SCHOOL OF MEDICINE AND HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

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COMMUNITY HEALTH DEPARTMENT

FIELD PLACEMENENT REPORT

ENDING THE SCHISTOSOMIASIS EPIDEMICS IN RUSIZI DISTRICT BY 2024

Submitted by: **Group III**

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ABBREVIATION AND ACRONYMS

CHUK	Centre Hospitalier Universitaire de Kigali
CHWs	Community Health Workers
HCs	Health Centers
FAO	Food and Agriculture Organization
RHMIS	Rwanda Health Management Information System
P4	Primary 4
S3	Senior 3
UR	University of Rwanda
MDA	Mass Drug Administration
RDB	Rwanda Development Board
REMA	Rwanda Environmental Management Agency
RAB	Rwanda Agriculture Board
RCA	Rwanda Cooperative Agency
RNEC	Rwanda National Ethics Committee
RBC	Rwanda Biomedical Center
ELISA	Enzyme-Linked Immunosorbent Assay
LMICs	Low- and Middle-Income Countries
NTD	Neglected Tropical Diseases
SCH	Schistosomiasis
STH	Soil-transmitted helminth
WHO	World Health Organization
STATA	Syllabic Abbreviation of Words Statistics and Data
TV	Television

I. INTRODUCTION

I.1. BRIEF DESCRIPTION OF NEGLECTED TROPICAL DISEASES IN RWANDA

I.1.1 HELMINTHESIS:

The nationwide school-based mapping conducted between 2007 and 2008 revealed that the prevalence of any soil-transmitted helminth (STH) infection was ranging from 7.6% to 95.8% in districts with overall country prevalence of 65.8%. District STH prevalence was generally over 50% except in 3 districts of Kigali city where it was found to be below 20% (10).

In 2014, a nationwide follow-up mapping of schistosomiasis and STH (using Kato-Katz) revealed the prevalence of STH ranged from 2.1 % to 89.6% (95%CI: 0.9% - 98.0%) with national prevalence of 45%. Fifteen (15) Districts have the prevalence of any STH above 45%.

I.1.2 SCHISTOSOMIASIS:

The nationwide school-based mapping conducted between 2007 and 2008 revealed that the prevalence of intestinal schistosomiasis (SCH - caused by *Schistosoma mansoni*) was ranging from 0% to 69.5% across the surveyed schools with overall country prevalence of 2.7% among school children (using Kato-Katz technique).

Between 2009 and 2011, additional assessment of schistosomiasis was undertaken in 3 districts of Bugesera, Ngoma and Rusizi by the NTD program following the request from local health facilities which had increasingly registered cases among outpatients while there was no treatment available in their places(11).

In 2014, a nationwide follow-up mapping of schistosomiasis and STH using both stool and urine test revealed the endemicity of schistosomiasis that requires interventions is in 132 administrative sectors

Lake Rweru located in Bugesera joined important endemic areas with prevalence of up to 30.1% among general population (range in surrounding villages (1.6% - 30.1%) while in Rusizi district, Nkombo isle seated on Lake Kivu had an overall prevalence of 62.1%, ranging from 28.6% to 77.9% across schools. Therefore, this isle became the highest schistosomiasis endemic area known in Rwanda.

I.1.3 LIMPHATIC FILARIASIS:

In 2008, the lymphatic filariasis mapping survey conducted in adults aged over 15 years from the general population of 13 Villages of 5 Districts (Bugesera, Rwamagaan, Kayonza, Nyagatare and Rusizi) where generally altitude of below 1500m, using the immunochromotographic card test (ICT), found only one positive case confirmed by a nocturnal blood smear Positive, suggesting a prevalence of 0.3% (1/296).

In 2017, during a cross-sectional survey on distribution and prevalence of podoconiosis in Rwanda (10) where 80 sectors were surveyed, filarial rapid diagnostic tests (Filariasis Test Strip-FTS and Wb123) were performed on people with leg swelling and 9 cases were found to be positive in 6 different Districts (Rusizi, Nyamagabe, Gisagara, Gasabo, Ngoma and Bugesera).

I.1.4 PODOCONIOSIS

Podoconiosis is a neglected skin disease considered as one of the "NTDs" which causes massive swelling of the lower limbs and is common in low- and middle-income countries (LMICs). It is caused by long term exposure to volcanic origin soils (12).

The results of recent nationwide mapping supported by the Centre for Global Health Research at Brighton & Sussex Medical School, UK showed that the disease is widespread in Rwanda with a national prevalence of 68.5 per 100,000 (10). Almost all districts of Rwanda have cases, but Western and Northern Provinces are more affected.

I.1.5 SCABIES

Human scabies is a contagious dermatologic infestation caused by the mite *Sarcoptes scabiei var hominis*. Itching and skin rash are the most common symptoms. Cases are reported through the RHIMS while some outbreaks were reported in boarding centers with promiscuity. A cross-sectional survey was conducted in 2018 among students at 8 primary schools demonstrated prevalence between 1 and 20%, but the results are still to be formally published. However, the real burden and distribution of scabies is still unknown (12).

I.1.6 TUNGIASIS:

Tungiasis also commonly known as jiggers is a parasitic skin disease due to the permanent penetration of the female sand flea *Tunga penetrans* or related species into the skin of its host. The

hosts include human and other warm-blooded animals. The main habitat for *Tunga penetrans* is warm, dry soil and sand of beaches, stables, and stock farms. Tungiasis may be classified in ***"other ectoparasites"*** under **'scabies and other ectoparasitic diseases'** recognized by WHO as One of NTDs. Since 2014, the Government of Rwanda has prioritized the elimination of tungiasis targeting the poor families in rural areas where risk factors prevail.

I.1.7 RABIES:

Rabies is an infectious disease that can affect any mammal including humans. It is transmitted through the saliva of an infected animal. More than 99% of infection in humans is caused by dog bites. Incubation period is usually very long ranging from 3 weeks to 7 years depending on the site of bite. Symptoms are dominated by hypersalivation, excitability, hydrophobia, change of behavior, death within 7 days following the onset. Diagnosis is done clinically and confirmed by laboratory (IFAT for presence of Negri bodies in the brain, ELISA, Inoculation to mouse).
The case fatality rate for confirmed rabies is almost 100%.
Globally, related deaths are estimated at 55,000. The total global cost of post-exposure prophylaxis is estimated at USD 584,000,000.
In Rwanda, even though the true situation of the disease is not well known, rabies is a very serious issue and requires attention. Cases of bites are concentrated in towns and around natural forests

I.1.7 SNAKE BITES ENVENOMING (SBE):

Snakebite envenoming (SBE) is a largely unrecognized public health problem that presents significant challenges for medical management. Now snakebite envenoming is a neglected tropical diseases and a common occupational hazard of farmers, plantation workers and others, resulting in tens of thousands of deaths each year and many cases of chronic physical handicap.

In Africa, which is home to more than 400 snake species, of which about 30 venomous species, belonging to four families-atractaspididae, colubridae, elapidae and viperidae- are known to have caused human deaths, according to WHO.

In Rwanda, below there are species identified in Akagera National Park region by the Rwanda Development Board (RDB) as species with very dangerous venom.

I.1.8 CYSTICERCOSIS:

Cysticercosis is a parasitic tissue infection caused by larval cysts of the tapeworm *Taenia solium*. These larval cysts infect brain, muscle, or other tissue, and are a major cause of adult onset seizures in endemic countries[1]. By ingesting contaminated vegetation with eggs or proglottids, human (autoinfection) and pigs become infected. Oncospheres hatch in the intestines, invade intestinal wall and, via hematogenous spread, reach striated muscles where they become cysticerci. A cysticercus can survive for several years in the host and can invade any organ such as brain, subcutaneous tissues, spine, ocular muscles, liver and others. It is defined Neurocysticercosis when cysticerci infect the brain.

In Rwanda, a health facility-based study conducted in person with Epilepsy in Southern province revealed that 23,3% were due to Neurocysticercosis in 2010.

I.1.9 HUMAN AFRICAN TRYPANOSOMIASIS:

The results of documentary review confirmed that the situation of Human African Trypanosomiasis in Rwanda is documented up to 1994 by M. Jules Hanotier, who confirmed the presence of trypanosomiasis T. *b. rhodesiense*, in Umutara and the Akagera Park region. In 1989, ten cases were diagnosed in CHUK (CHK, 1990), Eight (8) patients with late stage disease were admitted to CHUK for treatment in 1993 (12).

No control activities have been conducted since 1994. Based on the results of a situational analysis by the WHO, it has been recommended to the MOH to start an integrated HAT surveillance through selected health structures in identified risk areas.

I. 2 HEALTH ISSUES PRIORITIZATION

I.2.1. ESTABLISHMENT OF PRIORITY DISEASES AMONG KEY NTDs USING SOME CRITERIA OF MY CHOICE (IMPORTANCE OF THE PROBLEM, ITS VULNERABILITY, FEASIBILITY OF THE PROPOSED SOLUTION)

Diagnosis according to the problem	Importance of the problem		Vulnerability of the problem		Feasibility (of the proposed solution)			Score	Rank
	Severity	Frequency	Technical	Operational	Political	Cultural	Economical		
Intestinal worms prevalence and contribution to stunting	++	++++	+	++	+++	++	++	16	4
Schistosomiasis burden in children and Adults and contribution to stunting	++++	+++	+++	++	++++	++++	++	22	1
Scabies among schools and some poor families	+	++	+	++	+++	++	++	13	6
Snakebites envenoming in farmers around Nyungwe forest	+	+	+++	+++	++	+	++	13	7
Tungiasis (Jigger disease) burden in some individuals from poor households	+++	+++	+++	+++	+++	++	++	19	2
Dog bites (risk of rabies)	+++	+	++++	++++	++	++	+	17	3
Cysticercosis/ taenia	+++	+	+++	+++	++	+	++	15	5

Following the prioritization done in the above table, we came up with one priority that is ranked higher “Schistosomiasis burden in children and adults and contribution to stunting”. It is taken as priority not only on its high prevalence but also on how the schistosomiasis burden affects both children and adults., thus its health impact on the general populations’ health. When the quality and access on Schistosomiasis management measures are improved and accessed, the affected and exposed groups are healthy, and supporting in the control of other NTDs. Again, the determination of priorities does not necessarily mean the government will be concerned exclusively of Schistosomiasis burden as priority, or that I will wait until the complete resolution of this first problem before tackling the next on the list.

