

**PILOT PROJECT ON
NEGLECTED TROPICAL DISEASES**

ENDLINE EVALUATION REPORT

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ACRONYMS/ABBREVIATIONS

COVID-19	Corona Virus Disease
KAP	Knowledge Attitude and Practice
LGA	Local Government Area
MoH	Ministry of Health
NTDs	Neglected Tropical Diseases
WHO	World Health Organisation
YEDI	Youth Empowerment and Development Initiative

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1. INTRODUCTION

The World Health Organization classified various communicable diseases linked to poverty and sanitary conditions of communities, occurring in 149 tropical and sub-tropical countries of the world as Neglected Tropical Diseases (NTDs). Most common of these diseases are: Buruli ulcer, chagas disease, dengue and chikungunya, dracunculosis, echinococcosis, endemic treponematoses (yaws), lymphatic filariasis, trypanosomiasis also referred to as sleeping sickness, river blindness, rabies, leprosy, schistosomiasis, leishmaniasis, trematodiosis, trachoma and taeniasis. Others include helminthiasis (ascariasis, trichiuriasis and hookworm infections), taenia/cysticercosis and trachoma, trachoma, rabies and mycetoma (WHO, 2009).

The general burden of NTDs on the growth of sub-Saharan Africa cannot be over-emphasized because, NTDs have become a scourge eating deep into the fabric of economic development (Conteh *et al*, 2010), and exert vast strain on pregnancy outcome, child development and national productivity (Federal Ministry of Health, 2015; Olamiju *et al*, 2014; Hotez and Kamath, 2009; Hotez *et al*, 2007; Molyneux *et al*, 2005). Hotez *et al* (2012) estimated that about 500 million children are affected by NTDs in sub-Saharan Africa including Nigeria, the diseases which are prevalent among poor rural and some disadvantaged urban populations has disabled and caused various infections in the community, accounting for 1.25 million of the African disease burden (Federal Ministry of Health, 2015). According to Global Alliance to Eliminate Lymphatic Filariasis (2005), elephantiasis is the most prevalent NTD in Nigeria, with an estimation of 106 million populace in danger, followed by ascariasis which infects about 55 million people (de Silva *et al*, 2003), hookworm with an estimated 38 million infected persons, and trichuriasis with an estimated 34 million infected persons (de Silva *et al*, 2003). Schistosomiasis accounted for 29 million infected persons (Steinmann *et al*, 2006),

Neglected Tropical Diseases are of significant concern to the society at large and public health in particular. The diseases are mostly neglected and awareness is often low. NTDs often result in social stigma for those affected and in extreme cases, social stigmatization can lead to impaired mental health, dampen the self-esteem and eventually reduce the economic prospects of such a person. In line with the above, YEDI's pilot intervention was aimed at reducing the risk of NTDs by improving NTDs knowledge and awareness.

1.1 Objectives of the Evaluation

This evaluation was undertaken to assess the input indicators, the process indicators, the output indicators as well as the impact of the interventions on both the primary and secondary beneficiaries of this NTDs awareness pilot project, in the selected schools in Kosofe Local Government Area (LGA) of Lagos State where the project is being implemented.

1.1.1 Primary Objectives

The primary objectives of the evaluation are to:

1. Reduce the risk of NTDs infection by improving NTDs knowledge and awareness through the delivery of football inspired health education to students.
2. Organize a multiplier football event that involves delegations of youth from the targeted areas in Lagos featuring workshops, cultural activities and a fair play football tournament that will efficiently carry health-related messages and provide public exposure.
3. Determine proof of concept and conduct impact assessment.

1.2 Description of YEDI Core Tasks

In the course of the evaluation, the implementing organization YEDI:

- Involved school-aged children and young adults from vulnerable communities in the program and enable them to act as role models in their communities, promoting health education practices that reduce the risk of NTD transmission, demand treatment, and positively impact future health and education outcomes as well as youth welfare.
- Infused the use of football/SKILLZ approach in the delivery of the NTDs preventive messaging to students and community members.
- Organized a football event that involves delegations of youth from the target project community and schools - featuring workshops, cultural activities and a fair play football tournament that will efficiently carry health-related messages and provide public exposure.
- Performed monitoring and evaluation to collect baseline data on behaviour change during the course of the pilot phase. The M&E provided the foundation for further ongoing activities and potential expansion to other locations in the future.

1.3 Implementation Steps

Objective 1:

Reduce the risk of NTD infection by improving NTD knowledge and awareness through the delivery of football inspired health education to students.

1.3.1 Securing Project & School Approval

- Lagos MOH/ NTDs department facilitated YEDI's approval/ entry to implement the project in 3 target schools by liaising / writing the Education District.
- Lagos MOH/NTDs department also determined the project target location based on data on NTDs prevalence in Lagos.

1.3.2 Training of Trainers

- Lagos MOH/NTDs Health Educator determined the relevant IEC content required for the NTDs awareness curriculum for Lagos State.
- The implementing organization, YEDI provided a venue for the one-day stake holders training on awareness, knowledge and prevention messaging on the three state-relevant NTDs led by the Lagos State NTDs Health Educators.
- YEDI led the cascade of the specified NTDs messaging in selected schools and communities - using its football approach to support the key messaging delivery to students and community residents.

1.3.3 Training of Students

- YEDI coaches, trained on the NTDs messaging, were deployed to the three (3) targeted project schools to cascade the preventive messaging to the estimated students per school- sessions lasted for a 2-hour duration, spanning a maximum of 5 meetings, not exceeding 2 weeks engagement in each school.

1.3.4 Project Monitoring/Student KAP Assessment

- The project assessment was conducted using surveys, group discussions and participatory techniques.
- Project Completion Report; Submission of Report by YEDI

Objective 2

Organize a football event that involves delegations of youth from the targeted areas in Lagos featuring workshops, cultural activities and a fair play football tournament that will efficiently carry health-related messages and provide public exposure.

1.3.5 Festival/Community Outreach Site Sourcing

- YEDI through the support of the Lagos State Government and community leaders/local decision-makers determined a safe space to host the football event within the project target community. The Festival convened representatives (students/teachers) from schools engaged in the NTDs training and community residents.

1.3.6 Festival Execution Fair Play Soccer/ Behaviour Change Messaging/Health Services

- YEDI through SFW support conducted the festival, which convened 500 community residents and other relevant health and media stakeholders along with the community leaders to participate in the event.
- Four community-based football teams (male & female) played a fair play match using the football rules and also learnt about NTDs prevention.
- Lagos MoH and YEDI provided NTDs messages, counselling and other related basic health services within the event.

Objective 3

Determine proof of concept and conduct impact assessment

1.3.7 Engaging Project Researcher & Project Design Review

- YEDI supported END Fund to identify a competent researcher.

1.3.8 Project Assessment and Impact Measurement

- END Fund hired NTDs Expert, guided the assessment, led the impact measurement and provided a detailed report to END Fund and core stakeholders.

