

The Effect of a Health Communication Campaign on Compliance with Mass Drug Administration for Schistosomiasis Control in Western Kenya—The SCORE Project

Martin Omedo, Michael Ogutu, Alphonse Awiti, Rosemary Musuva, Geoffrey Muchiri, Susan P. Montgomery, W. Evan Secor,* and Pauline Mwinzi

Neglected Tropical Diseases Branch, Center for Global Health Research, Kenya Medical Research Institute (KEMRI), Kisumu, Kenya; Division of Parasitic Diseases and Malaria, Centers for Disease Control and Prevention, Atlanta, Georgia

Abstract. Compliance with mass drug administration (MDA) can be affected by rumors and mistrust about the drug. Communication campaigns are an effective way to influence attitudes and health behaviors in diverse public health contexts, but there is very little documentation about experiences using health communications in schistosomiasis control programs. A qualitative study was conducted with community health workers (CHWs) as informants to explore the effect of a health communication campaign on their experiences during subsequent praziquantel MDA for schistosomiasis. Discussions were audio-recorded, transcribed verbatim, translated into English where applicable, and analyzed thematically using ATLAS.ti software. According to the CHWs, exposure to mass media messages improved awareness of the MDA, which in turn, led to better treatment compliance. Our findings suggest that communication campaigns influence health behaviors and create awareness of schistosomiasis control interventions, which may ultimately improve praziquantel MDA.

INTRODUCTION

Praziquantel treatment for control of schistosomiasis improves child growth and development, lessens some of the end organ damage, and decreases the socioeconomic impacts linked to schistosomiasis.^{1,2} Current strategies are geared toward mass drug administration (MDA) to the at-risk populations.^{3–5} However, compliance remains a major challenge in the MDA delivery process and can be hindered within a community by lack of awareness, personal subjective experience of the side effects, religious objections, or misconstrued perceptions about the true intention of treatment. These challenges can, in part, be addressed through improved public communication campaigns as a form of community mobilization.^{5–9}

Health communication campaigns use mass media and an organized set of activities to generate specific outcomes or influence a large number of individuals. They are often the leading source of information about important health issues. For this reason, health communication is often used as a method by those who wish to influence the behavior of health professionals and community members.^{10,11}

Usually, health communication campaigns include public service announcements delivered through a diverse mix of communication channels, such as road shows, radio, posters, booklets, and brochures. The intervention strategies can be interpersonal or community-based to extend the reach and frequency of the campaign messages and increase the probability that messages will have an effect.^{12,13} Over the past few decades, health communication campaigns have been used in an attempt to affect behaviors related to general health topics or specific diseases, such as reproductive health, human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS), malaria, child survival, and sex-related behaviors.^{11,14–16} However, very little experience with these interventions has been documented with MDA for the control of schistosomiasis.

Previous studies have shown that participation in health campaigns can be adversely affected when insufficient knowledge or information leads to inaccurate theories about the health interventions being delivered.¹⁷ Hence, interventions for control of schistosomiasis and other neglected tropical diseases (NTDs) may benefit from health education and promotion activities that use locally developed information, education, and communication materials. Increasing the community's level of awareness about the disease and heightening their understanding of the benefits of the drugs and participation in MDA can lead to closure of the knowledge–practice gap, resulting in improved treatment coverage, behavioral change, and better control of schistosomiasis and other NTDs.^{7,9,18–20} To evaluate the impact of a health communication campaign for schistosomiasis control in western Kenya, we collected the perceptions of community health workers (CHWs) with regard to its impact on their ability to deliver praziquantel by MDA.

STUDY DESIGN AND METHODS

Ethics approval. The study was reviewed and approved by the Scientific and Ethical Review Committees of the Kenya Medical Research Institute and the Institutional Review Board of the Centers for Disease Control and Prevention. Informed consent was also obtained from all participants before their information was included in this study. Participants were requested to keep the identities of participants and the information that they discussed confidential. No information was publicly reported that would identify the CHWs as participants in the study.

