims and 23.7% were non-practicing. Nearly one-half (45.8%) had never attended school while 30.7% attended but did not complete primary level. Most (62.5%) were peasant farmers, 21.3% were casual laborers, fishermen or business owners. The remaining (16.1%) were either salaried workers or housewives.

About one-quarter (24.6%) of the opinion leaders, interviewed were local leaders, 23.2%, Christian religious leaders and another 23.2%, social group leaders. Islamic leaders and traditional herbalist accounted for 5.8 % and 4.3 % respectively. Teachers and policemen represented 18.9% of this group.

Nearly two-thirds (64%) of the LF patients had hydrocele, 35%, lymphoedema and only 1% had both manifestations. The mean age of the patients was 52.4 years; (SD=16.7) the youngest was 22 and the oldest 98 years old. Slightly more than two-thirds (67.5%) were male, one-half was from high and one-half from low compliance areas.

Results

Knowledge about Mass Drug Administration for Lymphatic Filariasis

Knowledge about MDA for LF was not significantly associated with compliance (P>0.05). Seventy three percent of the respondents in low and 78% in high compliance villages reported that they knew about mass treatment for lymphatic filariasis elimination in their community.

Source of MDA information

The source of MDA information was associated with compliance (P< 0.001). Nearly one half (48.5%) of the respondents in the high compared to 39.9% in the low compliance villages received the information from the CDD. Less than one fifth (17.7%) of the respondents in high and 12.8% in low compliance villages received the information from village elder or the chief (Table 2).

Table 2 Source of MDA information

How did you learn about MDA?	Low compliance %	High compliance %
CDD	39.9	48.5
Hospital	3.9	0.5
Radio/posters	4.8	2.7
Village elder/chief	12.8	17.7
Community members	5.5	2.7
School	1.2	0.2
Cannot remember	3.7	3.5
Rumors	2.0	2.5
N/A (did not know about MDA)	27	21.3

Content of MDA information

The content of information received about MDA was significantly associated with compliance, P< 0.001. Seventy-one percent of the respondents in high compared to 61% in the low compliance group received the correct information that the drugs were given to treat and control LF (Table 3).

Table 3 Content of Information about LF Drugs

What Information did you get about MDA drugs?	Low compliance%	High compliance %
Drugs given to treat and control LF	61.3	71
Cannot remember	5.2	3.2
Do not know	6.6	2.2
Drugs given for family planning and general health	0.9	1.5
N/A Never got information	26	22

Frequency of Receiving MDA information

Frequency of receiving information on MDA was significantly associated with compliance, P< 0.001. Both high and low compliance village members received the information at least once, (65.5 % and 50.3% respectively) while 10.5% in low compared to 7.9% in high compliance villages did not know how many times they had received the information (Table 4).

Table 4 Frequency of MDA Information

How frequent was the MDA information?	Low compliance %	High compliance %
Once	50.3	65.5
Twice	9.6	4.0
Thrice	2.5	0.5
Several Times	0.9	0.9
Do not know	10.5	7.9
N/A Never got information	26.2	21.3

Furthermore, in 4 FGDs in low and 2 in high compliance villages, majority of the participants reported that the community members were given MDA information one to two days before the MDA day. A

large majority of participants in 2 FGDs in low compliance villages reported that it took a very short period between the time they got the information and the time that the drugs were distributed.

On the other hand, a great majority of participants of 7 FGDs, 6 from high and one from a low compliance village said that they were given the MDA information 3 days before MDA day. Moreover, most participants of 3 FGDs, all from high compliant villages reported that they got the information 4 to 7 days before the MDA. In all FGDs, a great majority of the members emphasized that the communities needed to be given adequate sensitization and education about the LF programme. A male youth respondent in one FGD in a low compliance area said:

"But the problem is that people were not educated on the drugs and the CDDs just came and gave out the drugs, they did not explain the negative and positive effect that is why many people did not swallow the drugs".

Three CDDs from low and one from high compliance villages further reported that their communities had not been informed about MDA. Moreover, 3 CDDs from high and 2 from low compliance villages reported that they informed their community members about the campaign during the actual drug distribution time. All the CDDs felt that there was inadequacy in source, content and frequency of MDA information and that combined effort by health workers, local administration through meetings, CDDs and mass media through posters and radio announcement needed to be used in order to raise the compliance levels.

Only one health worker from a high compliance village reported having educated the community members on mass drug distribution by explaining the benefits of taking the LF drugs and the expected side effects while 2 health workers from high and one from a low compliance village reported that they used the villages elders, CHWs and CDDs to educate the community members about the drugs. One health worker from a low compliance village reported that he could not educate his community as he was a new staff in the area and having come from a non-LF endemic area did not know much about the programme. Moreover, only one District LF coordinator mentioned community sensitization and health education as one of the recent steps taken to control LF in the area.

Opinion towards source of MDA information

Individual opinion towards source of MDA information was associated with compliance (P< 0.001). Forty six percent of the respondents in high compared to 42.6% in low compliance villages considered the source as good (Table 5).

Table 5 View towards Source of MDA Information

Opinion	Low Compliance%	High Compliance%
Good	42.6	45.9
Poor	5.1	12.4
No Idea	15.0	8.0
Needs to be more factual	11.1	12.4
N/A Never got information	26.2	21.3

A female respondent in an FGD in a low compliance area further said:

" *I would like them to do like those who advertise using microphones or loud speakers in a car going house to house or different areas in the village explaining when the drugs will be given out, what they are for and who is required to take them. Also the village chairman should encourage his village people and many will get the information and accept to take the drugs next time."*

Discussion

The present study revealed that majority of the community members in both high and low compliance areas received information about the MDA campaign in their villages. However, it is apparent that several factors: access to MDA information, source of information, correctness of content of information on MDA, frequency of receiving the information and opinion towards sources varied between the two groups and influenced compliance with MDA uptake.