1.4 Outputs/Outcomes

At the end of the evaluation studies:

- a) Lagos State Ministry of Health NTDs Health Educators trained identified stakeholders on NTDs awareness and prevention messaging: YEDI gained relevant knowledge on NTDs needed to infuse its football approach into the prevention messaging.
- b) YEDI led NTDs preventive messaging, using its football approach, was delivered in 3 selected schools reaching 2000 school-aged children and young adults, aged 10 to 15 years. Students gained knowledge on identification and prevention of the 3# focus NTDs contributing to a reduced risk of transmission and thus NTD infection.
- c) YEDI hosted one Community Health Outreach with Football3 Fair Play Tournaments reaching 500 community residents: Community residents present at outreach gained awareness and knowledge on NTDs - transmission and prevention, and recognized steps for improving their healthy behaviour and practices contributing to a reduced risk of NTD transmission in target community.

1.5 Key Indicators for assessing the impact of the programme

1.5.1 Coaches/Trainers in the YEDI's NTD Awareness Pilot Project Curriculum

1. Percentage of coaches/trainers who correctly and effectively delivered the curriculum increased.

1.5.2 Knowledge and Attitude related to NTDs

1. Percentage of students who gained knowledge on identification and prevention of the three (3) focus NTDs contributing to a reduced risk of transmission and thus NTDs infection increased. The follow-up study also revealed that there was knowledge retention on the part of the students and change in attitude of few community members
2. Percentage of community residents present at outreach who gained awareness and knowledge on NTDs- transmission and prevention, and recognize steps for improving their healthy behaviour and practices increased.
3. Percentage of participants who can correctly identify at least 3 ways of preventing NTDs increased.
4. Percentage of participants who indicated a change in perception of NTDs increased.

5. Percentage of participants, particularly the students engaged in community service project(s) to improve their local community increased.

2. METHODOLOGY

2.1 Study design

The study adopted a triangulated quasi-experimental research design involving cross-sectional survey, key informant interview (KII), focus group discussions (FGD), and observation to assess the input indicators, the process indicators, the output indicators as well as the impact of the YEDI's NTDs Awareness Pilot Project on the participants in the selected schools. The pilot evaluation covered a period of 5 months, while the other round of evaluation aimed at assessing the level of retention of NTDs messages received by the student participants during the intervention phase was extended beyond 6 months as scheduled, due to COVID-19 pandemic.

2.2 Study location

The YEDI's NTDs Awareness Pilot Project was implemented in Kosofe Local Government Area (LGA) of Lagos state, Nigeria. For proper evaluation and location specific assessment of impact and challenges, the evaluation focused on three secondary schools and four communities where the project was being implemented. They are:

- a) Comprehensive High School, Alapere.
- b) Immaculate Heart Junior High School, Maryland.
- c) Ikosi Junior High School, Ketu.
- d) Alapere
- e) Ikosi Ketu
- f) Maryland
- g) Oworosoki

2.3 Study population

The primary target population for the cross-sectional survey were adolescent school boys and girls aged 10-15 years in selected schools in the Kosofe LGA, Lagos State where the intervention was carried out. The secondary target population for the evaluation comprises of trainers, State and LGA officials/political decision-makers, community leaders/decision makers and community residents present at Community Health Outreach events on NTDs Awareness.

2.4 Tools development, pre-study training and pre-test of tools

The tools used in the project lifespan were developed before the pre-study training that held for one day after which the tools were pre-tested and re-modified to suite the purpose of the study respectively. For the follow-up evaluation, the tools were modified to include more questions on practices and knowledge on COVID-19.

The challenges with tools were addressed to ensure they elicit the appropriate response to each of the questions.

Research Assistants (RAs) who were post-graduate students with vast experience in research activities were used for the data collection, throughout the span of the study. They were trained before the field work in order to ensure credibility, reliability and precision of data collected. The RAs' fieldwork activities were closely supervised and monitored all through the period of the evaluation.

2.5 Data collection procedures

In the pre-intervention phase, survey, focus group discussions (FGDs), in-depth interviews (IDIs) and key informant interviews (KIIs) were conducted to collect baseline data prior to the intervention activities that covered a period of two weeks.

The post-intervention phase was conducted after the intervention activities to assess and determine the effect of the intervention activities on the students mirroring the data collection procedures of the pre-intervention.

The other round of evaluation aimed at assessing the level of retention of NTDs messages received by the student participants during the intervention phase was extended beyond 6 months as scheduled, due to COVID-19 pandemic.

2.5.1 Focus group discussions, in-depth interviews and key informant interviews

Participants for the FGDs, IDIs and KIIs in the pre-intervention, the post-intervention and the follow-up study were selected using purposive sampling. The qualitative study was conducted among student, teachers and adult community members of communities where the schools and students involved in the training interventions are domiciled. The sampling was done to reflect gender balance. For the pre-intervention phase of the study, a total of 28 FGDs, 12 IDIs and 10 KIIs were conducted. In the post-intervention phase, 14 FGDs, 6 IDIs and 5 KIIs were conducted while for the follow-up study, a total of 5 FGDs (3 adult male

groups and 2 adult female groups), 14 IDIs of which, 8 IDIs (4 males and 4 females) were conducted among parents in the communities while 6 IDIs (3 males and 3 females) were conducted among the students in the schools. The ages of the FGD participants ranged from 31 to 70 years with an average age of 42.6 years (45.6 years males vs. 39.8 years females). Each FGD, IDI and KII session was tape-recorded, discussion and interview session was held in a comfortable and neutral setting, with the FGDs consisting of an average of 7-8 participants with similar social background plus a moderator and an observer who equally served as a note taker of the discussion.

2.5.2 Cross-sectional survey

Two hundred and forty-two [242] and Two hundred and twenty-five [225] of the 1,500 secondary school students (adolescent boys and girls aged 10-15 years) were proportionally sampled for the cross-sectional survey in the schools where the project is running pre- and post-intervention respectively. The respondents for each category of the study population were sampled using stratified and systematic random sampling methods using the class registers as the sampling frame.

For the follow-up study, a total of 58 students were interviewed in the schools using the questionnaire used in the pre- and post-intervention phases with some modifications probing the efforts the students have made to cascade the information learnt during the intervention trainings to people in the communities. In this follow-up study, only JSS 3 students in each of the 3 schools studied were assessed to know their level of retention given the restriction on the number of students allowed in schools in adherence to the government's social distancing directive as a way of preventing COVID-19. The distribution of the respondents based on their school is shown on Table 1 below.

Table 2.1 Distribution of students selected for training and those surveyed per school

Schools	Expected number to be trained	Total number selected for survey		
		Pre-intervention	Post-intervention	Follow-up Study
Immaculate Heart Junior High School, Maryland	500	80	79	19
Ikosi Junior High School, Ikosi-Ketu	500	80	70	17
Comprehensive Junior High School, Alapere	500	82	76	22
Total	1,500	242	225	58

2.5.3 Observation

Two observations of training sessions were carried out during the implementation of the project (Pre and Post evaluation). An observation guide was used in observing the process of delivering the contents of the training modules by the coaches to the athletes vis-a-vis the mode and method(s) adopted by the coaches in the dissemination of the messages, the delivery process, level of participation and interaction of the students, and how the students were able to internalize the messages during the training sessions. It was ensured that the observation did not in any way obstruct the session activities of the coaches and the students. Lessons learnt were communicated to the coaches at the end of the observed session in order to improve the delivery the contents of the modules in subsequent sessions.

For the follow-up evaluation phase, no observation was carried out as there were no implementations of activities, due to the effect of COVID-19 pandemic.