Study area. The health communication campaign was conducted in 75 villages that are located within 10 km of the shore of Lake Victoria in eight districts of western Kenya, including Kisumu East (4 villages), Kisumu West (2 villages), Kisumu Municipality (2 villages), Homa Bay (6 villages), Rachuonyo North (21 villages), Rarieda (22 villages), Nyakach (3 villages), and Bondo (15 villages).⁹ These villages had been included in the community treatment arms of the Schistosomiasis Consortium for Operational Research and Evaluation (SCORE) study for gaining control of schistosomiasis, the

*Address correspondence to W. Evan Secor, Division of Parasitic Diseases and Malaria, Centers for Disease Control and Prevention, 1600 Clifton Road, Atlanta, GA 30341-3724. E-mail: was4@cdc.gov

design of which has been described elsewhere.^{9,21} As part of the eligibility criteria, study villages had a *Schistosoma mansoni* infection prevalence $\geq 25\%$ in 13- and 14-year-old schoolchildren at baseline. The communities are mainly in rural parts of western Kenya, and the residents are predominantly involved in subsistence farming and fishing activities. The mean wealth index is approximately \$600–700 per compound.²² The population is of Luo ethnicity, and Dholuo is the most common language spoken. Christianity is the most practiced religion. Prior studies conducted in this region similarly showed a high prevalence of schistosomiasis.^{23,24}

Selection and training of the CHWs. CHWs had been selected in each district by the respective District Health Management Teams (DHMTs) using the existing Kenyan Ministry of Public Health and Sanitation community strategy structures within the Ministry's primary healthcare delivery system.²⁵ The CHWs were contacted through the DHMTs and had been trained on praziquantel drug distribution in the community. The project facilitated the work of the CHWs by providing transportation reimbursement at a rate that was agreed on by the DHMT members (approximately \$8 US per day), because the Ministry of Health does not have a fixed rate of remuneration but considers CHWs as volunteers in the community strategy structure.⁹

Key messages and communication strategies. During the first round of MDA in 2011, only the CHWs, health officials, and provincial administration were trained by the project, with the expectation that they could, in turn, perform the community sensitization. When discussing their experiences, CHWs suggested that providing more information about the MDA and health education through a variety of channels might improve community mobilization and compliance.⁹ Therefore, for the second round of MDA activities in 2012, a comprehensive health communication intervention was designed to (1) encourage participation in the annual MDA and (2) address health behaviors associated with increased transmission (e.g., swimming/bathing in schistosome-infected water bodies and open defecation/urination). These health communication messages were designed to increase awareness, leading to motivation and then individual behavior change.²⁶ As in other interventions,²⁷ health education messages that address behavior can be critical for control of schistosomiasis and other NTDs because of the role of human activities in the infection cycle.

The communication strategy included the distribution of health messages by radio, leaflets, and road shows as well as interpersonal communication through health officials, beach management unit (BMU) chairpersons, and representatives

from community groups, such as women's groups, church leaders, village elders, chiefs, and assistant chiefs. These community leaders conducted forums to provide health education about MDA, motivate community members to comply with praziquantel treatment, and also, encourage behavior changes. The radio messages were aired four times a day during the prime hours: very early in the morning (6:00 AM), midday, around 4:00 PM, and around 6:00 PM. The announcements aired on one station for a period of 4 weeks, beginning from the time that the CHWs started conducting the MDA activities.²⁸

The transcript used in the radio announcements contained two themes designed to influence knowledge, attitudes, and behaviors and encourage participation. The first theme was to inform the general public about schistosomiasis, its treatment, and the benefits of the treatment. The goal of the second theme was to motivate the community members to accept the free drugs that were being distributed by the CHWs (Table 1). The messages were translated and communicated in the local language spoken in the area (Dholuo).

The project also supported district public health officers who performed road shows in the villages where MDA was being conducted by providing transportation and daily lunch allowance in accordance with government regulations and practices. Road shows involved crisscrossing the whole village, announcing the MDA from a truck equipped with loud speakers, and stopping where there were gatherings to distribute information brochures/leaflets and answer questions about the treatment. The message delivered by road shows followed the same themes as the radio announcements.