I. 2.2 SCHISTOSOMIASIS

Background

The Neglected Tropical Diseases (NTDs) like Schistosomiasis also known as Bilharzia, have been identified by WHO to be eliminated as a public health problem by 2025 (1). Also the disease among other NTDs is targeted in SDGs where by 2030, the related epidemics should be ended(2). This ailment is caused by a parasites of the genus Schistosoma of which two species are most known in Africa: *Schistosoma mansoni*, and *Schistosoma haematobium*. The different species of *Schistosoma* generally require different species of snails for their development: *S. mansoni* requires *Biomphalaria spp* and *S. haematobium* requires *Bulinus spp*. *Biomphalaria* and *Bulinus* snails are widely distributed in Africa, leading to transmission of intestinal and urogenital schistosomiasis respectively (3).

The transmission of these parasites to humans requires the presence of human excreta containing parasite eggs, stagnant waters, and freshwater snails that act as the intermediate hosts through the shedding of (release) parasite larvae called cercariae (3). Human beings are contaminated by these free swimming cercaria released by snails by skin penetration of infestive larvae stage of Schistosoma “cercaria” in case of contact with contaminated water during his routine activities such as farming, fetching water, washing clothes, bathing or during his recreational activities such as swimming. Although schistosomiasis is not transmitted by swallowing contaminated water, the contamination can take place when the mouths or lips come into contact with contaminated water having infestive larvae stage of schistosoma.(4). In around 2 months, the larvae become adults and reside in blood vessels as definitive habitat (mesenteric veins in case of schistosoma mansoni

which is only species so far confirmed present in Rwanda) and after mating produce eggs. Around a half of eggs pass in urine or stool via bladder and intestine. In the course of migration to their definitive habitat, some may develop skin itching or rash, fever, chills, cough. During the chronic phase (when adults lodge in vessels and produce eggs) without ectopic deposit of eggs, some common signs and symptoms include abdominal pain, blood in urine or stool, hepatomegaly, liver fibrosis. Among complications include bladder cancer; portal hypertension due to periportal fibrosis leading to esophageal varices and hematemesis that can result in death if appropriate management is not done. The prevention of the disease is mainly prevent contact with contaminated water (swimming, farming, fishing, bathing, clothing, etc.), treatment of contaminated water before any use (drinking, etc.).(5–7).

The disease prevalence, has been attributed to factors like lack of potable water, leading to frequent contact with infected waters (lakes, ponds, wells, among them), coupled with the low levels of sanitation in rural areas which are associated with high rates of transmission. Also, human contact with infected water or human contaminating water, may directly or indirectly increase the outcome depending on how land is use and practices of communities adjacent to lake, potentially leading to high transmission of schistosomiasis (10). Snail abundance and infectivity are associated with the presence of organic contamination and degraded land cover (11). These actions have negative consequences that have a great impact on individuals affected especially children on their physical fitness, physical, and cognitive development, malnutrition, school attendance (14).

In Rwanda, the prevalence of the disease is 1.9% using microscopic survey while using immunological survey it was 7.6% and is among the fast track diseases in country that have been planned to be eliminated by 2024 (9) for the promotion of health and wellbeing in Rwanda. This second most problematic type of NTD in Rwanda affects mostly children within the ages 5-15 of age but extend also to adults at high risk zone areas around lakes mostly rampantly according to the last country mapping area of affected zone in 2014 (10,11).

Western Province is the most affected. Among 186 schools surveyed for its prevalence using Kato Katz technique, 12 surveyed schools had a prevalence of above 10%. Among these 12 schools, 7 were from Western Province, 2 were from Northern, 2 from Eastern and 1 from Southern provinces

(RBC mapping report). This indicates that Western province is highly endemic to SCH compared to other provinces in Rwanda(12).

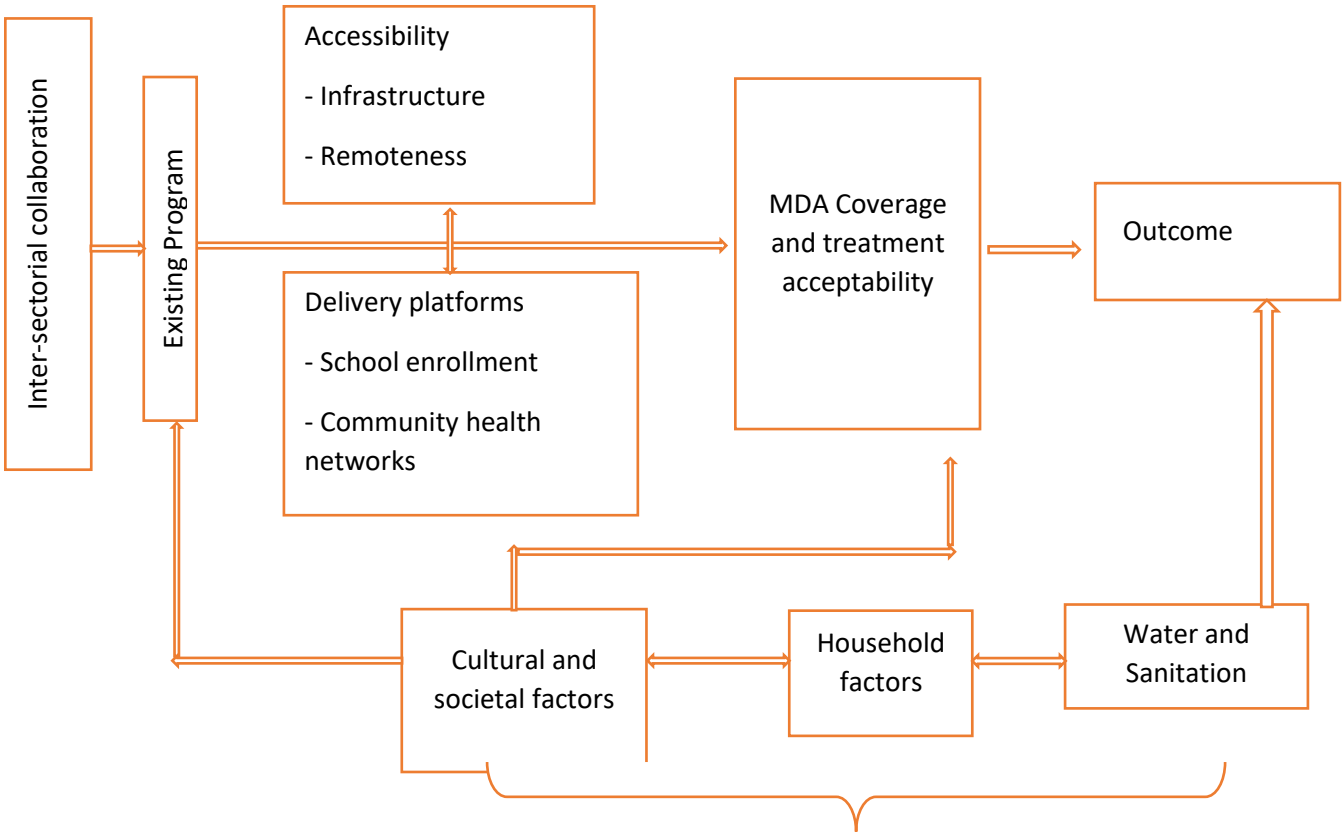

Figure 1:The conceptual framework showing the synergetic events and schistosomiasis

Endemicity of SCH in Western Province is also notable in routine health facility data reported via Rwanda Health Management Information System (RHMIS). When looking at the top 10 Health centers reporting, many cases of SCH in Rwanda for the past 6 years, 5 Health facilities are from Western province, 2 from Eastern province, 2 from Southern province, and 1 from Kigali (RHMIS, August 2018). The high endemicity may be caused by ecological (13) differences with other provinces as it borders Kivu lakes and other marshlands resulting from the lake or rivers. Among western, Rusizi District is ranked number one to have many sectors (16 sectors) affected by the disease and that are benefiting mass treatment for school aged children. Additionally, Rusizi district has 2 health centers among top 11 Health Centers reporting many cases in routine reports since 2012.

Praziquantel dose is used to contain the disease, determined according to its dosage poles within communities in Rwanda (10,14). The distribution of MDA in the most affected district in Rwanda among others, reached 91% of the target population (14), the containment and elimination of the disease has been a challenge.

It has been seen that eliminating schistosomiasis will not be feasible by only conduct mass treatment of children aged 5-15 years while excluding adults (remaining parasites reservoir) or by occasional awareness activities during the MDA campaign, but it will mean that there should but not limited to use treated water, defecation in toilets and appropriate agriculture practices such as use of boots, soil conservation and erosion control measures and Lake shores protection (with live buffer zone of bamboo trees) and fishing protective (15). Most importantly, there is a need to change the attitude and practices of the community by improving their knowledge on SCH transmission, signs and symptoms and prevention and also involve them and local administration in problem identification and resolution towards their full ownership and political support to the elimination program (16–19).