2.5.4 Data analysis

The quantitative data obtained, were entered into a computer by a data entry clerk and the data was later cleaned. Proportions were determined from all quantitative data obtained from structured questionnaires. The Statistical Package for Social Sciences (SPSS) software Version 23.0 was used for data entry and analyses.

In the same structure, the qualitative data collected through the recordings of the FGDs, IDIs and KIIs were recorded and later transcribed by two trained transcribers. The qualitative data for the study were analyzed through textual analysis using NVIVO software. In analysing the data, the tapes of responses from participants of the FGDs, IDIs and KIIs were first transcribed and typed accordingly. The transcripts were subsequently summarised, categorised, coded and sorted into text segments according to similarities and differences in individual opinions and views. It was possible to then synthesize, sort and then compare patterns of opinions and views as discussed by the respondents.

2.5.5. Measures adopted during the follow-up evaluation to prevent COVID-19

Knowing that COVID-19 primarily spread through respiratory droplets when an infected person coughs, sneezes or talks usually within a distance radius below two metres, the personal protective measures that were adopted during the follow-up study to reduce the risk of infection of COVID-19 among members of the research team that included the supervisors and research assistants and by extension, the students and community residents interviewed are:

1. The supervisors and research assistants wore both face masks protection from exposure to infection. Similarly, the students and community residents were ensured to wear face masks too during in-depth interviews (IDIs) and focus group discussions (FGDs).
2. Each supervisor and research assistant had a bottle of alcohol-based hand sanitizer for regular disinfection of hands. The hand sanitizers were used by the respondents too before the commencement of IDIs and FGDs.
3. Maintenance of a minimum of 2-metre social and physical distancing was observed by the research assistants among themselves and during their interaction with the respondents in the field.

2.5.6 Feedback from observational study about the programme

For the pre- and post-evaluation, the feedback from the NTD Awareness Pilot Project based on each of the indicators and outcomes of the evaluation through observation guide used include the followings:

i) Level of participation or active involvement of students observed

The approaches or strategies adopted by the coaches in the three schools that were visited were very interactive and participatory. They were mostly indoor activities involving tutorials and discussions to communicate relevant messages on elephantiasis, schistosomiasis and soil transmitted helminths. All the coaches demonstrated commendable levels of commitment, enthusiasm and friendship with the students. This also made the students quite enthusiastic, active and involved. Many of them saw their typical sessions as fun and showed sustained happiness while the sessions lasted. Interactions with some of the students and teachers of the three schools corroborated the fact that the children enjoyed the sessions.

ii) Duration of sessions with students

A typical session in most of the school visited lasted for about 60 minutes (1 hour). This became an issue against the backdrop of the common understanding that the concentration span of this class of people is usually short, a reason why each of their regular lesson periods would usually not exceed 30 minutes. This also raised some concern among the observation team especially when it was observed that a male athlete in one of the schools visited made attempts to leave the session before it ended. The activities in the training guidelines were divided and made into an hour training session for two days. The children actually enjoyed the sessions given the high level of conversation had during the question-and-answer sessions of the “Talk Shows”. None of the students was observed to be bored throughout the duration of sessions covered.

iii) Relevance and adequacy of content/messages and language of communication

The content/messages that were communicated to the students were adequate and relevant. The messages on the three diseases focused on for example reflected everyday realities which the students could relate to but did not previously have good knowledge about. Many of the students could make meaning out of many of the terms used by the coaches and their definitions as given in the module. The use of some hip hop terms (slangs) for example the adaptation of Korede Bello’s popular hit song “*I don* get alert, God win” in stimulating the attention of the students to engage them and the fusion of some hip hop culture in rewarding brilliant responses to questions such as clapping moves and which the students were observed to be very comfortable with made communication better during the sessions. There were no variations in the implementation of the intervention programme within the schools visited.

The contents of the training modules for the intervention activities were strictly adhered to by the coaches.

iv) Level of familiarity of coaches with the module

It was observed also that the coaches had good grasp of the messages from the module and their language of the module was simplified for the students to comprehend. This made communication between the coaches and the students less problematic.

The observation was an indication of mastery and familiarity of the messages of the training modules. The observed variation in the delivery of the messages however did not in any way affect the accuracy of messages being passed across to the students. The coaches possibly did this in context of the class they were in at a particular time putting the messages in the languages they thought the students would understand, and they did a good job of this.

v) Extent and quality use of game materials, pictorial or audio-visual aids

One important inadequacy of the sessions observed was the obvious lack of field use contrary to plan, and pictorial or audio-visual aids to help drive the messages home. These are certainly inadequate as this age group of students learn better by the aid of audio visuals. The teaching materials listed for use in the training sessions in the training curriculum were a 30-meter by 30-meter field/playground and cones, but these were not used. Rather the training activities were held in the students' classrooms which had an average of about 65 students under the tutelage of two coaches. This explains why the sessions were seen to be bit rowdy which gave the coaches some stress trying to put the students under constant check. The coach-student ratio is obviously high for ideal effective learning condition.

Similar training sessions in future therefore need to involve less coach-student ratios and additional use of audio-visual aids in facilitating the training of the students. The use of these in facilitating the passage of messages on the NTDs is believed to leave a long lasting impression in the minds and memories of the children. It is believed that school children tend to believe what they see than just hear through mere health talk and discussion, which was the adopted strategy of passing the messages in the schools studied.

vi) Cultural sensitivity of message/concepts

All the students who listened to the terms and messages communicated to them during the training sessions felt comfortable with the expressions used by the coaches in conveying messages about NTDs to the students.

vii) Timing of sessions in the schools

The timing of the training sessions were observed to be appropriate given that the sessions held only during or close to breaks in the schools.

viii) Length of intervention

The schedule of intervention visits indicated that there were simultaneous sessions of intervention activities in all the selected arms of classes from JSS 1 to JSS 3 during the two days earmarked for the intervention in each of the schools where this project took place. Each of these sessions lasted for about one hour.

ix) Sustainability plan

Discussions with the teachers post-intervention in the three schools visited indicated that none of them had the training module and that they were also not actively involved in the intervention activities. This raised concerns about future sustainability and continuity of the ideals of the NTD Awareness Pilot Project after its completion. The head teachers and class teachers would have loved to continue with the messages if they had the module and were given roles to play during the training activities carried out by the coaches with the students.

2.5.7. Strengths and weaknesses of the approach utilized in the pre-, post- and final-evaluation study

- Strength

The importance of the school environment in promoting physical and health activity cannot be overemphasized as children spend a considerable number of hours within the school environment every weekday.

1. The strength of the Talk show approach lies in its participatory outlook.
2. The adoption and fusion of hip-hop culture in the implementation of the intervention activities as a means of engaging the students being a young population by the coaches is commendable and enhanced the participatory outlook of sessions.
3. The students were able to participate actively in the sessions because of this. The coaches were also quite knowledgeable, committed, friendly and well loved by the students.

