

Implementation of Mass Drug Administration (MDA) Against Schistosomiasis: Its Implications to Health Policy Formulation

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ABSTRACT

Prevalence of schistosomiasis in Ezperanza, Agusan del Sur, continued to significantly increase in 2018 but the Mass Drug Administration (MDA) Coverage decreased in the same year. This notable problem on the prevalence of the disease inspite of government efforts exposes a critical gap between the goals and the implementation of MDA as a public health program. This study investigates several factors that lead to the downfall of MDA coverage in the said municipality. Descriptive mixed-method approach was used. A total of 390 household heads were surveyed and 20 of which were subjected to Focus Group Discussions (FGD). Further, 30 health workers and 13 barangay officials have undergone FGD to deeply understand the gaps and challenges that hinder the implementation of MDA in the community. Results showed that community's knowledge and participation to the program are poor. Barangay officials are not strongly involved in the MDA program inspite of their vital role. Experiences revealed that adverse reactions to drugs were due to the fact that people took the medicine with empty stomachs. Major findings of the study have resulted to the proposed institutionalization of MDA program at the Barangay level.

Keywords: *Mass Drug Administration (MDA), Schistosomiasis, Health Policy Agenda, Institutionalization of MDA*

Introduction

World Health Organization (WHO) considered schistosomiasis as one of the threatening yet remained neglected tropical diseases in Asia (Kenan et al., 2013; De Vlas et al., 2016). Schistosomiasis is a water-borne trematode infection which is caused predominantly by five blood fluke species of the genus *Schistosoma*: *S. mansoni*, *S. japonicum*, *S. mekongi*, *S. intercalatum*, and *S. haematobium* (Olevada et al., 2014). The disease continuously infects people across the globe and urged health planners to design for appropriate prevention and curing strategies.

In the Phillipines, Leonardo et al., (2016) reported that the disease has been endemic in 28 provinces in 12 regions of the country, with an estimated 28 million people at risk of infection. In the national prevalence survey conducted from 2005–2008, the estimated mean human prevalence was 1.30% (range 0.08–6.30%) (Inobaya et al., 2015). Mostly people in whole Mindanao are infected, the eastern part of Visayas, and only a few in some provinces of Luzon (Leonardo et al., 2012). When ranked according to prevalence, Leonardo (2012) found out that in the whole Mindanao, provinces in Caraga region

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secured alarming ranks with Agusan Del Sur placing the highest post while Surigao Del Sur, Surigao Del Norte, and Agusan Del Norte bagged 4th, 10th, and 14th, respectively. The infection is commonly known to infect people via contact with infected water.

In an effort to eliminate schistosomiasis as a serious public health concern, and to protect the exposed population from developing chronic infection, the Department of Health (DOH) has implemented the conduct of annual mass drug administration (MDA) in 24 endemic provinces among those aged 5–65 years commencing in 2009. MDA of praziquantel served as a preventive chemotherapy which was endorsed by World Health Assembly (WHA) in 2001 as the main strategy for schistosomiasis control. The aim was to attain at least 85% drug coverage for at least three years or until disease elimination (human prevalence < 1%) was achieved (Inobaya, 2015). From a prevalence of > 10% in 1990, it was reduced to less than 5% after 1995. However, the goal of disease elimination remains elusive as prevalence rates in 2013–2015 reported in 10 out of 13 provinces remained above 1% (Leonardo, 2016).

Gurarie et al., (2015) argued that treatment coverage rate, treatment campaigns, and compliance to treatment are significant determinants to the success of MDA in reducing the human prevalence of infection, and preventing transmission. Report from the Department of Health Center for Health Development-Caraga

(DOH CHD-Caraga) showed that the municipality of Esperanza in the province of Agusan Del Sur is consistently showing low MDA coverage while cases of schistosomiasis remain rampant. This is illustrated in the given figure 1 below.