I.3 Case definition

The case study is made of beneficiaries of Mass Drug Administration (MDA) school children aged between 10 and 15 years and adults participating in the distribution of drugs who are community health workers, health workers (nurses), and teachers as influencers in school community. These population depend mainly on nature to survive. Their farming, fishing and other activities

contribute in generating income and water source within their families. This initiative came up because this district is the most affected by the disease despite the mass drug administration provided in this community. This may probably be because most of these school age children among others, spent a great deal of their time mingling with contaminated water from the lakes and marshlands around. The population is continuously given drugs yet there is no clarity if they have comprehensive knowledge on why they are given these drugs as the disease prevalence is still unacceptable high. Thus, all these have push us to carry out this current study.

CASE STUDY OBJECTIVES

Overall objective: To determine the level of awareness on schistosomiasis infection among the population living in Rusizi district.

Specific objectives:

- To identify the vulnerable age group on lacking health information on
- To determine the level of knowledge, attitude and practices among both children and adults

CHAP II. COMMUNITY NEED ASSESSMENT

Type of case study

This holistic single case study is conducted within school age children and adults participating in the distribution of drugs who are community health workers, health workers (nurses), and teachers as influencers in school community from Rusizi district of Rwanda.

Study design

The study design was descriptive in nature using quantitative data collection methods. The study assessed the level of Knowledge, Attitudes, and Practices towards schistosomiasis control.

One sector with high endemicity was selected and from which two schools from the sector were randomly selected and at least 70 children aged from 10 to 15 were randomly selected for interview. The Sector was Nkombo having schools that had more than 10% prevalence during 2014 mapping data. Additionally, Nkombo sector ranks 5th among top 10 HCs that have reported many cases since 2012.

Study area and population description

The study was conducted in Rusizi District where the Kivu Lake borders the District and rice cultivation has been practiced a long time in Bugarama marshland. The population is composed of school children, teachers and adults participating (in mass distribution of medicines) and education for behavior change. The adults were teachers from MDA school areas, CHWs and health workers.

Study population and sampling

The study population was divided into 2 categories:

- School aged children receiving medicines in the mass drug administration program and teachers facilitating the distribution of drugs and health education.
- Adults participating in distribution of medicines during mass drug administration and education for behavior change. The adults included medical community made of CHWs and health professionals from villages and health centers surrounding selected schools in proximity with water bodies and who educate for behavior change and distribute drugs during MDA and teachers who participate in education for behavior change in schools.

Data collection materials

A structured questionnaire (annex 1) was used to conduct interview by experienced interviewers using smart phone, pre-loaded with study questionnaires. The server of University of Rwanda (UR) was used to receive the data. The data were uploaded for analysis at the end of the study data collection. Consent forms were used to get voluntary participation.

Inclusion Criteria

- CHWs in villages surrounding the selected school and health professionals from health facility nearing the selected school and who participated in MDA in the study area
- Being a teacher from primary 4 to Senior 3 (first 3 secondary years)
- School children males and females of age ≥ 10 -15 years
- Willing to provide informed assent or parental/ guardian consent (in case of minor –below 18 years old)

Exclusion Criteria

- Children less than 10 years
- Nurses and CHWs who had not participated in MDA
- Teachers who were not part of our target classes (P4 to S3)

Study variables

Dependent variables: The dependent variable in this study is the schistosomiasis infection.

Independent variables: The independent variables are socio demographics including age, gender, marital status, education level, work experience, location, knowledge and attitude. The practices information collected focused on behavioral and environmental factors that included swimming/ contact with water, washing clothes or fetching water and shoes wearing. In this current study, the knowledge on schistosomiasis is defined in terms of transmission, signs and symptoms and preventive measures. The attitude is defined as belief regarding environmental contamination, prevention and regular screening and mass treatment.

Data Analysis

The analysis was performed in 3 statistical ways:

- The raw data were cleaned, and data were coded before analysis
- Using STATA version 13.0 (College Station, Texas 77845 USA), to perform statistical analysis, the level of knowledge towards schistosomiasis was categorized as good for comprehensive correct answer/s, moderate for a half of correct answer/s while poor when no any correct answer was provided. For the attitude and practice, 2 categories were used to categorize healthy attitude or healthy practice as good while poor as risky attitude or practice. Descriptive summary statistics using frequency and percentage of each independent variable in order to define the status of knowledge, attitude and practices of the study population.

Ethical considerations

The ethical clearance No. 0064/RNEC/2019 was obtained from the Rwandan National Ethics committee (RNEC). Prior to start of the study, participants were explained the nature of the study for voluntary participation. Participants aged 18 years and above were enrolled into the study after providing an informed consent.

Children less than 18 provided their assent and, the school administration with the research team coordinated to have the consent of their parents or guardians. Assent/Consent forms were kept and a participant identification number was used and no names were recorded in the questionnaire

RESULTS

Description of study participants

For overall (143) participants, the children were (72%) aged from 10 to 15 years while adults in the current study were 40(28%) aged from 22 years and above. Participants recruited per educational level were 93 (65%),40 (28%), 10 (7%) primary, secondary and university levels respectively. Female were fewer than male (69=42% and 74=52% respectively (**Table 3**).

Description of knowledge, attitude and practices of study participants

Among overall participants, 112 (78%) replied to have heard about schistosomiasis (bilharziasis terminology was used in the survey as it is the commonly known name in Rwandan community) while 31 (22%) have never heard about schistosomiasis. Among children, 51% (n=73) have heard about schistosomiasis while among adults 27% (n=39) have heard about schistosomiasis.

In (**Table 4**), It shows that the knowledge about transmission is Good in 19% (n=28) participants, moderate in 8% (n=11) participants while poor knowledge is observed in 73% (n=104). The knowledge regarding signs and symptoms of schistosomiasis is good in 49% (n=71) participants, moderate in 43% (n=61) participants while poor knowledge is observed in 8% (n=11). For the knowledge concerning preventive measures, 39% participants have good knowledge while 14% (n=20) of participants and 47% (n=67) of participants had moderate and poor knowledge respectively.

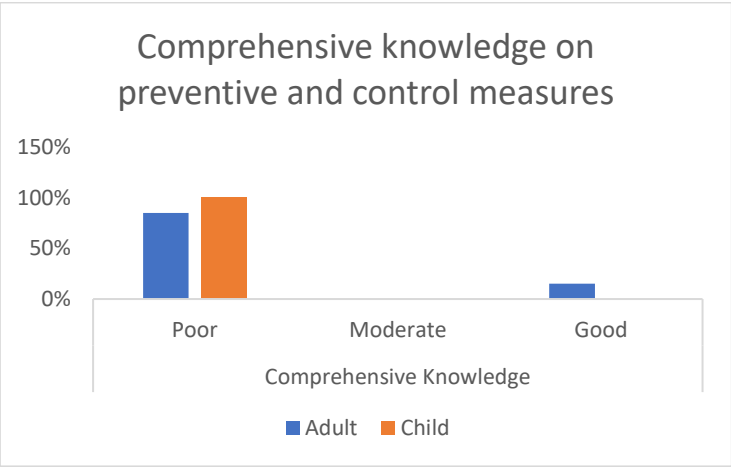

Figure 2: Level of comprehensive knowledge among study participants

In the same table, the overall comprehensive knowledge of participants on both transmission, signs and symptoms and preventive measures is good at 4% (n=6), moderate at 0% (n=0) while poor at 96% (n=137). The overall participant attitude towards schistosomiasis prevention, regular screening and mass treatment is good at 37% (n=53) and poor at 63% (n=90). The overall participants practice related to preventing schistosomiasis transmission (contact with water bodies: swimming, washing clothes, wearing shoes, drinking contaminated water) is good at 16% (n=23) and poor at 84% (n=120).

DISCUSSION AND CONCLUSION

Our findings revealed that, despite multiple MDA campaigns, the overall comprehensive knowledge (transmission, signs and symptoms and preventive measures) was very low (4%) although adults participating in mass drug administration and teachers had an improved level of knowledge compared to children. This points out that the messages on schistosomiasis during MDA campaigns might have not appropriately delivered or were poorly designed to be delivered or understood easily. Therefore, the elimination of the disease by 2024 cannot be easily feasible if the affected populations and behaviour changers do not know the transmission and prevention mechanisms. Consequently, there is a need of designing a comprehensive awareness strategy for behaviour change which should engage the affected community

CHAP III. COMMUNITY BASED HEALTH INTERVENTION PROGRAM TO ELIMINATE THE ISSUE

GOAL OF THE PROGRAM

The main goal of this program is ending the Schistosomiasis epidemics in Rusizi district by 2024

OBJECTIVES OF THE PROGRAM

The overall objective

The main objective is to contribute at elimination of the schistosomiasis infections rate in Rusizi district by 2024.

The intermediate objectives

- To Increase the access to information on the burden of the schistosomiasis infections rate
- To enhance the knowledge of community on risk of schistosomiasis infections practice towards its elimination.
- To Improve knowledge and attitude of the preventing and control measures for schistosomiasis infections
- To Increase awareness on preventives and treatment interventions among the targeted community in Rusizi district.

The specific objectives

- To identify the community needs for eliminating the schistosomiasis burden
- To train the three community facilitators on schistosomiasis control and prevention intervention per sector in Rusizi district
- To develop and avail the health education/communication materials on schistosomiasis control and prevention intervention for the population of Rusizi district
- To conduct weekly health communication sessions using media channels in Rusizi district.
- To conduct quarterly outreaches activities at the sectors level on schistosomiasis infections control and prevention intervention
- To provide biannual deworming campaigns in the Rusizi district for under five children
- To assess the practices towards of schistosomiasis prevention and control on annual basis.