- Weaknesses

The weaknesses of the approach as observed are as follows:

1. The absence of materials stipulated for use in the training module and audio-visual aids to help drive the messages home.
2. Some of the coaches were too fast for the students, probably because of the need to accomplish the day's task within the 1-hour time limit allotted per session.
3. The high coach-student ratio which made some of the sessions to be a bit rowdy.
4. The project does not seem to have sustainability plan as the teachers in the schools were not involved in the intervention activities.
5. Only the coaches had the manuals. This made it difficult for some students to relate properly with what they were being told about the diseases. It would perhaps have been different if they had had access to abridged copies of the manual, hand bills or an audio-visual alternative that have similar messages.
6. No form of refreshments was provided for the students at the end of the sessions.

2.5.8 Challenges faced in the data gathering process

The COVID-19 was indeed a challenge to the timely collection of data from participants. The team had to ensure compliance to all the COVID-19 precautions.

3. RESULTS

3.1 QUANTITATIVE RESULTS

Table 3.1 Respondents' demographic characteristics for follow-up Study

Characteristics	Number	Percent
Sex		
Male	29	50.0
Female	29	50.0
Total	58	100.0
Age group		
9-12 years	3	5.2
13-15 years	50	86.2
> 15 years	3	5.2
Missing	2	3.4
Total	58	100.0
Class		
JSS 3	57	98.3
Missing	1	1.7

Total	58	100.0
Religion		
Christianity	43	74.1
Islam	15	25.9
Total	58	100.0
Father's occupation		
Unemployed	7	12.1
Retired	3	5.2
Artisan (e.g. carpenter, hairdresser, etc.)	12	20.7
Formally employed in public sector (e.g. civil servant)	12	20.7
Trading	10	17.2
Formally employed in private sector (e.g. banker)	6	10.3
Importer	1	1.7
Security guard	1	1.7
Self employed	1	1.7
Transporter	1	1.7
Company worker	1	1.7
Missing	3	5.2
Total	58	100.0
Mother's occupation		
Unemployed	2	3.4
Characteristics		
	Number	Percent
Retired	2	3.4
Artisan (e.g. carpenter, hairdresser, etc.)	13	22.4
Formally employed in public sector (e.g. civil servant)	4	6.9
Trading	29	50.0
Formally employed in private sector (e.g. banker)	2	3.4
Cleric	1	1.7
Marketing	1	1.7
Nursing	1	1.7
Secretary	1	1.7
Missing	2	3.4
Total	58	100.0
Marital status of parent/guardian		
Single	4	6.9
Married	45	77.6
Separated	3	5.2
Divorced	1	1.7
Widowed	4	6.9
Missing	1	1.7

Total	58	100.0
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The study had a total of 58 respondents from three secondary schools in Kosofe Local Government Area of Lagos State. Half (50.0%) of the respondents were males and the other half (50.0%) females. Majority (86.2%) of respondents were within the age group 13-15 years, 5.2% were within ages 9-12 years while the remainder (5.2%) were aged 15 years and above. Almost all (98.3%) of respondents were in JSS 3. Significant proportion (74.1%) of the respondents were Christians while 25.9% were Muslims. See details of other demographic characteristics in Table 3.1.

3.1.1 Respondents' Knowledge of Elephantiasis

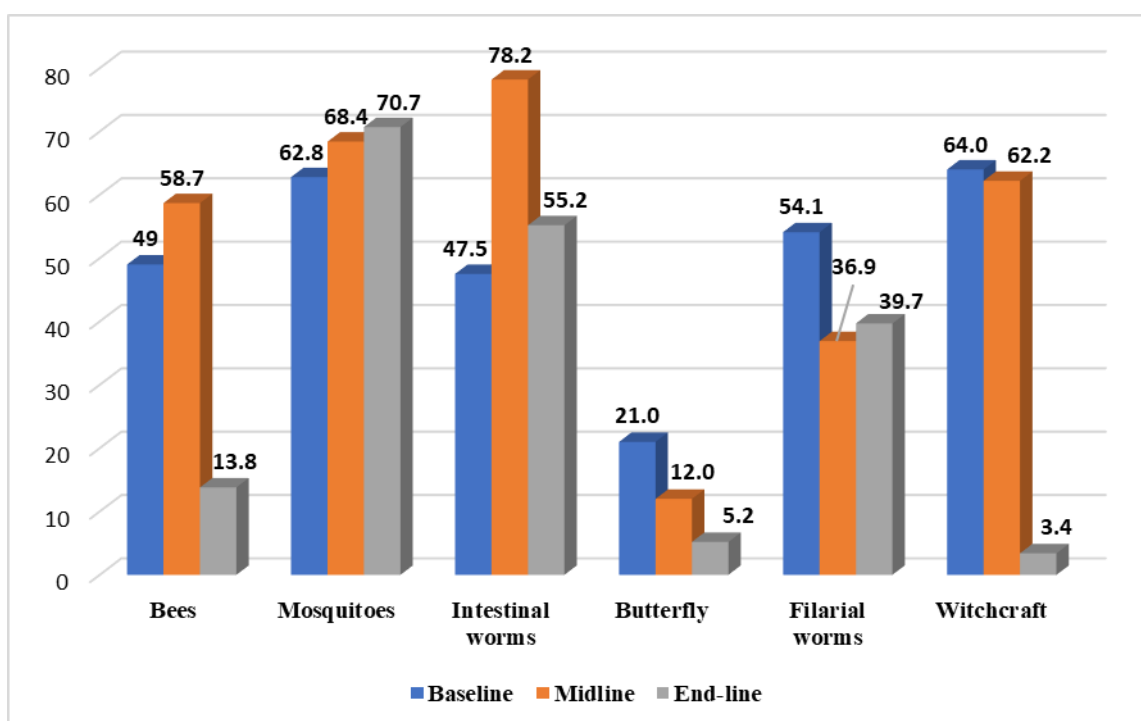


Figure 3.1 Respondents' knowledge of the cause of Elephantiasis

A large proportion (70.7%) of the respondents said Elephantiasis was caused by mosquitoes. An increase was observed from the baseline in which 62.8% of respondents said Elephantiasis was caused by mosquitoes. A decline in those who said Elephantiasis was caused by filarial worms was noticed at end-line (39.7%) compared to baseline (54.1%). A significant decline was observed at end-line among respondents who said Elephantiasis was caused by butterfly and witchcraft. See Figure 3.1 for details. Although the proportion of respondents who said

Elephantiasis was caused by intestinal worms rose significantly at midline (47.5% at baseline to 78.2% midline), decline to 47.5% of respondents was observed at end-line.