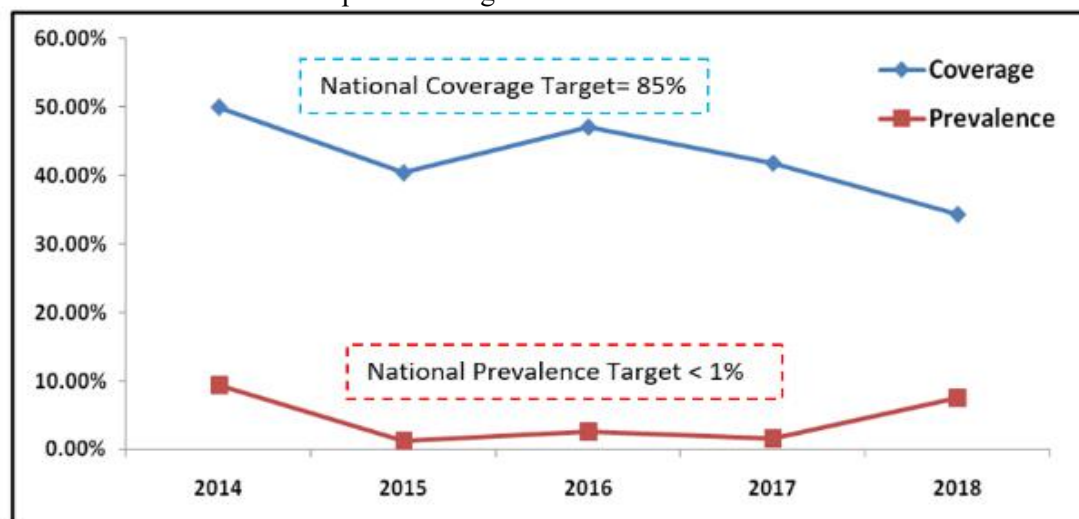


Figure 1. Schistosomiasis Prevalence and MDA Coverage, Esperanza Agusan del Sur, 2014-2018

The notable problem on the prevalence of the disease inspite of government efforts exposes a critical gap between the goals and the implementation of MDA as a public health program. This gap consequently defines the need to holistically evaluate the said program. As reviewed in the literature, however, information about the challenges and weaknesses of MDA implementation particularly in Esperanza are nowhere to find. Considering the scarcity of published knowledge and articles, this research is designed to generate a comprehensive picture of the current status of MDA program including the potential factors that hinder its full implementation. Further, the key findings will serve as inputs in the development of evidence-based action plan towards a more improved MDA program embedded with an ultimate aim of eliminating prevalence of schistosomiasis in the long run.

Further, this study deals with the following research questions;

1. What is the level of implementation of MDA, as perceived by the household heads, in terms of Person's Resistance to Drugs, Client's Knowledge on Schistosomiasis, Community's Perception to

DOH Program, Cultural Practices, and Willingness to take Schistosomiasis control drugs?

2. What are the gaps and challenges that hinder the implementation of Mass Drug Administration in the community?

Methodology

This study employed a quantitative-qualitative approach and descriptive research design. A four-point likert scale and researcher-made questionnaire was used to determine the level of MDA implementation in terms of Person's Resistance to Drugs, Client's Knowledge on Schistosomiasis, Community's Perception to DOH Program, Cultural Practices, and Willingness to take Schistosomiasis control drugs. Through pilot testing of the questionnaire, a Cronbach's alpha of 0.96 was obtained. Small group discussions with health workers was conducted to validate the items included in the abovementioned instrument. A total of 390 household heads were surveyed and 20 of which were subjected to Focus Group Discussions (FGD). Further, 30 health workers and 13 barangay officials have undergone FGD to deeply understand the gaps and challenges that hinder the implementation of Mass Drug Administration in the community. Moreover, health and safety measures were strictly followed

during the data collection that was completed on December 2020. Data were managed in Microsoft excel prior to the analysis.

Data Analysis

Descriptive statistics were used to treat quantitative data and content analysis was used to extract relevant themes from the qualitative data.

Results

Tables 1, 2, 3, 4, and 5 expose household's perceptions on the variables namely; Person's Resistance to Drugs, Client's Knowledge on Schistosomiasis, Perception to DOH Program, Cultural Practices, Willingness to take Schistosomiasis control drugs.