Data collection methods, processing, and analysis. All CHWs who were involved in the drug distribution process were invited for the group discussions. These CHWs had been involved in the drug distribution process in both rounds of MDA, but the intensive mass media campaign was only conducted before and during the second round of drug distribution. In total, five semistructured group discussions were conducted after the second MDA to elicit the perceptions of CHWs with regard to the effect of the health communication campaign.^{9,29–31} The discussions, which had between 10 and 12 mixed sex participants and lasted between 45 and 60 minutes, were recorded using a digital audio recorder. The discussions were later transcribed verbatim and translated into English where applicable. Main themes within the discussion guide were around the CHWs' perceptions of the effect of the health communication campaign on the delivery process, their perceptions of how the mass media affected people's knowledge and awareness about the program and the disease, and

TABLE 1
Radio transcript

Announcement! Announcement!

Following the research that was done by KEMRI-CDC they found out that most people in District XXX who live in the villages along the shores of Lake Victoria have Bilharzia. These villages include **XXXX, YYYYY**. KEMRI CDC through MOPHS (Ministry of Public Health and Sanitation) is facilitating CHWs from the above mentioned villages to conduct a Community Wide Treatment for Bilharzia. The CHWs will be moving from door to door giving the medicine that treat Bilharzia free of charge. We urge you to take the medicine that will be provided so as to treat Bilharzia. We are also urging everybody in these villages from age five and above to take these drugs that treat bilharzia. Bilharzia is a disease that we contract when we get into contact with infected water in the lake, pond, river etc. it brings other complications like liver disease, anemia, stomach extension, general body malaise that will make you not to attend to your daily activities properly. In children bilharzia affects their growth process and it also affects their thinking process in class. If you have any question you can contact xxxxxxxxxxxxxxxx from KEMRI on mobile number 0722XXXXXXXXX

how all this affected treatment compliance with praziquantel during the MDA process. Discussions were also held on ways that CHWs would suggest improving the campaign if it were to be done again. During the group discussions, probes were used by the moderator to encourage detailed conversations.

Inductive analysis was conducted according to the framework approach, a process of coding, categorizing, and explaining the qualitative data.^{32,33} The translated transcripts were read and reread several times by the principal researchers to identify index themes and categories as they emerged from the data. In addition, the recordings were listened to several times to ensure accuracy of the transcription.³⁴ This process of repeated reading and the use of the recordings to listen to the data result in data immersion and facilitate the researcher's awareness of the data.³⁵ The transcripts were imported to ATLAS.ti, a qualitative data analysis software package (<http://www.atlasti.com>). Line-by-line coding was used to develop coding indices organized by thematic category. Each transcript was coded according to the corresponding index in ATLAS.ti, and only those codes that were directly or indirectly related to the communication campaign were used to identify the final themes. The frequencies of the codes and corresponding commentary were assessed to distinguish the main categories of perceptions.^{33,35} Short memos and word tables were used to summarize the overall perspectives expressed by each informant, define major categories of comments, and organize descriptive categories into themes. The findings from the group discussion were then interpreted to provide possible and plausible explanations by choosing examples of extracts from the transcript to illustrate elements of the themes. These extracts clearly identified issues within the theme and presented a lucid example of the points being made.³⁶

To determine radio's effectiveness in terms of coverage, listenership, and effects of the communicated messages, a phone contact was provided where the community members could call or be called back (when someone tried to call or did not have money to call) to ask questions or seek direction about the infection and the treatment. The callers' locations and sexes were recorded. With their permission, the phone conversation was recorded on paper in the language of conversation and translated verbatim, which was later coded to identify the emerging themes from the data.

FINDINGS

Demographic characteristics of the respondents (CHWs).

In total, 75 CHWs worked as community drug distributors (CDDs), and all were invited to the feedback meetings during which these data were collected. However, only 53 (70.7%) CHWs came to the group discussions. The majority of the CHWs (41; 77.4%) who participated in the meetings was female, with a median age of 33 years old (22–64). Of 53 participating CHWs, 38 (71.7%) CHWs had completed secondary school, and 39 (73.6%) CHWs were married. Most (41; 77.4%) of the CHWs who participated in the discussions had been selected to be the CHW by the members of their communities (Table 2).