Table 3.2. Respondents who correctly answered questions on Elephantiasis

Statement	Phase		
	Baseline	Midline	End-line
Elephantiasis is also known as Lymphatic Filariasis	42.6%	58.7%	70.7%
Elephantiasis is an animal disease	32.2%	48.0%	56.9%
All insect bite cause elephantiasis	64.9%	73.8%	81.0%
An uninfected female Anopheles' mosquito spreads the roundworm larvae that cause elephantiasis	30.2%	41.8%	48.3%
A person would have to be bitten by a lot of mosquitoes over a long time to get elephantiasis	44.6%	57.3%	38.6%
The arms and legs of infected persons can swell and become much bigger than they should be	70.2%	91.1%	94.8%
Elephantiasis causes swollen limb(s)/breast(s)/scrotum	52.9%	64.9%	60.3%
The affected skin thickens and hardens to resemble an elephant's skin	39.3%	73.3%	51.7%
Elephantiasis is not preventable	53.7%	70.2%	77.2%
Using the insecticide-treated mosquito net is the most effective way of avoiding elephantiasis	57.0%	81.8%	63.2%
Draining of stagnant water where mosquitoes can breed can prevent elephantiasis	41.3%	60.9%	49.1%
Not taking deworming pills/tablets/medicine when treatment is taking place puts one at risk of elephantiasis	48.3%	54.2%	53.4%
The absence of the signs and symptoms of elephantiasis means the disease is not present in a person	33.9%	37.8%	53.4%
Those who have developed swollen limbs (elephantiasis) should wash them whenever they like.	48.8%	59.6%	70.7%
Those who have developed swollen limbs (elephantiasis) should avoid raising the legs regularly while sitting	38.4%	45.3%	51.7%

Elephantiasis can be transmitted directly from person to person	30.6%	37.9%	37.9%
Elephantiasis is not treatable	56.6%	69.3%	84.2%
The adult worms causing elephantiasis live in the human brain or the legs.	21.9%	77.8%	36.2%

Table 3.2 shows overall increase in proportion of respondents who had correct knowledge of elephantiasis. In few instances, a decline was observed among respondents who correctly responded to statements about transmission of elephantiasis for example, with respect to the statement, ‘*A person would have to be bitten by a lot of mosquitoes over a long time to get elephantiasis*’ 44.6% of respondents correctly responded at baseline, an increase in proportion (57.3%) was observed at midline while a decline (38.6%) in proportion of correct responses was observed at end-line. Respondents’ correct response to the statement, ‘*Elephantiasis causes swollen limb(s)/breast(s)/scrotum*’ also declined from 64.9% at midline to 60.3% end-line, although both midline and end-line showed an increase from baseline of 52.9%.

3.1.2 Knowledge of Schistosomiasis

Table 3.3 Respondents who correctly responded to statements on Schistosomiasis

Statement	Phase		
	Baseline	Midline	End-line
Schistosomiasis is a tropical disease caused by parasitic worms.	24.6%	40%	82.5%
Insect bite causes Schistosomiasis	16.5%	20.8%	51.7%
Schistosomiasis is not preventable.	15.05%	25.8%	81.0%
Schistosomiasis is an air-borne disease	28.3%	30.4%	38.6%
The worm or fluke that causes schistosomiasis affects the intestines or the urinary system.	25.85%	39.4%	80.4%

The worm or fluke that causes schistosomiasis lives in the blood vessels; it can harm other systems in the body	8.2%	5.2%	86.2%
The larvae of worm that causes schistosomiasis penetrates the skin and travels through the body to the intestines or bladder.	26.3%	38.1%	72.4%
Those who have been infected with schistosomiasis for a long time may experience infertility and or bladder cancer.	28.9%	36.1%	63.8%
Statement	Intervention		
	Baseline	Mid-line	End-line
Schistosomiasis is treatable.	28.9%	36.8%	87.9%
In children, schistosomiasis may cause poor growth and learning difficulty.	34.25%	41.2%	81.0%

Table 3.3 shows respondents' responses to statements to assess their knowledge of schistosomiasis. The statements centred on the nature, causes and effects of Schistosomiasis on growth and development. The respondents were required to respond with 'Yes' or 'No' to each statement. Correct responses from the respondents are featured in the table.

There was an increase in proportion of respondents who correctly responded to the statements from baseline to end-line. Although a steady increase was observed from baseline to end-line among respondents who correctly responded to the statement on the mode of transmission of schistosomiasis (i.e. *schistosomiasis is an air-borne disease*) a significant proportion responded incorrectly to the statement. See details in Table 3.3 above

Table 3.4 Respondents’ knowledge on transmission of schistosomiasis

Statement	Phase		
	Baseline	Midline	End-line
Schistosomiasis is spread by contact with ponds and lakes contaminated with the parasites.	39%	46.1%	75.9%
The eggs that do pass back into the environment from infected persons can subsequently infect others.	36.4%	44.1%	65.6%
Swimming or walking through freshwater in our community can make us have schistosomiasis.	12.8%	24.9%	43.1%
Indiscriminate open urination and defecation particularly near/in fresh water are practices that should be discouraged.	33.65%	40%	64.3%
Schistosomiasis infection is acquired when people come into contact with fresh water infested with the larval forms known as schistosomes.	31.8%	41.1%	70.7%
Making available clean water for personal and domestic use reduces the risk of schistosomes.	39.4%	41.3%	75.8%
Schistosomiasis cannot be transmitted directly from person to person.	25%	24.6%	58.7%

Table 3.4 shows a list of statements on transmission of schistosomiasis. Respondents were required to agree or disagree with the statements. Respondents who correctly replied each statement are displayed in the table. A general increase was observed in knowledge of transmission of schistosomiasis among the respondents. The most significant of these was the statement, ‘*Schistosomiasis is spread by contact with ponds and lakes contaminated with the parasites*’ which moved from 39% at baseline to 75.9% at end-line.

3.1.4 Knowledge of soil-transmitted helminths

Table 3.5 Respondents' knowledge on transmission of helminths

Statement	Phase		
	Baseline	Midline	End-line
Soil-transmitted helminths cause swollen limb(s)/breast(s)/scrotum.	34.7%	47.2%	33.2%
Soil-transmitted helminths are not preventable.	52.1%	63.7%	69.0%
Not taking deworming pills/tablets/medicine when treatment is taking place puts one at risk of intestinal worms.	55.1%	65.1%	70.7%
The absence of the signs and symptoms means the disease is not present in a person.	25.5%	36.1%	46.6%
Soil-transmitted helminths are air-borne diseases	29.4%	32.9%	43.1%
Intestinal worm infection can only be contracted through contact with the soil.	77.6%	83.4%	37.9%
All of us can do something to stop the spread of intestinal worms	57.8%	69.3%	74.1%
Diarrhoea is a symptom of intestinal worms.	49.8%	62.8%	51.7%
Hookworm causes chronic intestinal blood loss that result in anaemia.	63.7%	77.3%	69.0%
Soil-transmitted helminths are found more in areas where sanitation is poor.	38.1%	34.1%	87.9%
I can get intestinal worms from touching someone with elephantiasis also known as Lymphatic filariasis.	50.6%	66.4%	56.9%
Soil-transmitted helminths are not treatable.	32.6%	21.9%	81.0%

Table 3.5 shows the proportion of respondents who correctly responded to statements on the nature, mode of transmission and symptom of soil-transmitted helminths. An increase in proportion of respondents knowledgeable about soil-transmitted helminths was observed at end-line compared to baseline, although a few dropped from higher proportion at mid-line. For example, 49.8% of the respondents correctly responded to the statement, '*Diarrhoea is a symptom of intestinal worms*' at baseline. This increased at mid-line to 62.8% but dropped to 51.7% at end-line. This trend was noticed for few other statements such as '*Soil-transmitted helminths cause swollen limb(s)/breast(s)/scrotum*' and '*Hookworm causes chronic intestinal*

blood loss that result in anaemia'. The most improved knowledge was with the statement “*Soil-transmitted helminths are found more in areas where sanitation is poor*” which was 38.1% at baseline, 34.1% at midline and 87.9% at end-line. A decrease in proportion of correct responses was observed with the statement, ‘*Intestinal worm infection can only be contracted through contact with the soil*’. See details in Table 3.5.