Table 1: Extent of manifestation of drug resistance as perceived by household respondents

Indicators	Mean	Qualitative Response	Manifestation of Resistance to Drugs
The size of drugs given is manageable for intake.	2.76	Disagree	High
The taste of drugs is fair. It does not have any foul savor.	2.53	Disagree	High
Drugs given do not have any bad odor.	2.45	Disagree	High
I don't have any negative body reactions when I took drugs.	2.51	Disagree	High
I am confident that the drugs given are safe and will not result to any adverse reactions.	2.92	Disagree	High
Overall Mean	2.64	Disagree	High

Note: Mean intervals falling within 1.00-1.74: Strongly Disagree, 1.75-2.49: Disagree, 2.50-3.24: Agree, 3.25-4.00: Strongly Agree

Table 1 presents the manifestation of drug resistance as perceived by the household respondents. It can be observed that all indicators are coupled with mean scores showing the disagreement of respondents on all indicators considered. Both the respective largest and least mean scores of 2.92 and 2.45 unfold that respondents disagreed on the indicators "I am confident that the drugs given are safe and will not result to any adverse reactions" and "Drugs given do not have any bad odor", respectively. As a result, the overall mean of 2.64 posits that resistance to drugs is highly manifested in the community.

During the actual interview, it was found out that resistance to prazi is experienced mostly by people with empty stomach or with existing medical conditions. Some respondents encountered resistance because of the size of drugs and psychological influences. Resistance to drug intake is also a global problem (WHO, 2017). This concern has been addressed by improving trust and confidence of the people and thereby removing fears and psychological dilemma. In medical aspects, the overall of quality of prazi is continuously studied for human's acceptance.

Table 2: Extent of manifestation of household knowledge on Schistosomiasis

Indicators	Mean	Qualitative Response	Manifestation of Knowledge on Schisto
Schistosomiasis is not caused by bacteria and is not contagious.	2.12	Disagree	Poor

Waste of humans and animals are potential sources of schistosomiasis related bacteria.	1.89	Disagree	Poor
Cows and carabaos in the farms are potential carriers of bacteria causing schistosomiasis.	2.01	Disagree	Poor
Schistosomiasis can be acquired through the water we drink.	2.42	Disagree	Poor
Schistosomiasis can be treated.	2.16	Disagree	Poor
Overall Mean	2.12	Disagree	Poor

Note: Mean intervals falling within 1.00-1.74: Strongly Disagree, 1.75-2.49: Disagree, 2.50-3.24: Agree, 3.25-4.00: Strongly Agree

Table 2 displays the extent of manifestation of household's knowledge on schistosomiasis. The same table revealed that respondents disagreed in all indicators considered. The largest and lowest mean scores of 2.42 and 1.89, unfold respondents' poor knowledge on the respective indicators "Schistosomiasis can be acquired through the water we drink" and "Waste of humans and animals are potential sources of schistosomiasis related bacteria".

Poor knowledge of people towards schistosomiasis is a significant indicator to prevention and control (Tuhebwe et al., 2015). Empirical findings exposed in table 2 reflect the vulnerability of the community towards the disease (Chami et al., 2016). In the study of (Odhiambo, 2016), it was also asserted that awareness and knowledge on the disease stimulate better prevention and control practices. The low coverage

to MDA can be significantly linked to poor understanding to both Schistosomiasis and MDA program. Knowledge of community to diseases and health threats is a very essential component that is mainstreamed in public health programs. In a round table discussion with Barangay officials, majority mentioned that people do not have enough or strong knowledge about the detrimental and harmful effects of Schistosomiasis. Considering that farming serves as the main livelihood of the majority, the probability of being infected with Schistosomiasis is high. Hence, it is very important that people should be knowledgeable enough on appropriate measures like complying with the MDA. The issue of poor awareness can also be viewed in terms of the presence of sustainable and effective information strategies.

3: Extent of manifestation of the perceived quality of DOH program as rated by the household

Indicators	Mean	Qualitative Response	Manifestation of Quality of DOH Program
DOH programs are effective in promoting better health of the community.	3.30	Strongly Agree	Very High
I trust programs of DOH including schistosomiasis program.	3.30	Strongly Agree	Very High
DOH program is timely and community reaching.	3.17	Agree	High

DOH disease control programs like mass drug administration of schistosomiasis are safe and effective. 3.15 Agree High

I am so positive that DOH programs are promoting health security and sustainability among people. 3.18 Agree High

Overall Mean 3.22 Agree High

Note: Mean intervals falling within 1.00-1.74: Strongly Disagree, 1.75-2.49: Disagree, 2.50-3.24: Agree, 3.25-4.00: Strongly Agree

Table 3 presents the perceived quality of DOH program based on respondents' ratings. As reflected in the mean scores, household representatives unveil an impressive level of quality of DOH program. The lowest mean rating of 3.15 manifests that on the average, household representatives agreed that DOH disease control programs like mass drug administration of schistosomiasis are safe and effective. On the other note, the largest mean scores of both 3.30 on the first two indicators suggest that there is a very high manifestation of DOH programs' effectiveness in promoting better health of the community and household's trust on health programs including

Schistosomiasis. The relatively larger mean scores presented in table 3 above resulted to an overall mean score of 3.22. Hence, the extent of manifestation of the perceived quality of DOH program as rated by the household is high.