RECOMMENDED ACTIONS / MAIN COMPONENTS OF THE PROJECTS

To achieve the goal, the below key actions will be done in the in achieving each of above specific objective in the five districts:

- Hiring the staff that will support in this program
- Key tools development
- Baseline assessment will be conducted in this district known to have high prevalent schistosomiasis infection rate, factors will be analyzed and documented
- Meet the key stakeholders in this program (MoH, church leaders, ministries, program funders, etc.) to seek their collaborations

- Selection of media channels and approaches
- The training of community facilitators will be conducted for 54 community facilitators candidates (three community facilitators per sector in eighteen sectors).
- Advocating and support in availability of deworming services/infrastructures (rooms, equipment, drugs)
- Support the continuous Mobilization activities for the preventive and control measures at the sector level
- Support for the health communication session at the health facilities and family levels
- Monitoring the rate of schistosomiasis infections attending the health facilities at monthly basis
- Monitor the availability of essential medications and equipment in all health facilities.
- Monthly data collection for key indicators
- Periodic monitoring of planned activities to assess the progress of each activity
- Quarterly meeting in each supported sector in Rusizi district
- Annual reporting activities
- Bi-annual coordination meeting of key stakeholders
- Final program evaluation

THE REQUIRED RESOURCES

Both financial and human resources are required to eliminate and end the schistosomiasis infections in this community. This program will use 317,010,000 RWF for five years for this district. To achieve the goal of ending the Schistosomiasis epidemics in Rusizi district by 2024 in Rwanda with high prevalence of schistosomiasis infection, there will be an involvement of multisectoral, health professionals (clinicians, community health workers, nutritionist, etc.) in all activities directly linked to the decrease of schistosomiasis infections rate.

The program will need to hire 2 community health specialists, a data analyst, monitoring and evaluation officer, accountant, program manager, three drivers and other two supportive staff. Different categories of logistics, including vehicles will be bought. Technical staff will be distributed in 18 sectors for five years, and will work with 94 community health workers (1 CHW in each cell). The program will work closely with ministry of health, health centers and district hospitals for their collaboration in different activities. The existing health care providers in the supported sectors will support in community mobilization and deworming activities. This program

will work also with other ministries (mainly ministry of agriculture, ministry of local government, ministry of education, ministry of infrastructure), national agencies (example is REMA, RBA, RTV, RADIO y'Abaturage ya Rusizi, etc.) that will support in community health education, mobilization, monitoring.

THE SCHEDULE AND TARGET POPULATIONS

This program targets all children and adults living in Rusizi district. The program will start by January 2020 and end by December 2024.Summarized schedule for this program follows, and it summarizes the key activities for the five years. The table below summarizes the schedule of main activities.

MAIN ACTIVITIES	**SCHEDULE**				
	Year 1	**Year 2**	**Year3**	**Year4**	**Year5**
1. Hiring staff and	X	X			
2. Program design &tools development	X	X			
3. Baseline assessment	X				
4. Training key group of community facilitators	X	X	X		
5. Design and test educational materials	X	X	X		
6. Selection/hiring of key media channels/stakeholders/partners	X	X			
7. Start implementation	X				
8. Monthly Program Monitoring	X	X	X	X	X
9. Annual report	X	X	X	X	X
10. Biannual stakeholders meeting		X	X	X	X
11. Continuous Program Implementation	X	X	X	X	X
12. Program evaluation			X		X

THE EVALUATION CRITERIA FOR EACH OF THE SPECIFIC OBJECTIVES

Objective 1: Baseline assessment report

Objective 2: Number of education materials developed

Objective 3: Number of community facilitators trained on prevention and control measures of schistosomiasis

Objective 4: Number of weekly health communication sessions passed through media (on radio, on TV)

Objective 5: Number of quarterly outreaches conducted in each sector in Rusizi district

Objective 6: Number of deworming campaigns conducted annually

Objective 7: Annual report showing the assessment of preventing and control practices towards elimination of schistosomiasis infections.

STAKEHOLDER ANALYSIS METHODS

The analysis was made following the three steps: Brainstorming to identify the key stakeholders, Group the stakeholders in four categories then understand the role of each group/stakeholder.

1. **Identification of stakeholders**

The group members brainstormed the key stakeholders for this community intervention. The goal was to have the list of people/organization who are affected, who may have influence or power over project success or failure.

Government	Shareholders	Person/individual
• Local Government (starting from ISIBO to District) • Early Childhood Development Program (ECD) • Rwanda Biomedical Center/ Malaria and Other Parasitic Diseases Division/ NTDs program • Rwanda Health communication center • Ministry of Health • Ministry of Agriculture (MINAGRI) • Rwanda Agriculture Board (RAB) • Ministry of education • Rwanda Environmental Management Agency (REMA) • Ministry of culture and sports	• Society for Family Health (SFH) for communication and community engagement expertise • End Fund (funder) • World Health Organization • Food and Agriculture Organization (FAO)	• Community families in Rusizi District • Farmers (cultivators) in marshlands in Rusizi District • Fish farmers/ pickers • Community Health workers • Health workers at Health centers and at Hospital level • Rwanda Broadcasting Agency (RBA) • Rwanda Cooperative Agency (RCA) for marshland's cooperatives (e.g. rice)

2. Prioritization of the stakeholders

Table 1: Power/Interest Grid stakeholder prioritization

Stakeholders interest and expectations			
	Positive	• Early Childhood Development Program (ECD) • Rwanda Environmental Management Agency (REMA) • Health workers at Health centers and at Hospital level	• Rwanda Biomedical Center/ Malaria and Other Parasitic Diseases Division/ NTDs program • Rwanda Health communication center • Ministry of Health • Society for Family Health (SFH) for communication and community engagement expertise • End Fund (funder) • World Health Organization • Food and Agriculture Organization (FAO) • Community families in Rusizi District • Farmers (cultivators) in marshlands in Rusizi District • Fish farmers/ pickers • Community Health workers.
	Negative	• Rwanda Broadcasting Agency (RBA) • Ministry of education • Ministry of culture and sports.	• Local Government (starting from ISIBO to District) • Rwanda Cooperative Agency (RCA) for marshland's cooperatives (e.g. rice • Ministry of Agriculture (MINAGRI) • Rwanda Agriculture Board (RAB)
		Low	High
		Importance	

3. Understanding stakeholders

We have used a four-categorization approach to discover how key stakeholders feel or support our community-based health intervention. With this, we looked on how best we shall engage them throughout the program lifespans using the following questions:

- What financial or emotional interest do they have in the outcome of our intervention? Is it positive or negative?
- What motivates them most of all?
- What information do they want from us, and what is the best way of communicating with them?
- What is their current opinion of the intervention? Is it based on good information?

- Who influences their opinions generally? Do some of these influencers therefore become important stakeholders in their own right?
- If they aren't likely to be positive, what will win them around to support our intervention?

Finally, the position allocated for each person/individuals, organization/agency show us the attention we must take with them:

High importance or power, highly interested group: These are people/groups that must be fully engaged and satisfied through the whole intervention

High power, less interest persons/group: In this case, there are less interested people/organization with the intervention at hand. Yet, their influence is highly important for the success of the intervention. So the satisfaction of their need is highly needed.

Low power, highly interested party: In this section, we must adequately inform these people, and talk to them to ensure that no major issues are arising, as the member of this group are very helpful with the detail of the project.

Low power, less interested people, called monitor: this group needs to be monitored and does not accept excessive communication.

Table 2: RESULT OF STAKEHOLDERS ANALYSIS

Stakeholder	Impact	importance	Concerns	Action
• Rwanda Biomedical Center/ Malaria and Other Parasitic Diseases Division/ NTDs program • Rwanda Health communication center • Ministry of Health • Society for Family Health (SFH) for communication and community engagement expertise • End Fund (Funder) • World Health Organization • Food and Agriculture Organization (FAO) • Community families in Rusizi District • Farmers (cultivators) in marshlands in Rusizi District • Fish farmers/ pickers • Community Health workers.	High	High	Internal champions and sponsors, need to succeed	Use for internal promotion of objectives and benefits
• Early Childhood Development Program (ECD) • Rwanda Environmental Management Agency (REMA) • Health workers at Health centers and at Hospital level	High	Low	Concerned by their contribution	Seek their views on key issue and address concerns
• Local Government (starting from ISIBO to District) • Rwanda Cooperative Agency (RCA) for marshland's cooperatives (e.g. rice • Ministry of Agriculture (MINAGRI) • Rwanda Agriculture Board (RAB)	Low	High	Worried that new intervention will cause disruption	Counter the reasons for low acceptance
• Rwanda Broadcasting Agency (RBA) • Ministry of education • Ministry of culture and sports.	Low	Low	NA	Keep informing them

PROCESS OF INTERVENTION SELECTION

To intervene on the schistosomiasis burden in Rusizi district, the main process will follow these steps/ elements: Need assessment(already done),use of a theoretical framework for guiding development , implementation and program evaluation of community , consider the socio-ecological theories of behavioral change into our intervention (Annex, **Fig.3,4 &5**), follow the implementation model to guide intervention delivery the use multiple intervention modalities. The Bronfenbrenner ecological system theory of 1979, was used to provide an understanding the different factors that may or not influence.

Predisposing, Reinforcing, and Enabling Constructs in Educational Diagnosis and Evaluation (PRECEDE) of Green et al, 1981 approach is used for process design, starting with the need assessment. The design helped us to identify the following key factors under need by the population

- **Social assessment:** Based on the age, gender, education level, occupation, residence/sector and marital status.
- **Behavioral and environmental assessment:** attitude, knowledge and practices towards the condition**.**
- **Administrative and policy factors that influence:** Insufficient health education and existing policies supporting the intervention (not assessed in this current case).
- **Epidemiological factors:** the prevalence of the disease in the community, see the background of schistosomiasis.