Table 3.6 Knowledge of soil transmitted helminths

Statement	Phase		
	Baseline	Midline	End-line
Hands should be washed before meals, and after urinating and defecating.	98.5%	94.7%	74.1%
Intestinal worm eggs need to be in soil for a period of time before becoming infective.	33.2%	48.8%	65.5%
The eggs that do pass back into the environment from infected persons can subsequently infect others.	42.3%	50%	62.1%
Regular hand washing prevents soil-transmitted helminths.	42.6%	53.1%	70.7%
Indiscriminate open defecation is a bad practice that should be encouraged to reduce soil-transmitted helminths.	48.4%	52.2%	51.7%
Soil-transmitted helminths can be transmitted through eating of contaminated food e.g. vegetables that are not carefully cooked, washed or peeled.	46.1%	62.8%	70.2%
Making available clean water for personal and domestic use reduces the risk of soil-transmitted helminths.	46.1%	62.8%	74.1%
We can avoid soil-transmitted helminths through access to good sanitation which includes the use of functioning and clean toilets.	35.6%	48.4%	67.3%
Wearing of shoes protects one from soil-transmitted helminths.	25.3%	41.1%	70.7%
Intestinal worms cannot be transmitted directly from person to person.	47.6%	62.7%	56.9%
All of us can protect ourselves and our community from intestinal worms.	92.7%	95.8%	75.8%

Table 3.6 shows positive responses to key statements indicating improved knowledge on pre-disposing factors and means of preventing transmission of soil helminths among the pupils interviewed. Respondents were required to agree or disagree with the statements in the table. There was generally an improvement in the opinion of respondents on soil-transmitted helminths at end-line compared to baseline. In few instances, opinion of respondents dropped at end-line compared to mid-line. For example, 95.8% of the respondents agreed to the statement, '*All of us can protect ourselves and our community from intestinal worms*' compared to 75.8% at end-line. A decline from 94.7% at midline to 74.1% was also observed for the statement, '*Hands should be washed before meals and after urinating and defecating*'.

In summary, there is an observed increase in knowledge of the diseases - elephantiasis, schistosomiasis and soil-transmitted helminths among the students. Improvement in knowledge appears to differ from one disease to another and even within different aspects of knowledge testing about the diseases. This may be due to various factors such as time allotted to teaching the topics, style of delivery/communication, complexity or simplicity of terms used in teaching, possibility of distractions during the sessions and time lag between baseline and end-line which could have affected their recall capacity.

3.2 QUALITATIVE FINDINGS

3.2.1 Socio-demographic characteristics of FGD participants and IDI respondents

A total of 50 and 49 students participated in the FGD sessions held in the pre-and post-intervention phase of the study respectively. Of the 50 students who participated pre-intervention, 50.0% were males and females respectively. Their ages ranged from 11 to 18 years with an average age of 13.6 years [male 14.0 years; 13.2 years].

For the post-intervention study, 49.0% and 51.0% were males and females respectively. Their ages ranged from 11 to 18 years with an average age of 13.4 years [male 13.8 years, female 13.0 years].

The final evaluation study had a total of 48 participants were involved in the FGDs and IDIs. Six (6) were students from Immaculate Heart Junior High School, Ikosi Junior High School and Comprehensive Junior High School Alapere while 42 were adult residents of Alapere,

Ikosi Ketu, Maryland and Oworosoki communities. Forty eight percent (48%) of the respondents interviewed were males while 52% were females.

3.2.2 Knowledge and perception of NTDs

Results from the qualitative data obtained through the FGDs and IDIs among the students showed a progression of “no knowledge” in the pre-intervention stage to “improvement in participants’ knowledge about NTDs” in the post-intervention phase and “proper retention of NTDs in the follow-up study. The study revealed that in the pre-intervention phase, none of the students who participated in the FGDs and those interviewed knew the full meaning of the acronym NTDs. This is contrary to the post-intervention phase, when more of the students could state the full meaning of the acronym. The knowledge of NTDs among a large number of the students, based on their ability to correctly define the acronyms NTDs improved significantly after the training. In the follow-up survey, the students’ retention of knowledge reflected in their ability to state the full meaning of the acronyms NTDs.

Many of the students in both the focus groups and interviews had misconceptions about the causes of the three diseases focused on in the study. These misconceptions were dispelled among majority of the students at post intervention and the follow-up study. Many of the students interviewed in group and as an individual understood the terms – elephantiasis, schistosomiasis and soil transmitted helminths better and demonstrated improved knowledge of the actual cause, signs and symptoms of the NTDs, how to prevent the diseases and tangible actions to take to remain healthy contrary to the poor knowledge they exhibited pre-intervention. The end-line evaluation also reflected that there was retention on knowledge on NTDs.

3.2.3. Knowledge, Attitude and Practice on elephantiasis

The follow-up study reflects a good retention of knowledge on NTDs among the community members and the students. The respondents clearly stated the signs and symptoms of elephantiasis with emphasis on the swelling of the affected leg, redness of the affected leg, inability to walk and the leg emitting offensive smell. They also listed various causes, best practices to protect themselves and demonstrated willingness to pass the knowledge obtained to other community members, relations and friends.

“Elephantiasis is a disease that affects human body that causes swelling in some body parts especially the legs. In terms of description, the legs will be fat and swollen, it inches and sometimes it smells and looks very rough at sight”.

IDI with Community, **Comprehensive Junior High School Alapere**

“Elephantiasis is a parasitic disease that causes the leg to be extraordinary big”. FGD with Community, **KETU IKOSI**

3.2.3.1. The cause of elephantiasis

From the follow-up study, the responses given by participants on their knowledge of what causes elephantiasis demonstrate that there are quite a number of factors that can cause the disease, ranging from the metaphysical factor popularly referred to as “spiritual attack” to intake of excess sugar, mosquito bites and contact with dirty contaminated water. However, it was observed that, most of the community members did not know what cause elephantiasis and believed that the disease is more of metaphysical than medical. The responses of the students however differ from those of the community members. The students demonstrated good knowledge while explaining the causes of elephantiasis. Some of the causes explained by the students are quoted below:

“It is caused by microorganism which one contract in dirty water, take excess sugar it can cause it, mosquito bites and contact with dirty contaminated water can cause elephantiasis.” IDI with student, **COMPREHENSIVE JUNIOR HIGH SCHOOL ALAPERRE**

“It is caused by mosquitoes and polluted environment where we have stagnant water may breed mosquitoes which could lead to elephantiasis. More so, lack of personal hygiene and sanitation could make someone vulnerable of the disease. IDI with student, **IKOSI JUNIOR HIGH SCHOOL**

According to the respondents interviewed in the follow-up study, more elaborate points were emphasized on ways in which individuals can protect themselves from elephantiasis, particularly with the importance of sleeping under the insecticide treated mosquito net.

Respondents affirmed that clean environment and a clear drainage system should be encouraged in the communities and the use of insecticide treated mosquito net in preventing mosquito bites in the home.