The role of DOH as the main program implementer, plays the most significant part the in overall success of MDA program. Considering the positive and remarkable impressions of the household reflect that the existing poor MDA performance is attributed to other possible factors which are discussed further in the succeeding findings.

: Extent of manifestation of cultural related practices as hindrances to Mass Drug Administration coverage and compliance

Indicators	Mean	Qualitative Response	Manifestation of Cultural Practices
I am member of cultural group with practices that prohibit participation to government's health programs.	2.38	Disagree	Poor
My religion is a consideration when taking drugs given by DOH MDA program.	2.40	Disagree	Poor
I prefer to follow traditional medical practices than taking schistosomiasis control drugs given by DOH.	2.21	Disagree	Poor
It is part of our family or tribe not to believe in other medicines than the plants and other heirs of our grandparents.	2.10	Disagree	Poor
My decision to take schistosomiasis control drugs depends on the decisions of my community.	2.21	Disagree	Poor
Overall Mean	2.26	Disagree	Poor

Note: Mean intervals falling within 1.00-1.74: Strongly Disagree, 1.75-2.49: Disagree, 2.50-3.24: Agree, 3.25-4.00: Strongly Agree

Table 4 presents the extent of manifestation of cultural related practices that are potential constraints to people's subscription to Mass Drug Administration or MDA. The overall mean score of 2.26 reflects that on the average, cultural practices that hinder compliance to MDA program are poorly manifested in the community. Poor manifestation of such cultural practices is substantiated by the findings that respondents disagreed in all indicators included in table 8. The largest and lowest respective mean scores of 2.40 and 2.10, suggest that households disagreed on the

indicators "My religion is a consideration when taking drugs given by DOH MDA program" and "It is part of our family or tribe not to believe in other medicines than the plants and other heirs of our grandparents".

It may be valid to suspect or hypothesize that the presence of cultural beliefs and practices hinder subscription to MDA. However, results showed that respondents do not have any issue on cultural practices. Having this observation defines a strength and opportunity while designing better plans and actions for MDA programs

5: Extent of manifestation of household's willingness to take drugs administered through the Mass Drug Administration program

Indicators	Mean	Qualitative Response	Manifestation of Household's Willingness
For me, taking drugs given by DOH is very necessary.	2.13	Disagree	Poor
I am confident that the drugs given by DOH are effective and do not trigger any bodily resistance.	2.34	Disagree	Poor
I am sure that drugs against schistosomiasis do not have bad effects on the body.	2.20	Disagree	Poor
If am given drugs right now, I will take it immediately to show my confidence that it is safe and effective.	2.01	Disagree	Poor
I am always ready to get protected against schistosomiasis because of control drugs given by DOH.	2.43	Disagree	Poor
Overall Mean	2.22	Disagree	Poor

Note: Mean intervals falling within 1.00-1.74: Strongly Disagree, 1.75-2.49: Disagree, 2.50-3.24: Agree, 3.25-4.00: Strongly Agree

Table 5 shows household's willingness to be compliant with the Mass Drug Administration (MDA) program. The largest and lowest mean values of 2.43 and 2.01 posit that respondents demonstrated poor extent of willingness to take drugs administered through the Mass Drug Administration program. Consequently, the overall mean of 2.22 empirically supports the mentioned poor willingness of household to be compliant

with the MDA program of DOH. These findings unfold for the need to strengthen health promotion efforts and Information and Education Campaign.

In a more direct way of saying, willingness to participate on Mass Drug Administration of household respondents is poor. Data revealed that majority disagreed to take prazi if given immediately during the interview. People don't feel the essence or necessity of taking drugs

that are distributed by the Department of Health through MDA program. Fear towards the program is one of the reasons to poor level of willingness while at the same time national issues on Dengue Vaccination is outraging. In an effort to re-gain the trust of the people, strong and appropriate health promotion effort must be designed with the

inclusion of Barangay officials through governance on health.