PRIORITIZED COMMUNICATION CHANNELS

- Local radio (radio y'abaturage)
- TV
- Posters
- Billboard
- Flyers
- Radio spot /tv spot
- Health communication messages ata health facility
- Churches

IMPLEMENTATION, MONITORING AND EVALUATION PLAN

This project is planned to be implemented for 5 years that is January 2020 -December 2024. To achieve the intended goal in collaboration with stakeholders/partners. Different objectives will be achieved by implementing, monitoring key activities in a chronological order. All implementation, monitoring, and evaluation related activities are summarized and detailed in implementation, monitoring, and evaluation plans that are annexed below (**Table 5, 6&7**).

VALUE-ADDED IN THE SPECIFIC CHOSEN COMMUNITY

Based on the need assessment findings in the Rusizi district of Rwanda, we found that there is a lot to be done to eliminate the schistosomiasis infection in this community. Thus, if the planned activities are well implemented as planned to achieve the goal, then the community shall gain: community development (potable water supply and use), uptake of desired health behaviors, comprehensive knowledge on schistosomiasis prevention and control.

CONCLUSION

Elimination of schistosomiasis within this community can be only be possible if there is a strong community engagement, use of diverse intervention activities mainly different communication channels, community mobilization, all supported by different stakeholders/partners.

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ANNEX

Table 3: Socio-demographic characteristics of study participants

Social factors	Value	n	%
Age category	10—15	103	72%
	22—57	40	28%
Gender	M	74	52%
	F	69	42%
Education level	Primary	93	65%
	Secondary	40	28%
	University	10	7%
Marital status	Single	107	75%
	Married	35	24%
	Divorced/ Separed/ Widowed	1	1%
Years in service	0 year	103	72%
	1-5 years	10	7%
	6-10 years	18	13%
	11 years +	12	8%

Table 4: Knowledge, attitude and practices level among the study participants

		Total Participants		Age category			
		N	%	Children		Adult	
				n	%	n	%
Knowledge about Transmission	Poor	104	73%	83	81%	21	52%
	Moderate	11	8%	4	4%	7	4%
	Good	28	19%	16	15%	12	30%
Knowledge about Signs& Symptoms	Poor	11	8%	9	9%	2	5%
	Moderate	61	43%	46	45%	15	37%
	Good	71	49%	48	46%	23	57%
Knowledge about Prevention	Poor	67	47%	51	59%	6	15%
	Moderate	20	14%	19	19%	1	3%
	Good	56	39%	23	22%	33	82%
Comprehensive Knowledge	Good	6	4%	0	0%	6	15%
	Moderate	0	0%	0	0%	0	0%
	Poor	137	96%	103	100%	34	85%
Overall Attitude	Good	53	37%	20	19%	33	82%
	Poor	90	63%	83	81%	7	18%
Overall Practice	Good	23	16%	5	5%	18	45%
	Poor	120	84%	98	95%	22	55%

Conceptual Schematically, these are two key examples of theories chosen to guide our intervention on schistosomiaisis elimination in Rwanda. There are theory of planned behavior and Trans-theoretical model on behavior change.

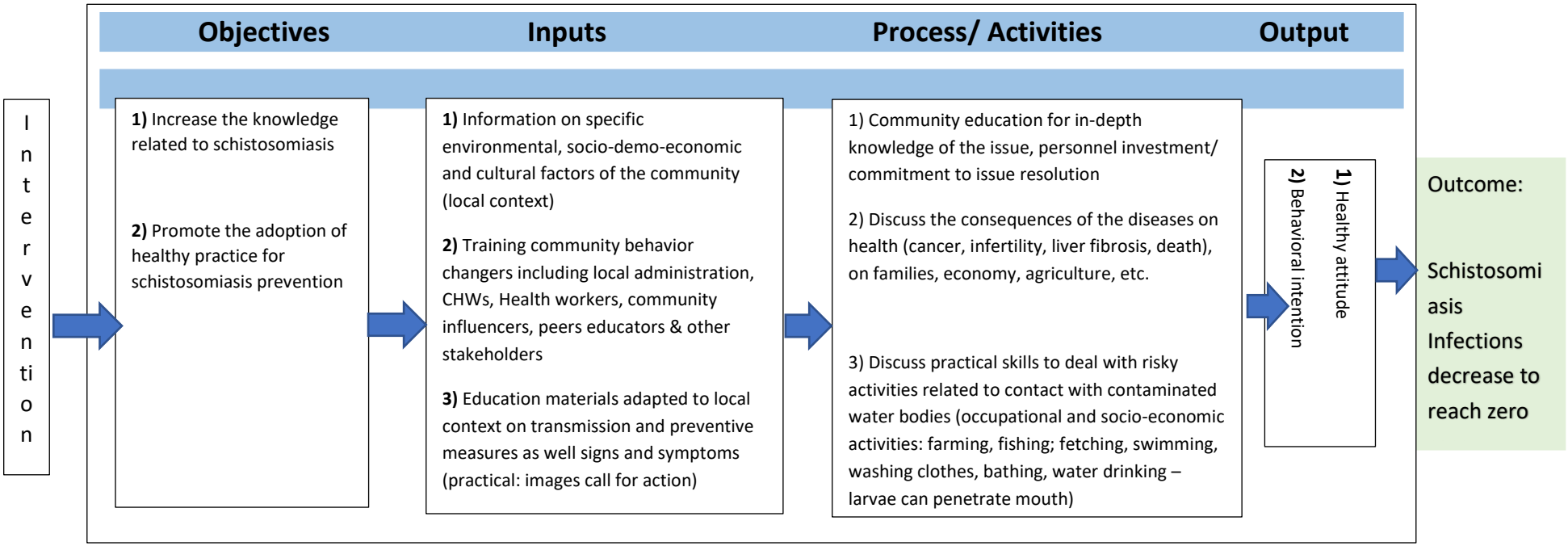
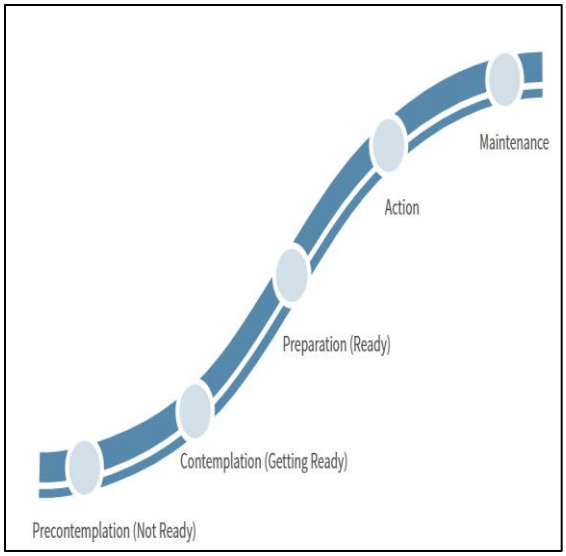


Figure 3 : Conceptual framework for the awareness intervention in relation to theory of planned behavior



Considering that 47% of participants from Rusizi district are found having poor knowledge on preventive measures for schistosomiasis, the TTM will be applied through our intervention. The uninformed group of community member will be approached by the trained community facilitators, who will help them to know about the burden, what to do for preventing this disease. Informed individuals will start be ready for preventive measures implementation. Those actions will be implemented based on changed behavior. The importance of preventive actions will make them start, moving to modified and desired lifestyle. This will be seen and evaluated in six to 12 months

Figure 4:Trans-theoretical model of behavioral change in schistosomiasis prevention and control

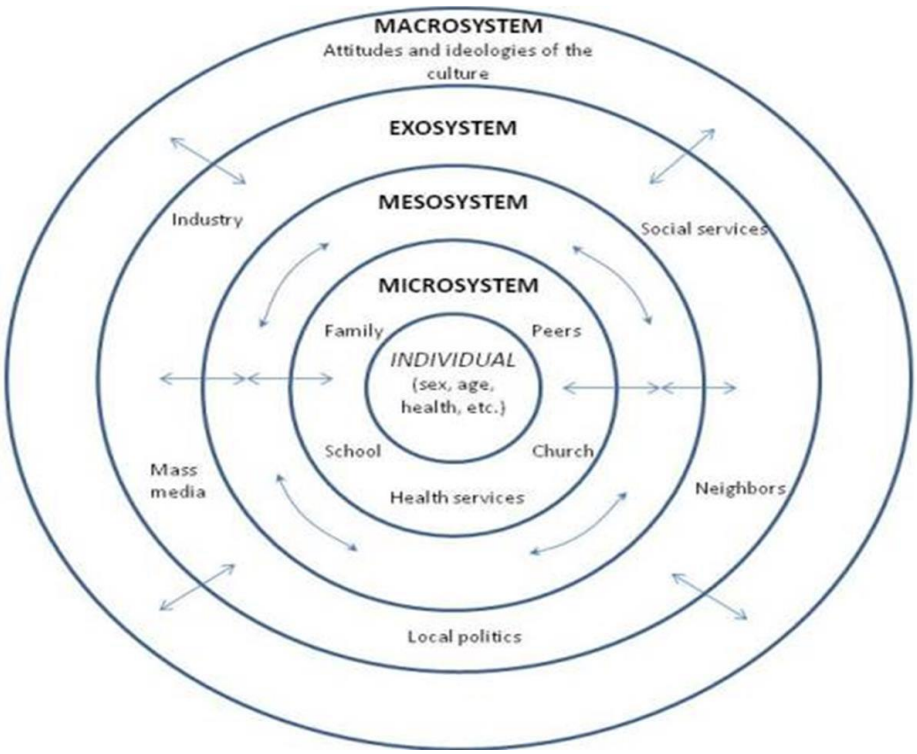


Figure 5:The Bronfenbrenner ecological system theory

Table 5 : OPERATIONAL PLAN.