“Just like I said earlier, we must keep our environment and surroundings clean, make water flow and avoid stagnant waters in your environment to avoid mosquitoes from laying eggs. Also, sleep under mosquito treated net and fumigate your environment and living room regularly. Use of mosquito coil, insecticides and the likes is also helpful in combating mosquitoes in our surroundings. When our house and environment is clean mosquitoes cannot survive in such a place”. FGD with Community, **OWOROSHOKI**

The knowledge and perception on how risky it is not to sleep under insecticide treated mosquito nets and or participate in deworming campaign during mass drug treatment of schistosomiasis and soil transmitted helminths in the community changed positively in the follow-up study, compared to pre-intervention and the post-intervention phases. The respondents in the follow-up study revealed that, not participating in deworming campaigns is quite risky as it allows harmful worms to stay in the body. The respondents interviewed and focus group participants opined that it is very important, especially for the children, so that they can pass out the existing worms in their bodies as this will aid their growth. Their consensus regarding this is reflected in the responses illustrated below.

“It is very important, especially for the children. I did that when my children were small because of what we consume nowadays, so the children will be healthy. There are women looking for the fruit of the womb for years, thinking it’s one old woman that is troubling them not knowing it’s just worms disturbing them, so it’s very essential”. FGD with Community, **ALAPERRE**

“There are worms in the body. It’s important to use the deworming pills from time to time, especially for children. When I was younger, there was this woman that makes the concoction for us. She goes to the bush early in the morning to get the leaves and make the herbal drink for us to take. So I defecated about 20 worms at once. And since then I’ve not used it again.

It's very important for children, due to the sugary things they eat". FGD with Community, ALAPERÉ

The follow-up study showed an increase in knowledge, attitudes and practices on the part of the students compared to the pre- and post-intervention phases. However, misconceptions were noticed among the respondents as regards the causes of elephantiasis, some of the respondents still believe that mosquito bites cause elephantiasis, sitting in one position for a long time, charms from evil machinations. There is need to clarify this knowledge among the participants. For example, some focus group participants were of the view that: *"Sitting down at the same spot for a long time can cause elephantiasis"*, others expressed their beliefs thus: *"I believe when someone steps on charm it can cause elephantiasis"* and a few stated that: *"It is risky because one can be bitten by mosquito and it could cause elephantiasis and malaria"*.

"People who have it are spiritually attacked, some people have elephantiasis because of their body type. When an insect bite them and they scratch it, it might become swollen. I've seen someone like that, with a swollen leg and tried everything to fix it but, the leg remained swollen. As regards mosquito bites, I'm not sure if it can cause the leg to swell. But we have different body. So it's possible. I don't know much about things like this. FGD with Community, ALAPERÉ

3.2.3.1. Risk of not participating in deworming exercise

Participants affirmed that, not participating in deworming exercise could lead to the presence of 'plenty worms' in the body, leading to adverse effects such as damage to the intestine and problem of indigestion. Many of the participants said that it could generally lead to bad health. These responses obtained from the follow-up qualitative study, revealed retention of knowledge on risk of not deworming among the participants.

"It is very important, especially for the children. I did that when my children were small because of what we consume nowadays, so the children will be healthy. There are women looking for the fruit of the womb for years, thinking it's one old woman that is troubling them not

knowing it's just worms disturbing them, so it's very essential". FGD with Community, **ALAPERÉ**

"Deworming is very advantageous, there are different worms in the body, and some are harmful to the body system, while some are helpful to the body system. The harmful ones are the tapeworms. These worms can be eaten with meat, if the meat is not cooked well. So when these worms get into the body, it is very dangerous".

"It is risky because if we don't deworm it can cause other diseases like ulcer and it can cause growth retardation in a person". IDI with student, **IKOSI JUNIOR HIGH SCHOOL**

"If one fails to deworm, such individual has opened doors to different diseases". IDI with student, **IMACULATE JUNIOR HIGH SCHOOL MARYLAND**

"It disturbs the stomach if you don't deworm". IDI with student, **IMACULATE JUNIOR HIGH SCHOOL MARYLAND**

Just like the post-intervention, participants demonstrated good knowledge of where individuals can access care when affected by elephantiasis. Majority of them cited hospital, pharmacy, and seeing a qualified doctor, some community members however believed in the efficacy of herbs.

"They can go to the hospital for treatment or treat locally with herbs".
IDI with Community, **Alapere.**

The post-intervention and follow-up study reveal the willingness on the part of the participants in serving as change agents by volunteering to educate other community members, friends and relations.

3.2.4. Knowledge, Attitude and Practice on Schistosomiasis

It was observed that there was knowledge increase and retention on the part of students interviewed. Participants had reasonable knowledge on schistosomiasis, citing unclean

stagnant water which breeds germs and parasites, open defecation and open pool as the source of infection. Participants further explained that the disease is said to operate under the nails of the legs and hands, traditionally known as *Jomi Jomi* and *Sobia, Esusu* in Yoruba land.

“Schistosomiasis is a disease that is contracted in dirty water which breeds germs and parasites”. FGD with Community, **KETU IKOSI**

“Schistosomiasis is a vector-borne disease caused by parasitic worms found in dirty water” IDI with Community, **KETU IKOSI**

Participants outlined major signs and symptoms of schistosomiasis to include: itching of the leg, foot rot, tears on the foot, high temperature, fatigue, it weakens body immune system’s capacity to fight diseases, rough nails, skin irritation and swollen body part. Knowledge increased in terms of schistosomiasis; in the pre-intervention phase, most of the participants were unable to identify signs and symptoms of schistosomiasis. In the post-intervention phase only a few participants recognised sign and symptoms of schistosomiasis. However, there was increase in knowledge as most participants could mention few signs and symptoms of schistosomiasis, such as, having contact with polluted water and poor personal hygiene.

“High temperature, fatigue, the body lacks the capacity to fight diseases.” IDI with Community, **KETU IKOSI**

“Rough nails, rough feet, skin irritation, infected part will Be swollen” IDI with student, **IMMACULATE JUNIOR HIGH SCHOOL MARYLAND**

On prevention of schistosomiasis, participants identified avoiding dirty waters, maintaining personal hygiene, proper sanitation, and avoid wearing wet socks and shoes because these are means of preventing schistosomiasis. In consensus, all the participants recommended regular visit to the hospital as the step to take when someone has schistosomiasis. In addition, participants said they were willing to be involved in educating their community members, relations and friends about schistosomiasis and how to prevent it.

“Keep your environment clean and devoid of stagnant water”. FGD with Community, **OWOROSHOKI**

“Always wash your legs immediately you get home” FGD with Community, **OWOROSHOKI**

“Avoid playing in dirty water and wear rain boots and shoes while walking around, clean your surroundings and maintain a good personal hygiene” .IDI with Community, **ALAPERE**

“Through personal hygiene and avoid playing or swimming in open pond or lake”. IDI with Community, **ALAPERE**

“I know it’s a disease, and to prevent yourself from any disease, you have to be clean”. IDI with Community, **KETU IKOSI**

In terms of practice, it is important to note that few community members have been creating awareness in their various communities and enlightening people to seek medical attention when any NTDs is noticed, while majority are willing to serve as change agents in their communities.

3.2.4.2 Importance of avoiding playing/swimming in an open pond or lake

Participants listed quite a number of reasons to avoid playing/swimming in an open pond or lake. These reasons included: avoidance of infectious water microorganisms or bacteria and a possibility that there could be leeches called *Muje Muje* in the flowing water, which sucks the blood of people when they enter the water.