The next table 6 deals with the experiences of the respondents including Barangay officials, Barangay health workers, and selected household members. Actual responses are shown along with the generated themes

Challenges and gaps that hinder the implementation of Mass Drug Administration in the community

Actual Responses	Thematic Response
Dili motomar kay mahadlok sa side effect. (Don't intake because of fear from side effects) Dili motomar kay malipong, suka suka, kabuhi-on. (Don't intake because of dizziness, vomiting, and uncomfortable) Dili makatumar kay high blood og naay laing balati-on (Don't intake due to high blood and other co-morbidities) Nagmagahi sa pagtumar sa tambal kay daghay mga rason. (Hesitant due to a lot of reasons) Drug reactions kulang sa pagsalig/kahadlok unsay mga side effect nga mahitabo human sila makatumar (Low trust and fear on the possible side effects) Mahadlok sa reaction sa tambal (Fear from possible reactions from the meds) Fears on drug reactions	Resistance to Drugs
kakulangun sa paghatag ug kahibalo sa mga katawhan. (Poor information campaign) No regular information drive conducted Kulang sa pagpasabot sa mga tawo. (Poor information campaign) Walay pagpahibalo sa katawhan kabahin sa Schisto, kulang ang pagmonitor sa mga apektadong tao sa matag barangay (No information drive to the people and no monitoring at the Baranagay) Lack of social campaign about schisto Poor participation due to lack of understanding. People do not know what to prepare before taking the medicine (should eat, should not drink soft drinks,...) kulang sa kahibalo mahitungod sa Health Education (Poor educational awareness on health education) Kulang sa kahibalo sa sakit nga Schisto. (Poor knowledge about schistosomiasis) kulang ang kahibalo, walay kooperasyon. (Poor knowledge, poor cooperation) Kulang sa kahibalo kon unsa ang dakong epekto sa Schisto sa panglawas. (Poor knowledge on the effects of schisto to the body) Lack of social campaign about schistosomiasis Non production of IEC materials in local dialect	Poor Information and Health Promotion System

Dili approachable ang Midwife (Midwives are not approachable) Dili manghatag ug tambal ang Midwife. (Midwives do not give medicines) Dili tanan BHW magpahibalo (Not all BHW informs the people) Walay Doctor nga gideploy sa panahon sa MDA. (No doctor deployed in times of MDA) Kulang ug manpower (Poor manpower) Renewal of HRH depends on national budget Ang mga BHW nanginahanglan pa ug dugang nga mga pagtuon, pagkat-on. (BHWs still need more knowledge and experience) Dili tanan barangay iyang maubanan sa Doctor. (Not all Barangays are visited by the Doctor) The nurse assigned in the barangay is not permanent the renewal Renewal of HRH depends on the national budget. HRH/NDP assigned in endemic areas are not regular	Manpower (Health Workers) Related Issues
kulang sa tambal (Insufficient medicines) Late distribution of logistic. Allocated funds for the program is not enough Walay egong pundo para sa pag implmentar sa maong programa (Not enough funds for program implementation)	Insufficient Funds and Logistic Support
Community people does not participate during health education Lack of community participation Busy sa trabaho. (Busy for work) Majority of the people will not submit or attend health education conducted by the health care provider Negative attitude towards MDA towards dare to during reaction Negative attitude towards the program	Poor Community Participation
Geographical location of purok's Layo ang balay sa venue sa MDA (Houses are situated far from the venue for MDA) Distant people from the venue do not have food. No System and sustainability of treatment for farflung areas Distant people from the venue do not have food.	Geographical Distance from the MDA designated areas
Wala mapadayon ang programa sa pag implementar sa Sisto kay walay coordination sa Baranagay (The program is not well implemented due to lack of coordination with the Barangay) Kulang sa pag follow-up kung gitumar ba ang tambal. (There is no follow-up if the medicines given were really taken by the people) Hinay ang coordination sa Baranagay (Poor coordination at the Baranagay level)	Poor Monitoring and Coordination to Baranagay Levels

Note: Statements in blue are English translations of the prior responses

Table 6 shows verbatim statements as responses of respondents to the question regarding the challenges and gaps in the implementation of MDA program in the community. A total of 7 thematic areas

were extracted based on the collated responses. These areas include (1) Resistance to drugs, (2) Poor Information and Health Promotion System, (3) Man power (Health Workers) related issues, (4) Insufficient funds and logistic support, (5) Poor community participation, (6) Geographical Distance from the MDA designated areas, and (7) Poor monitoring and coordination to Barangay levels.