Four main themes were identified during analysis; they covered improved work output, improved awareness of the program and the disease, suggestions for improvements, and importance of stakeholder's involvement. They are described below in more detail.

TABLE 2

Sociodemographic profile of CHWs who were the drug distributors

Description	Frequency (N = 53)	Percentage
Sex		
Female	41	77.4
Male	12	22.6
Educational level		
Primary education*	13	24.5
Secondary education*	38	71.7
Post-secondary education	2	3.8
Marital status		
Married	39	73.6
Single (never married)	1	1.9
Widowed	13	24.5
Selected as CHW by		
Community members	41	77.4
Assistant chief	4	7.5
Chief	7	13.2
Village elder	1	1.9

*Attended primary or secondary education, even if the level was not completed.

Awareness creation and demand for the drug. The health communication campaign helped create awareness of the program and the disease. CHWs perceived that this campaign stimulated an increased acceptance and demand for treatment. The CHWs reported that, during the MDA, there were fewer cases of resistance to treatment compared with the previous year, when there had been no health communication campaign.

“...I didn't have a difficult task because they had announced, secondly, there were announcing in the radio, now even when I go to a given household they tell me that, 'eeeh you are the CHW that was being announced in the radio that will be treating in this village?' And I would agree 'yes,' and I didn't have any challenge” (39-year-old male CHW, Bondo District).

“...I worked last year and worked this year again. The treatment went on so good in the village. The day I started distributing the drug that is the day that the announcement through the road show started. Radio also helped me a lot, the information was really listened to and people were saying, 'it seems this drug is very good.' Hence, when I started treating people really took the drug” (31-year-old female CHW, Nyakach District).

Improved work output and compliance. CHWs felt that the health communication interventions improved their work output. They were able to cover more households and distribute praziquantel more rapidly compared with the first round of MDA. The CHWs felt that this improvement was a result of needing to spend less time explaining about the activity, because the community had already received the information during the campaigns. They also reported that there was a demand for drugs from those who had heard about the MDA, and some community members would seek treatment from the CHWs before it could be brought to them.

“...The announcements that were done this year really helped and again you did the announcement in the radio and on the road. Now you know when you go to someone's compound you find when they already know what is happening. Now in my area people took the drug I even came back and picked more drugs from

the hospital when the drug that I was given got over. Now some people were also asking, 'Can I be added another dose?'" (40-year-old female CHW, Rachuonyo District).

"... I worked last year and I again worked this year. When I started working I found the job very easy because it was different from last year. I was not explaining much about the drug and I found out that I covered very many households compared to last year" (36-year-old female CHW, Rarieda District).

"... Me and the village elder we went and made announcement there and you also came with a car and also made announcement then there was also announcement in the radio. You should do those announcements again. Some people even came to my house looking for me very early in the morning saying, 'Come and give us the drug.' That really made me happy because my work was really made very easy. I gave out the drug till the ones I had got over very fast and I even called on the phone that I needed more drugs and you brought me more drugs and even those that you brought me got over and I came back and took some from the hospital. I really worked very well" (30-year-old male CHW, Homa Bay District).

Suggestions for improvement. When the CHWs were asked to suggest ways to improve the communication campaigns, some CHWs suggested that more than one radio station should be used during the campaign, because not all community members listen to the channel that was used. Some CHWs also proposed that, the next time, their names should be mentioned in the radio announcements and the road shows should tell the community members who would be responsible for drug distribution during the MDA in their area. The CHWs reported that community gatherings may have been less effective, because other interventions had paid community members to attend meetings, and community members might seek payment for coming to hear about schistosomiasis MDA. The CHWs proposed the use of posters and other communication channels instead of organizing community gatherings.

"... Announcements helped me a lot, because they were listening to the announcement and seeing the action on the ground. This time round you really had a wise thought (idea) about announcing but next time when you are announcing you can say something like, 'In such a village look for such a person.'" (29-year-old female CHW, Rarieda District).