Activity	Calendar					Responsible	Indicator	Source of verification	Budget (RWF)	Source of funding	Observation
	Year 1	Year 2	Year 3	Year 4	Year 5						
Hiring the key staff that will be involved in this program						**Program manager**	% of hired staff	Staff Personal files in HR service	**1000000**	**End Fund**	Hiring needed staff may take more time than planned
Key tools development						**Technical team**	Number of developed tools among the needed tools.	Available developed tools	**10000**	**End Fund**	
Meet twice the key stakeholders in this program (MoH, church leaders, ministries, program funders, etc.) to seek their collaborations						**Program manager**	Number of meetings done among	Meeting reports	**1500000**	**End Fund**	
Conduct the baseline assessment in the district known to have high prevalence of schistosomiasis infection, make analysis and document the findings.						**Program manager**	N/A	Baseline assessment report	**2500000**	**End Fund**	More resources may be needed
Objective 1: To train the three community facilitators on schistosomiasis control and prevention intervention per sectors in Rusizi district											
Selection of community facilitators						**Technical team**	Number of selected candidates in the district		**N/A**	**End Fund**	
Prepare and run the training						**Technical team**	Number of trained candidates in the district		**7000000**	**End Fund**	

Orientation/mentorship on community facilitation approach						**Technical team**	Number of mentored facilitator candidates in the district	Mentorship report	**5000000**	**End Fund**	
Objective 2: To develop and avail the health education/communication materials on schistosomiasis control and prevention intervention for the population of Rusizi district											
To form the team for selecting and designing the bilariziose related education /communication materials(both community, Health facilities and media uses)						**Program manager**	**N/A**	Available team	**N/A**	**End Fund**	
Test the designed materials in the community						**Technical team**	**N/A**	Tested tools	**500000**	**End Fund**	
Review of & finalize the tested materials for including the given comments/inputs						**Technical team**	**N/A**	Final tools ready for validation	**N/A**		
Validate, Share and distribute the designed education/communication material among the key stakeholders, community facilitators, HFs.						**Program manager**	Number Validated tools are available	Signed Distribution list	**1000000**	**End Fund**	
Objective 3: To conduct weekly health communication sessions using media, community meeting/communication channels in Rusizi district											
Selection and/or hiring of the communication channels						**Program manager**	Number of hired companies to pass messages	List of communication channels hired	**1500000**	**End Fund**	
Selected channels pass the education messages on weekly basis						**Program manager**	Number of messages passed per week	Records of passed messages	**100000000**	**End Fund**	
Objective 4: To conduct a quarterly outreach activity at the sector level on schistosomiasis infections control and prevention intervention											

Selection and meet of stakeholders that will be involved in community outreaches						**Program manager**	Number of meetings held	Meeting reports	**1000000**	**End Fund**	
Selecting the key sites for outreaches in each sector						**Technical team**	Number of selected sites in the district	List of the name of the sites	**500000**	**End Fund**	
Prepare and run the outreach activities						**Technical team**	Number of outreach activities per year	Outreach report	**7500000**	**End Fund**	
Report the outreach activities						**Technical team**	N/A		**N/A**		
Objective 5: To provide biannual deworming campaigns in the Rusizi district for under five children											
Prepare and procure the quantity of the deworming medications						**Technical team**	Number of anti-parasites drugs procured	Procurement report	**9000000**	**End Fund**	
Prepare and run the deworming campaigns						**Technical team**	Number of deworming activities /years	Deworming Campaign report	**4000000**	**End Fund**	
Report the campaign activities						**Technical team**	**N/A**		**N/A**		
Objective 6: To assess the practices towards of schistosomiasis prevention and control on annual basis.											
Assessment tools development						**Technical team**	Number of developed tools	Assessment tool available	**1000000**	**End Fund**	
Testing, review and validation of the developed tools						**Technical team**	N/A	Validated tool	**500000**	**End Fund**	
Selection, training of assessors						**Program manager**	Number of trained assessors	Training report	**3000000**	**End Fund**	

Conduct the assessment sessions						**Technical team**	Number of annual assessments conducted	Assessment report	**5000000**	**End Fund**	
Data entry, analysis						**M&E officer**	N/A		**N/A**		
Assessment findings report						**M&E officer**	N/A		**N/A**		
Dissemination of assessment findings among the stakeholders						**Program manager**	N/A	Disseminatio n report	**2000000**	**End Fund**	
OPERATING EXPENDITURES											
Staff salaries, hiring offices, buying all logistics						**Program manager**	N/A	Payroll reports, purchasing reports.	**140000000**	**End Fund**	
Miscellaneous/unplanned cost									**8000000**	**End Fund**	
MONITORING ACTIVITIES											
Monthly routine data collection for key indicators						**Technical team**	N/A	Monthly data report	**N/A**		
Quarterly coordination meeting in each sector (community level)						**Technical team**	Number of quarterly coordination meeting held	Meeting report	**3000000**	**End Fund**	
Bi-annual coordination meeting of key stakeholders (district level)						**Program manager**	Number of bi annual meeting held		**2000000**	**End Fund**	
Mid-term program evaluation (every two years)						**M&E officer**	N/A	Mid-term report	**3000000**	**End Fund**	
End program evaluation						**M&E officer**	N/A	Evaluation report	**7500000**	**End Fund**	
TOTAL BUDGET									**317,010,000**		

Table 6: LOGICAL FRAMEWORK AND MATRIX OF MONITORING AND EVALUATION

Inputs	Activities/process	Outputs	Outcomes	Impact
• Financial resources, • Human resources, • Time	• Selection and training of community facilitators • Designing and testing key messages/education materials • Conduct community outreaches • Hire the communications channels/companies • Conduct mobilization activities (via media/meeting) • Regular deworming campaigns • Monthly Data collection • Regular meeting • Mid-term and end program evaluation.	• Trained community facilitators • Validated education messages • Hired media channels • Informed /Aware community on risk factors • Posted education messages	• Informed community of risk factors for schistosomiasis shares the health information on schistosomiasis • General population decreases use of poor /stagnant water and • Community stops the use of poor /stagnant water • Sick children and adult consult the health facility immediately • Prevalence of schistosomiasis infection decreases	The reduction to zero new cases in Rusizi district

Table 7: MATRIX OF MONITORING AND EVALUATION

Objectives	Indicators	Indicator definition	Baseline	Target	Implementation time					Data collection method(s)	Verification sources	Frequency of collection
					Y1	Y2	Y3	Y4	Y5			
To conduct the baseline assessment on knowledge on prevention and control of schistosomiasis among the community of Rusizi district	Level of knowledge of this community	N/A	Will be the finding of the baseline assessment	N/A	**X**					Community survey	Survey report	Once at the beginning of program.
To train three community facilitators on schistosomiasis control and prevention intervention per sectors in Rusizi district	Number of trained community facilitator candidates in the district	**Numerator:** # of trained community facilitators **Denominator**: Total number of community facilitators needed.	N/A	54	**X**	**X**				N/A	Training report	Once year for the first two years
To develop and avail the health education/communication materials on schistosomiasis control and prevention intervention for the population of Rusizi district	Number Validated educational messages	**Numerator**: Number of validated educational messages **Denominator**: Total number of needed educational messages	10%	90%	**X**	**X**				N/A	Validated tools/messages	Yearly

To conduct weekly health communication sessions using media, community meeting/communication channels in Rusizi district	Number of messages passed per week	**Numerator**: # of passed messages per week **Denominator**: Total # of messages planned per week	0%	100%	**X**	**X**	**X**	**X**	**X**	Monthly review	Messages records	Monthly
To conduct a quarterly outreach activity at the sector level on schistosomiasis infections control and prevention intervention	Number of outreaches activities conducted per year	**Numerator**: # of outreaches activities conducted per year **Denominator**: Number of outreaches activities planned per year	0	4	**X**	**X**	**X**	**X**	**X**	Annual review	Annual report	Yearly
To provide biannual deworming campaigns in the Rusizi district for under five children	Number of deworming campaigns per year	**Numerator**: Number deworming campaign conducted **Denominator**: Total number of deworming campaign planned per year	20%	100%	**X**	**X**	**X**	X		Annual review	Annual report	Yearly
To assess the practices towards of schistosomiasis prevention and control on annual basis.	Number of annual assessments conducted	**Numerator**: Number of annual assessments conducted **Denominator**:	0	5	**X**	**X**	**X**			Community assessment	Annual reports	At end each year

	in five years	Total number of annual assessments planned in 5 years										
To Evaluate the program impact in Rusizi district	Two program evaluations made	**Numerator**: Number of evaluation done **Denominator**: Total number evaluation planned	N/A	2			**X**		**X**	Community survey	Program evaluation report, archives reports	Once at the mid-term & at end of program /5 years.