Resistance to drugs is also manifested as a problem based on the perception of respondents on the survey item. During the Focus Grouped Discussions (FGD) with stakeholders, many respondents confirmed that resistance to drugs has been an issue to the community because of several reasons which include; (1) fear from the issues on DOH, (2) people took drugs with empty stomach particularly those that are from far flung areas, and (3) presence of unstable medical conditions like hypertension.

Poor Information and Health Promotion System has also been found an issue as manifested on the poor knowledge of people on Schistosomiasis. In the discussions with some Barangay health workers and officials, poor understanding of people on Schistosomiasis is very evident in the area. This is one of the serious problems that lead to poor participation of the community.

Due to the bulk of health workers' deliverables, man power in the implementation of MDA is insufficient. This is one of the thematic areas that is extracted from the Focus Grouped Discussions. Barangay officials collegially mentioned that the number of medical Doctors is not enough to accommodate different demands of all areas. The presence of nurse and Barangay Health Workers are also insufficient besides the fact that these workers are non-plantilla holders. Attitude of health workers are another problem encountered by the respondents. Actual statements supporting such poor attitude and knowledge of some health workers include;

"Dili tanan BHW magpahibalo"
(Not all Barangay Health Workers show intention to inform the people)

"Dili approachable ang Midwife"
(Midwife is not Approachable)

Although not mentioned many times, some respondents perceived that there is insufficient logistic and fund support. This issue may be experienced by households from far flung areas. Accordingly, one respondent said;

"Walay egong pundo para sa pag implmentar sa maong programa"
(There is no enough funds for the said program)

Poor community participation is very common to almost all Barangays as confirmed by Barangay officials during FGD. Based on the stories shared by local officials, the poor

cooperation of community to the implementation of MDA maybe linked to nature of livelihood, poor knowledge on the program, and attitude.

The current system of drug administration under MDA is very challenging in terms of access to people far flung areas. It is known the MDA is conducted in a designated area that is significantly distant from the houses of many involved communities. In one of the responses shown in table 13, respondents mentioned that some people reached MDA venue with empty stomachs and experience high resistance to drugs.

Lastly, Barangay officials claimed that there is poor coordination with them. Because of the overlapping schedules, MDA program has not been given priority. If given with policy and financial support, MDA task force at Barangay levels maybe formed. In this scenario, MDA maybe done within Barangays or puroks with appropriate funds for people with empty stomachs.

Conclusions

The highlighted aspects to which MDA program will be strengthened are construed to be made possible by involving the community and the Barangay task force in the whole program implementation. Results further recognized the very crucial role of regulatory and law enforcing powers at the Barangay levels.

Along with the specific results revealed in this study, it is concluded that to improve MDA coverage and eliminate the rising positive cases of schistosomiasis, geographical distance and poor involvement at Barangay levels should be considered as inputs to a more contextualized and evidence-based action plan in zeroing schistosomiasis in the municipality of Esperanza.

Recommendations

In the light of the conclusions presented above, the following recommendations were suggested;

1. The Local Government Unit (LGU) and the Department of Health (DOH) should consider the seven thematic factors namely; (1) Resistance to drugs, (2) Poor Information and Health Promotion System, (3) Man power (Health Workers) related issues, (4) Insufficient funds and logistic support, (5) Poor community participation, (6) Geographical Distance from the MDA designated areas, and (7) Poor monitoring and coordination to Barangay levels, through the continuing implementation of Mass Drug Administration (MDA) in the municipality of Esperanza.
2. Institutionalization of Schistosomiasis programs at the Barangay levels is highly recommended as an effective and sustainable intervention to reduce and eventually eliminate Schistosomiasis cases in the municipality.
3. Delimitations of these study is suggested for further investigation among future researchers. One possible area of interest is the consideration of practices and challenges in other regions of the country.
4. Future researchers can also investigate socio-demographic factors towards incidence of Schistosomiasis and the implementation of MDA program. There is also an on-going need to deeply understand how can health promotion strategy increase the demand for prazi.

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