"... Radio helped but not everyone was reached because the station that was used only a few listen to it. Ramogi and Citizen (names of radio stations) is very clear hence majority of the people this side tend to listen to the two. However those who listened to the announcement were asking about the drug but I think that the money that you use on the radio should be diverted to road show which I think was very effective" (29-year-old male CHW, Homa Bay District).

"... Posters should be used instead of community gathering because community gathering has been

abused before by other organizations. They built that culture of issuing cash among the community members." (27-year-old male CHW, Homa Bay District).

Health communication interventions were considered to have helped reduce anxiety about drug side effects. In the first round of MDA, many community members had suffered side effects after treatment, which led to fear of side effects and reduced uptake of the drug later in the first round of MDA implementation. However, after the intensive health communication campaign during the second round of MDA, fear of side effects was not a major issue according to the CHWs. They attributed this change to the campaign.

"... Also the announcement that was made on the radio helped me to work in my area. Last year I gave out the drug and I really had difficult time with people in that area so I went back this year. The announcements really helped me now, most of the people knew how the drug makes you feel (side effects). Some were saying that the drug makes them feel nauseated, they were also feeling dizzy. Now what I was telling them was that they should not take the drug before eating and even if they have eaten they should not walk here and there (they should settle down...)" (40-year-old male CHW, Rachuonyo District).

Stakeholders' involvement in mass media campaign process. The involvement of stakeholders, like Provincial Administrators, church leaders, BMU leaders, women's group leaders, and other community leaders in the campaign, was acknowledged by the CHWs as very important. These stakeholders helped to mobilize the community and provided forums for communicating the MDA activities to the general public and providing health education; they also provided security to the CHWs during the exercise. However, there were no major security issues reported.

"... I was working and what made me very happy and I have been longing for because I worked last year. This time you called the assistant chiefs, clan elders and the chief also came, and they announced about the treatment very very well and they also gave us the opportunity to give the drug without any problem (without any security issue or any form of harassment)" (30-year-old female CHW, Rachuonyo District).

"... I went to church on Friday and I found that some people did not come to church because they felt sick after taking the drug. But because my pastor was aware of the activity since he came for the training, he gave me an opportunity to teach about bilharzia and the drug I was distributing in the community. I realized that gave me easy time with my community members" (33-year-old female CHW, Homa Bay District).

The influence of the radio messages in terms of coverage, listenership of the target group, and effects of communicated messages was also apparent from the response by the listeners who called in during the campaigns. The radio announcement reached all the districts that were targeted for treatment. However, 87% (40 of 46) of all the callers were from

non-intervention areas. The main concern of the callers from the non-intervention areas was why they were not receiving treatment, although they live in the same environment as those being treated. They also wanted to know where they could access the schistosomiasis treatment services and the name of the drug. Those who called from treatment areas only wanted to know either who was distributing the drug or the side effects that they could expect after taking the drug. Others wanted to know if they could take the drug if they had a certain condition or disease or were taking certain medications. Some callers asked about rumors that were circulating in the community.

“...What is the name of that drug so that I can go buy it from the pharmacy. I have not heard my district being mentioned and I think I have the disease since I work a lot in the lake. Next time you should also come up to this place. We are also suffering just like those other people and we are also Kenyans just like them” (female caller from Migori).

“...Daktari (Doctor) I have a child who has a continuous stomach ache. He is ever tired and he keeps forgetting and those are the things I have (heard) being mentioned in the radio. The reason why I have called you is that I want you to help this child of mine because I have listened to the announcement in the radio but I have not heard the name of my village being mentioned. This child of mine really needs that drug” (male caller from Bondo).

“...I have heard from those who have taken the drugs in our area that when you take the drug you will have stomach discomfort. Is it true and why is that happening? I have not taken the drug but I am hearing it from those who have taken the drug” (female caller from Rachuonyo).

“...If you have taken the bilharzia drug and you start to diarrhea. What does that means and what of head ache?” (female caller from Rarieda).

The study also noted that 26.1% (12 of 46) of all those who called were mostly concerned about their children.

“...My child has wounds in the head, does it mean that he has the disease also?” (female caller from Kisumu East).