Figure 6 : EXAMPLES OF EDUCATION MESSAGES THAT HAVE BEEN TESTED AND SUITABLE FOR OUR INTERVENTION IN RUSIZI DISTRICT

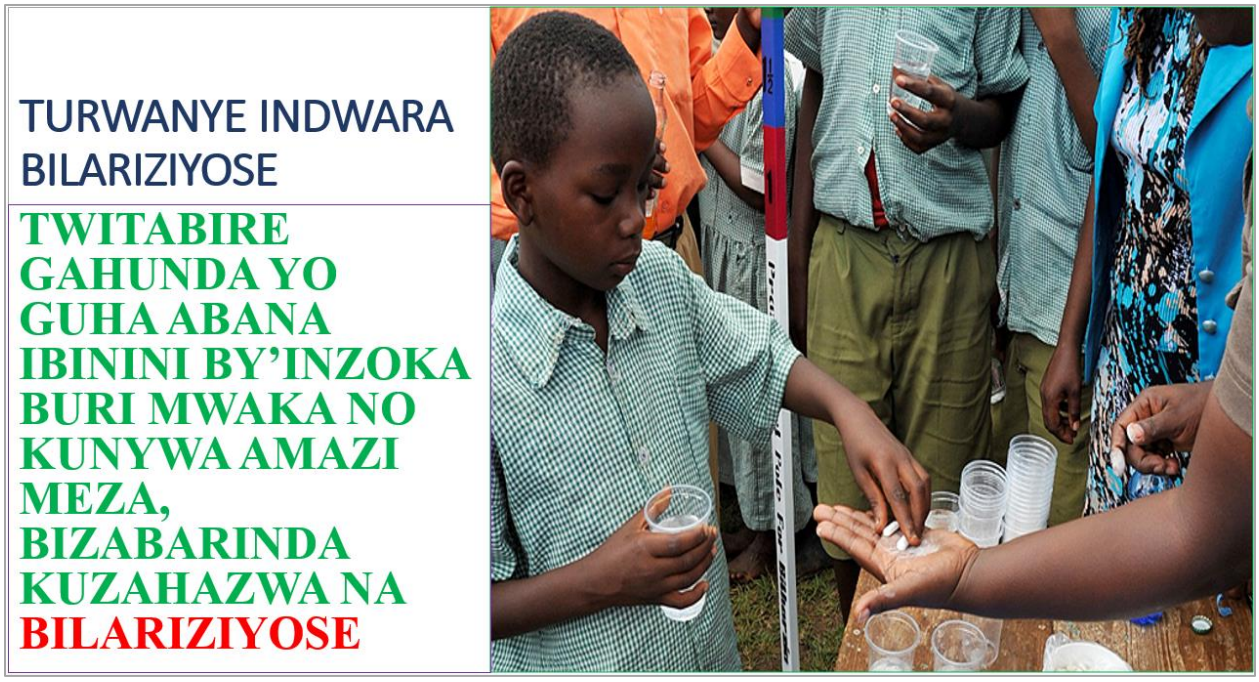


Figure 7: EXAMPLES OF EDUCATION MESSAGES THAT HAVE BEEN TESTED AND SUITABLE FOR OUR INTERVENTION IN RUSIZI DISTRICT

TUMENYE INDWARA YA BILARIZIYOSE

Bilariziyoze Ni iki ?

- ✓ Bilariziyoze ni indwara iterwa n'inzoka iba mu miyoboro y'amaraso hafi y'amara. Udukoko tuyitera twitwa «Shisitozoma» twororokera mu mazi adatatemba. Ayo mazi nayo aba yandujwe n'uyirwaye kubera kwituma muri ayo mazi no mu bishanga cyangwa ku musozi ubikikije.
- ✓

Bilariziyoze yandura gute?

- ✓ Bilariziyoze yandura iciye mu ruhu rw'umuntu mu gihe yoze cyangwa akandagiye mu mazi adatemba cyanwa ibishanga birimo udukoko twa shistosoma.
- ✓ Ayo mazi yanduzwa n'urwaye iyo nzoka binyuriye ku mwanda yitumye.
- ✓ Bilariyoze ikunze kwibasira cyane cyane abakorera imirimo yabo mu bishanga n'ahandi hose haboneka amazi adatemba nko mu buhinzi bw'umuceri, ibiyaga n'ibindi bikorerwa mu bishanga.

Bilariziyoze wayirinda ute?

- ✓ Kwituma buri gihe mu musarane, twirinda kwanduza amazi cyangwa imisozi kugira ngo imvura itamanukana umwanda iwujyana mu gishanga, mu kiyaga n'ahandi.
- ✓ Kambara inkweto buri gihe, cyane cyane mu mirimo yo gukora ahantu hari amazi adatemba (mu bishanga, …….)
- ✓ Kubuza abana bato kwidumbaguza mu bizenga by'amazi cyangwa ibiyaga biri mu mirenge yagaragayemo indwara ya Bilariziyoze
- ✓ Kwirinda kujya kuvoma amazi yo mu kiyaga cyangwa igishanga cyagaragayemo iyo ndwara
- ✓ Kwisuzumisha kwa muganga indwara ya Bilharziose nibura kabiri mu mwaka
- ✓ Kwihutira kwivuza neza kwa muganga igihe cyose ugize ikimenyetso kiyiranga, **nko kwishimagura, kuribwa mu nda, kubyimba inda n'ibindi,**
- ✓ Gufata ibinini bya Praziquantel ivura Bilharziose mu gihe byatanzwe mu gace mutuyemo

Ni izihe ngaruka Bilariziyoze itera ku buzima bw'umuntu?

- ✓ Kwishimagura ku mubiri wose
- ✓ Kubyimba inda bitewe no kwangirika k'umwijima
- ✓ Kuribwa mu nda
- ✓ Kubura amaraso no kugira imirire mibi iganisha k'ukukwingira kw'abana
- ✓ Ishobora gutera ubugumba cyane cyane ku bagore
- ✓ Ishobora gutera cancer y'umwijima
- ✓ Hari n'igihe umurwayi wayo ashobora kunyara amaraso

« TWESE HAMWE DUFATANYE GUHASHYA BILARIZIYOZE MU BACU N'IWACU MU MUDUGUDU!! »

Knowledge, Attitude and Practices towards Schistosomiasis in Rwanda

IFISHI Y'IBUSHAKASHATSI N^{O}: _____/_____

Umutwe w'ubushakashatsi: *Ubushakashatsi bwo kumenya ubumenyi, imyumvire, n'imigenzereze y'abarezi n'abakora muby'ubuzima muri gahunda yo kurwanya bilariziyoze mu Rwanda.*

Check one: /*Hitamo kimwe*

Date/*Italiki*: ___ / ___ / ___

☐ Baseline data collection/ *Amakuru abanza* Location code/k*ode y'ahabera ubushashatsi*: _____ /

☐ Follow-up data collection/ *Amakuru y'ikurikirana*

Interviewer: Place an X in the box of the selected answer(s) (Tick all that apply).
Shyira akamenyetso X mu kadirishya k'igisubizo wahisemo (Hitamo ibisubizo byose bishoboka)
Do not read responses unless the directions indicate/*Ntusome igisubizo keretse aho usabwa kubikora.*

A. IDENTIFIER

Table 8 : Questionnaire

No	QUESTION/VARIABLE/ *IKIBAZO*	RESPONSE/*IGISUBIZO*
A.1	Day/Month/Year of Interview *Umunsi/Ukwezi/Umwaka w'ibazwa*	____/_____/2018
A.2	Time of interview	Start/*Gutangira* /___/___//___/___/End/*Gusoza* /___/___//___/___/ HH/Isaha MM/*Iminota* HH/Isaha MM /*Iminota*

A.3	Respondent ID/*Numero iranga ubazwa*	___/___/___
A.4	Interviewer/*Umukarani w'ubushakashatsi*	Names/*Amazina*: Code/*Kode*: /___/___/ Sign/*Umukono*:_____
A.5	Supervisor/*Ukurikirana ubushakashatsi*	Names/*Amazina*: Sign/*Umukono*:_____

B. GENERAL AND DEMOGRAPHIC QUESTIONS/ *IBIBAZO RUSANGE N'UMWIRODORO*

No	QUESTION/VARIABLE/*IKIBAZO*	RESPONSE/*IGISUBIZO*
B.1	District/*Akarere*	/_____/
B.2	Sector/*Umurenge*	/_____/
B.3	Cell/*Akagari*	/_____/
B.4	Village/*Umudugudu*	/_____/
B.5	Health Center attached to/*Ikigo nderabuzima akorana nacyo*	/_____/
B.6	How old are you? (In completed Years)/ *Imyaka y'ubukure*	/____/____/
B.7	What is your gender?/*Igitsina*	1.Male/*Gabo* ☐ 2.Female/*Gore* ☐
B.8	What is the highest level of education you have completed?/ *Ni kuruhe rugero wagarukiyeho mu kwiga kwawe?*	1.None/*Ntayo* ☐ 2. Primary/*Abanza* 1-3 ☐ 3.Primary/*Abanza*4-8 ☐ 4.Secondary/Ayisumbuye1-3 ☐ 5.Secondary/Ayisumbuye4-6 ☐ 6.University/*Kaminuza* ☐

		7. Vocational training/*Ayimyuga* ☐ 8.Literacy classes only/*amashyuri yo gusoma no kwandika*☐
B.9	Do you currently have paid employment?/*Waba ufite akazi kaguha umushahara?*	1. Yes/*Yego* ☐ 2. No/*Oya* ☐
B.10	What is your marital status?/*Irangamimerere ry'ubazwa*	1. Married/*Uwubatse* ☐ 2.Widowed/Umupfakazi ☐ 3.Divorced/*Baratandukanye* ☐ 5.Separated/*Baba ukubiri* ☐ 6. Single/*Ingaragu* ☐
B.11	For how long have you been serving as a Community Health Worker/teacher/nurse? (In completed Years)/*Umaze igihe kingana iki ukora umurimo w'umujyanama w'ubuzima?(Imyaka)*	/____/____/

C. KNOWLEDGE, ATTITUDE, PRACTICES TOWARDS SCHISTOSOMIASIS/BILHARZIA

UBUMENYI, IMYUMVIRE, N'IMIGENZEREZE KU BIJYANYE NA BILARIZIYOZE

C.1. KNOWLEDGE ABOUT BILHARZIA/*UBUMENYI KURI BILARIZIYOZE*

C.1.1. Have you ever heard about bilharzia?/*Hari icyo waba warigeze wumva kuri bilariziyize?*

1. Yes/*Yego* ☐ **2.** No/*Oya* ☐

C.1.2. Where did you receive information about bilharzia?/*Amakuru ajyanye na bilariziyoze wayakuye he?*

1. School/*Mu ishuri* ☐
2. Media/*Mu itangazamakuru* ☐
3. Training/*Mu mahugurwa* ☐
4. Health center/ Hospital/ *Ku kigo nderabuzima/Ibitaro* ☐
5. Other ☐

(specify)/*Ahandi(Havuge)*:_____

C.1.3. Have you ever been involved in mass distribution of pills against bilharzia?/

Waba warigeze ufasha muri gahunda yo gutanga ibinini bya bilariziyoze?