In the current study, access to MDA information which seemed to have been better in high compared to low compliance areas influenced compliance with treatment. This finding is in tandem with the results of Wanji et *al*.,

[12] which indicated that due to the social awareness campaign the population was well informed on the process and the role to play in the process which contributed much to the success of the programme and each partner in the community-directed treatment with ivermectin (CDTI) process adequately played his or her role. World Health Organization [13], emphasizes that community involvement in health not only helps to break the bond of dependence that characterizes so much health development work but also creates a general awareness among local people of the potential for their involvement in all forms of development.

The study results also showed that the sources of MDA information also influenced compliance with treatment. The CDDs followed by the chief and/or village elder were the most common sources of MDA information in both low and high compliance groups, while the hospital, press and print media were more common sources of information in the low compared to the high compliance areas. The results revealed that the health professionals did not play a frontline role in disseminating information on MDA suggesting that the MDA information received by some of the community members may have been inadequate and/or incorrect as the two main sources (CDDs and chiefs and/or villages elders) are non- health professionals who should not be relied upon as the main sources of information. Amarillo et *al*., [14] mentioned the important role of the health workers as the community's major source of information indicating that their active and sustained participation is vital in running a five- year MDA programme to eliminate LF. Haselow et *al*., [15] on programmatic and communication issues in relation to serious adverse events following ivermectin treatment in areas co-endemic for onchocerciasis and loiasis mentioned that the community sensitization activities have typically been carried out by nurses and CDDs. Efforts of health workers may also need to be complemented with continuing if not intensified support from the local government unit. In Zanzibar, Mohammed et *al*., [16] where the programme has been successful, a combined message from an advisory board, ministries, national institutions, non-governmental organizations, (NGOs), religious organizations and political leaders were used to disseminate the information to the population.

Although the compliance levels were different, the results of the current study show that majority of the community members in both high and low compliance groups knew about MDA. Similarly in Haiti, only about 9% of the persons interviewed claimed to be unaware of mass drug administration [17]. In India however, Aswathy et *al*., [18] on perceptions and practices of MDA against filariasis in a rural community showed that a large proportion of the people did not know the term 'mass drug administration' although they lived in an area that had experienced three rounds of MDA in their lifetime. In the current study, other than having the correct information that the drugs were given to treat and prevent LF, some members could not remember or did not know why the drugs were given while some were misinformed and thought that the drugs were given for family planning and general good health. This suggests a need for adequate awareness creation and involvement of the target audience in deciding on the materials and methods to be used. The findings of the current study are similar to those of Yirga et *al*., [19] where health education activities were very weak and could have otherwise provided epidemiological information that could have probably raised perceived risk of individuals to the disease. Furthermore, predominant reasons given for non-compliance were; thinking that the drugs were for only those with clinical manifestations and a lack of perceived need for the treatment [19].

Health education could also raise awareness of the social, economic and environmental determinants of health, and be directed towards the promotion of individual and collective actions, which may lead to modification of these determinants. In the Philippines, Amarillo et *al*., [14] showed that nearly all those sampled did not know that a person with LF could be asymptomatic and the majority was only aware of the manifestations of the disease, which appear in its later stages. This lack of knowledge may have influenced their health-seeking behaviour such as waiting at home to receive the drugs and their perception of being infected, especially when they did not have symptoms and were not feeling unwell. Nutbeam, [20] expresses that in terms of 'content', efforts to improve people's knowledge, understanding and capacity to act, should not only be directed at changing personal lifestyle or the way in which people use the health services.

The current study showed that majority of the community members from the low compliance areas had never heard of MDA and one-half got the information only once before the MDA. The findings therefore suggest that the low compliance community members may have had limited and infrequent exposure to health education materials. Rao and Sharma, [21] indicated that it is plausible that more frequent contact with the population before treatment could improve compliance especially if the contact involved health education. Mathieu et *a*l., [22] however found that non-

compliant persons were not less exposed to health education materials but did not retain or accept the messages.

As more of the community members from the low compliance areas had never heard about MDA they therefore could not give their opinion towards the source of information or had no idea on what to comment about their views. This implies that the sources of MDA information in the low compliance areas were infrequent or rare and hence the low levels of compliance. Nutbeam, [21] in a report on health literacy as a public health goal, mentioned that interventions which have relied primarily on communication and education have mostly failed to achieve substantial and sustainable results in terms of behaviour change, and have made little impact in terms of closing the gap in health status between different social and economic groups in society.

Conclusions

This study advocates for improvement in making MDA information accessible to all targeted community members and for ensuring that health personnel participate adequately in information dissemination so as to build confidence among the target community members. Increasing the frequency of number of times of MDA information dissemination will help ensure that all members are aware of the programme. For higher compliance levels, different channels of information dissemination should be used in all communities.

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Competing interests

The authors declare that they have no competing interests.

Authors' contributions

DWN and MAN designed the study protocol; DWN and SMN conducted the social mobilization assisted by local leaders; DWN, SMN, JKM and MAN supervised data collection, MAN and DAM assisted DWN in data analysis and interpretation. DWN drafted the manuscript. All authors read and approved the final manuscript. DWN is the guarantor of the paper.