“...I have children who have stomach problems (swollen stomach) and they lose concentration very fast. How can I get the drug that you are announcing to give them? If you are not coming this sides, where can I go and get the drugs?” (male caller from Migori).

DISCUSSION

Implementing public health interventions, such as MDA, in the community setting is complex and challenging, because there are numerous cultural and individual factors that directly or indirectly influence treatment delivery.^{9,17} Health communication interventions can be used to help overcome misconceptions about public health interventions, such as MDA, or the purpose of treatments (e.g., the perception that

they are family planning pills) by improving knowledge and awareness of these public health interventions.^{7,14,37} The CHWs felt that there was increased community awareness and MDA compliance after an intensive health communication campaign about schistosomiasis control in western Kenya. More effective MDAs coupled with other schistosomiasis control strategies, such as improved sanitation,^{4,38–40} may help to change health behaviors of the community members in programs designed to control and possibly eliminate schistosomiasis.⁴¹

The findings of this study are consistent with other studies showing that the use of mass media communication strategies to raise awareness is essential to impact health behaviors and increase the use of healthcare interventions.^{10,16,42,43} The increase in the number of people who complied with treatment (Onkanga M and others, unpublished data) was largely attributed by the CHWs to the intensive mass media campaign that was implemented before the MDA.

Raising the level of community awareness of the disease, the control programs, and the intervention may be a mediator of actions, because those who are more aware and perceive that they are at risk are more likely to engage in behavior change and healthcare-seeking behaviors.^{16,28,44} According to the CHWs, some of the community members who are involved in fishing activities recognized their increased risk of infection and responded to the media campaign by seeking out the CHWs to obtain the praziquantel.^{40,45} Although it was not part of the study, it would have been interesting to ascertain the effect of the communication campaign on persons seeking treatment of schistosomiasis at public health facilities.

In our study, the CHWs acknowledged the significant role of integrating various communication channels, because people could get the information from different sources. Strategies, like radio call-in sessions and involving health officers, church leaders, and village elders in the community offered collateral benefits, such as perceived security for the CHWs during the exercise. Material in the health messages was presented in ways that were familiar to persons living in rural areas and allowed for discussion and input from community members, leading to increased participation.^{46,47}

The study could have been strengthened if we had also been able to assess the perceptions of the targeted treatment groups with respect to the impact of the health communications strategy. However, previous reports have indicated that CHWs present unique opportunities for community-based participatory research (CBPR) by their unique position as a link between researchers, program implementers, and the communities targeted. CHWs can bring the end users' perspectives to project managers and implementers, and successful programs often integrate feedback from communities to solve challenges that arise during implementation of such community interventions.⁴⁸ In fact, the impetus for performing the communications campaign arose after the experiences that the CHWs reported from the first MDA.⁹ However, because this MDA was the second MDA, it is not possible to fully attribute the increased treatment compliance to the communications campaign because the previous year's MDA could have also influenced the community's receptiveness in the second year.

In conclusion, CHWs perceived that a health communication campaign increased awareness and compliance regarding schistosomiasis MDAs as a control strategy in western Kenya.

However, more robust research is needed to ascertain if the effect of communications efforts on increased openness to MDA is similar when implemented in schistosomiasis control programs in other parts of Kenya and other countries. Additional research is needed to understand which health messages have the greatest impact and what culturally appropriate communication methods work best for schistosomiasis control in at risk communities.

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Authors' addresses: Martin Omedo, Michael Ogotu, Alphonse Awiti, Rosemary Musuva, Geoffrey Muchiri, and Pauline Mwinzi, Neglected Tropical Diseases Unit, Center for Global Health Research, Kenya Medical Research Institute (KEMRI), Kisumu, Kenya, E-mails: Momedo@kemricdc.org, michaelogutu06@yahoo.com, aawiti@kemricdc.org, RMusuva@kemricdc.org, geoffmosh@yahoo.com, and PMwinski@kemricdc.org. Susan P. Montgomery and W. Evan Secor, Division of Parasitic Diseases and Malaria, Centers for Disease Control and Prevention, Atlanta, GA, E-mails: zqu6@cdc.gov and was4@cdc.gov.

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