1. Yes/*Yego* ☐
2. No/Oya ☐

C.1.4. How does bilharzia presents?/*Ni ibihe bimenyetso biranga bilariziyoze*

1. Blood in urine/*Kwihagarika inkari zirimo amaraso* ☐
2. Blood in stool/faeces/*Umwanda ukomey/amabyi uvanzemo amaraso* ☐
3. Diarrhea/*impiswi* ☐
4. Fever and headache/*Umuriro no kuribwa umutwe* ☐
5. Don't know/*Nabyo nzi* ☐

C.1.5. Which of the following is the most important factor for bilharzia infection?/*Ni ki cy'ingenzi muri ibi bikurira gitera kwandura bilariziyoze?*

1. Ingesting water and food contaminated with bilharzia eggs/*Kunywa amazi no kurya ibiryo byandujwe n'amagi ya bilariziyose* ☐
2. Insect bite/*Kurumwa n'agakoko* ☐
3. Swimming in water containing cercariae/ *Koga mu mazi arimo imihini ya bilariziyoze* ☐
4. Ingesting fish infected with cercariae/*Kurya amafi yandujwe n'imihini ya bilariziyoze* ☐
5. Don't know/*Ntacyo nzi* ☐

C.1.6. What is an intermediate host for the transmission of bilharzia?/*Ni kihe gifasha mu kwanduza bilariziyoze?*

1. House fly/ *Isazi yo mu nzu* ☐
2. Mosquito/*Umubu* ☐

3. Fresh water fish/*Ifi idateste* ☐
4. Snails/*Ikinyamujonjorerwa* ☐
5. Don't know/*Ntacyo nzi* ☐

C.1.7. Which of the following methods is not important for the prevention of bilharzia?/*Ni ubuhe buryo muri ubu bukurikira butari ubw'ingenzi mu kwirida bilariziyoze?*

1. Proper construction and use of latrine/*Kubaka no gukoresha neza umusarane* ☐
2. Boiling water for drinking/*Guteka mazi yo kunywa* ☐
3. Cleaning the canal where snails breed/*Gusukura imiyoboboro y'indiri y'ibinyamujonjorerwa.* ☐
4. Educating the public to avoid contact with water bodies that have cercariae and to use latrine/ubukangura mbaga ku kwirinda guhura n'amazi arimo imihini ya bilariziyoze no gukoresha umusarane ☐
5. Don't know/*Ntabwo nzi* ☐

C.1.8. How to protect yourself from contacting bilharzia?/*Wakwirinda ute kwandura bilariziyoze?*

1. Staying indoor/*Kuguma mu nzu* ☐
2. Avoid direct contact with the river/dam water/*Kwinda kujya mu mazi y'umugezi/ikindendezi* ☐
3. Avoid direct contact with rain water/*Kwirinda guhura n'amazi y'imvura* ☐
5. Don't know/*Ntabyo nzi* ☐

C.2. ATTITUDE TOWARDS BILHARZIA PREVENTION AND MANAGEMENT/*IMYUMVIRE KU BIJYANYE NO KWIRINDA NO KURWANYA BILARIZIYOZE*

Question/Variable/*Ikibazo*	**Strongly Agree *Turabye menyaho cyane***	**Agree *Turabyemeranyaho***	**Disagree *Sibmyemera***	**Strongly *Disagree Simbyemera na gato***
1. Bilharzia is a disease that cannot be prevented	☐	☐	☐	☐

	Birariziyoze ni indwara idashora kwirindwa				
2.	Communication for behavior changes is the responsibility of public health staff and CHWs *Ubukangurambaga ni inshinganoz'abashinzwe ubuzima rusange n'anajyanama b'ubuzima*	☐	☐	☐	☐
3.	Defecting in the toilet is very important/*Kwituma mu musarane ni ingenzi*	☐	☐	☐	☐
4.	It is impossible to recover completely from bilharzia disease/*Ntibishoboka ko umuntu yakira burundu bilariziyoze*	☐	☐	☐	☐
5.	Everybody has the chance to be infected with bilharzia disease/*Umuntu uwari we wese yakwandura bilariziyoze*	☐	☐	☐	☐
6.	Person who once got bilharzia disease cannot get bilharzia disease again/*Umuntu warwayeho bilariziyoze ntashobora kongera kuyirwara*	☐	☐	☐	☐
7.	It doesn't matter is to urinate in water/*Kunyara mu mazi ntacyo bitwaye*	☐	☐	☐	☐
8.	It is important to learn about bilharzia/*Bifite akamaro kwiga ibijyane na biraziyoze*	☐	☐	☐	☐
9.	It is important to periodically screen for bilharzia/*Ni ngombwa gusuzuma bilariziyoze mugihe gihoraho*	☐	☐	☐	☐
10.	It is important to administer bilharzia tablets periodically/*Ni ngombwa gutanga ibinini bya bilariziyoze*	☐	☐	☐	☐

11. When I pass blood in urine/stool I should go to hospital/ *Igihe mbonye amaraso mu nkari/umwanda ukomeye ngomba kujya ku ivuriro*	☐	☐	☐	☐
12. Traditional medicines is the best treatment of bilharzia/*Bilariziyoze ivurwa neza n'ububuzi bwa gakondo*	☐	☐	☐	☐
13. You are one of the important people in preventing bilharzia transmission/ *Uri umwe mu bantu b'ingenzi mu kurwanya bilariziyoze*	☐	☐	☐	☐

C.3. PRACTICES TOWARDS BILHARZIA/*IMIGENZEREZE KU BIYJANYE NA BILARIZIYOZE*

Question/Variable	**Never** ***Nta na rimwe***	**Seldom** ***Gakeya***	**Always** ***Kenshi/Buri gihe***
1. Swim in river/lake/dam water/*Koga mu mugezi/ikiyaga/ibidendezi*	☐	☐	☐
2. Wash clothes or utensils in open water source/*Gufura imyenda cyangwa koza ibikoresho byo mu gikoni mu mazi y'imigezi cyangwa isoko.*	☐	☐	☐
3. Wear shoes when going outside/*Kwambara inkweto igihe uri hanze*	☐	☐	☐
4. Drink untreated water/*Kunywa amazi adasukuye*	☐	☐	☐
5. Seek treatment from clinic for GIT and urinary tract symptom/ *Kwivuza kwa muganga mu gihe hari ibimenyetso mu rwungano ngogozi n'urwinkari*	☐	☐	☐
6. Seeking traditional treatment for GIT and urinary tract symptom*/ Kwivuza mu buvuzi gakondo mu gihe hari ibimenyetso mu rwungano ngogozi n'urwinkari*	☐	☐	☐

7. Do nothing for GIT and urinary tract symptom/ *Kutagira igikorwa mu gihe hari ibimenyetso mu rwungano ngogozi n'urwinkari*	☐	☐	☐

CONSENT/ ASSENT FORM

Title: Elimination of Schistosomiasis in Rwanda: gaps related to knowledge, attitudes and practices in western Rwanda Introduction

The purpose of this form is to provide you (as the parent of a prospective research study participant) information that may affect your decision as to whether participate in this research study. The person performing the research will describe the study to you and answer all your questions. Read the information below and ask any questions you might have before deciding whether or not to take part. If you decide to be involved in this study, this form will be used to record your permission.

Purpose of the Study

If you agree, you will be asked to participate in a research study about **Elimination of Schistosomiasis in Rwanda: gaps related to knowledge, attitudes and practices in western Rwanda.** The purpose of this study is to **assess the gaps related to knowledge, attitudes and practices to find out gaps for capacity building in Schistosomiasis Knowledge, attitude and practices towards country elimination target.**

If you participate in this study, you will be discussing with us about potential obstacles for a short time on your **Knowledge, attitude and practices towards schistosomiasis.**

- No biological or any other type of sample you will be taken
- This study will take **between 10 to 20 minutes.**

Participation and voluntary withdraw from the study

You participation is voluntary and you can withdraw without any further harm. If you feel uncomfortable during the interview, stop us and ask your concern. If you are not satisfied you can stop the interview without any harm or nuisance to your well-being in the society or school.

Risks and benefits

There is no risk associated with your participation in this research. Although you will receive no direct benefits. The results of this research will be a guide for planners and program managers in the health and education sectors.

Confidentiality

Your participation in the research and all information collected about you will be kept strictly confidential. You will be identified by unique identity number known only by the staff responsible for this research. In addition to this staff, people from the National Ethics Committee should check the records to make sure that the survey was conducted properly. They must respect your confidentiality. Your identity will not be disclosed in any publication or presentation of this research.

Prior, during or after your participation you can contact the research Team Leader, Jean Bosco MBONIGABA on 0788609068 for any questions or if you feel that you have been harmed.

This study has been reviewed and approved by The Rwanda national Ethics Committee. For questions about your rights or any dissatisfaction with any part of this study, you can contact, anonymously if you wish, the chairperson of the Rwanda National Ethics Committee (RNEC): Dr. Mazarati Jean Baptiste at 0788309807 or the RNEC Secretary: Dr. Tumusiime David at 0788749398

Signature

I ……

Village:……..,
Cell:…….., Sector:……..……,
District:……

I have been informed about this survey and its possible benefits (and no risks).

I hereby agree to take part in this research as a subject. I recognize that my consent to participate is voluntary and that I am free to withdraw this consent and quit this project at any time, and that doing so will not cause me any penalty or loss of benefits that I would otherwise be entitled to enjoy.

Signature of Participant | Date

_____ | _____

Signature of Witness (when a minor) | Date

_____ | _____