“To prevent diseases”. FGD with Community, **KETU IKOSI**

“To prevent water infections”. FGD with Community, **KETU IKOSI**

“To eliminate infection, sickness and disease”. FGD with Community, **KETU IKOSI**

3.2.4.3 Risky behaviours that can put one at risk of schistosomiasis

Participants revealed that swimming in an open and dirty pond and lake, not practicing proper personal and environmental hygiene, walking bare footed are risky behaviours that can put one at risk of schistosomiasis infection. Their responses are further illustrated below:

“Carelessness with ones’ health and living in dirty environment can make one contact schistosomiasis”. IDI with Community, **OWOROSHOKI**

“Playing in dirty waters and not being hygienic can put one at risk of schistosomiasis”. IDI with Community, **ALAPERERE**

“Like I said earlier swimming in a pond and dipping the leg in stagnant water all constitute risky behaviour that can put one at risk of schistosomiasis”. IDI with Community, **ALAPERERE**

“Having contact with dirty water”. IDI with Community, **KETU IKOSI**

“Swimming in an open lake or pond, swimming in a dirty water”. IDI with Community, **MARYLAND**

3.2.5. Knowledge, Attitude and Practice on Soil Transmitted Helminths

Similar to the post-intervention phase, participants identified soil-transmitted helminths as worms found in contaminated soil which can infect humans. Some of the participants mentioned *“walking bare-footed”* or *“consuming improperly cooked food”* *“living in a dirty environment”* and *“having a poor personal hygiene”* as possible causes of helminths while others identified open defecation and urination, bathing or swimming in pond or lake as ways of contracting of helminths. Many of the participants listed *“Proper washing of vegetables and fruits before eating”*, *“Keeping ones’ environment clean always”*. *“Observing a proper personal and environmental hygiene”*. *“Wearing a rain boot while walking in a flooded or swampy area”*, *“regular hand washing”*, and *“proper sanitation and refuse disposal”* as means of preventing helminths. They also asserted that visit to the hospital is the step to take when someone has soil-transmitted helminths. The participants reported that soil-transmitted

helminth is the disease that can be transmitted by bacteria and germs in the soil. Below are the views of the community members:

“I believe those are caused by germs, and there can be germs everywhere, especially where there is dirt. That is why we prevent children from playing with sand so that germs won’t contaminate their hands. These germs can’t be seen with the naked eyes, so we prevent children from playing in the sand”. FGD with Community, **ALAPERÉ**

“It is the disease that is found in the soil and can harm the human body”. FGD with Community, **KETU IKOSI**

“Soil transmitted helminths are those diseases that we can contract in the soil. Some children play and eat soil especially the young ones and this can affect their health generally”. FGD with Community, **OWOROSHOKI**

“It is a disease that is transmitted through the soil”. FGD with Community, **MARYLAND**

“It’s a disease that can be transmitted in a dirty environment”. IDI with Community, **ALAPERÉ**

“I think it’s a ringworm infection that one can contract from the soil and vegetables”. IDI with Community, **KETU IKOSI**

“Soil transmitted helminths are the disease that is associated with the soil”. IDI with Community, **MARYLAND**

The views of the students differed a bit from those of adult community residents. Listed below are the views of the trained students:

“Soil transmitted helminth is a disease that can enter into the body from the soil. I don’t know the local name for soil transmitted helminths”. IDI with student, **COMPREHENSIVE JUNIOR HIGH SCHOOL ALAPERÉ**

“It is the disease that you get from the soil”. IDI with student, **COMPREHENSIVE JUNIOR HIGH SCHOOL ALAPERÉ**

“When you play in sand, there is a worm that can enter your body”. IDI with student, **IKOSI JUNIOR HIGH SCHOOL**

“Soil transmitted helminths can be defined as a disease that is transferred from saprophytes in the soil as a results of decomposition of faeces”. IDI with student, **IKOSI JUNIOR HIGH SCHOOL**

“They are parasites that are associated with the soil, that do more harm to the body”. IDI with student, **IMMACULATE JUNIOR HIGH SCHOOL MARYLAND**

3.2.5.1. Causes of soil transmitted helminths

Most of the respondents interviewed and participants in focus groups did well in outlining what they know to be the cause of transmitted helminths. They explained that when an individual has contact with the soil that is contaminated and the individual fails to wash his/her hands properly, such parasites and germs may be transferred into the body and can cause soil transmitted helminths. They further disclosed that lack of good personal hygiene, dirty surroundings and lack of or poor washing of vegetables and fruits are predisposing factor to soil transmitted helminths. This is further illustrated in the responses of some adult residents in the communities below:

“Improper washing of vegetables and fruits before consumption”. FGD with Community, **OWOROSHOKI**

“Not being hygienic with our dealing with foods obtained from the soil. Also, not ironing our clothes before putting them on”. IDI with Community, **OWOROSHOKI**.

The view of the trained students about the causes of *helminths* is reflected in the response of a student who said:

“When an individual has contact with the soil that is contaminated and he doesn’t wash his/her hands properly, such parasites and germs may be transferred into the body and can cause soil transmitted helminths. To prevent it we must maintain a good personal hygiene, constant washing of hands and keep our surroundings very clean always”. IDI with student, **IKOSI JUNIOR HIGH SCHOOL**

3.2.5.2. Prevention of helminths

The respondents highlighted ways; such as proper washing of vegetables and fruits before eating, observing a proper hygiene and keeping the environment clean always as measures of preventing soil-transmitted helminths.

“Observe personal hygiene, proper cleaning of vegetables and fruits before eating, keeping your environment clean and engaging in regular hand washing”. FGD with Community, **OWOROSHOKI**

“Keep your surroundings clean and eat good food”. FGD with Community, **OWOROSHOKI**

“Wash your vegetables and fruits properly before eating and maintain a good personal hygiene”. FGD with Community, **MARYLAND**

“Constant hand washing and sanitizing”. IDI with student, **COMPREHENSIVE JUNIOR HIGH SCHOOL ALAPERE**

3.2.5.3. Risky behaviours that can put one at risk of soil transmitted helminths?

When asked about risky behaviours that can put one at risk of soil transmitted helminths, participants agreed that, not washing vegetables and fruits properly before eating, not observing personal hygiene and living in a dirty environment are risky behaviours that could put one at risk of soil transmitted helminths.

“Not properly washing vegetables and fruits before eating”. FGD with Community, **KETU IKOSI**

“Not observing good personal hygiene”. FGD with Community, **KETU IKOSI**

“Living in a dirty environment and not taking good care of your house”. FGD with Community, **KETU IKOSI**

“Living in a dirty environment”. FGD with Community,
OWOROSHOKI

“Having a poor personal hygiene”. FGD with Community,
OWOROSHOKI

The respondents gave quite an extensive list of actions one can take to stay healthy. The practice sums up to regular exercising, maintaining good personal hygiene, eating fruits and vegetables regularly and drinking clean water regularly as illustrated in the following responses:

“Eat clean and healthy food. Personal hygiene is also important”. FGD with Community, **ALAPERÉ**

“Going to the hospital for check always is very important. So in the morning when you feel uncomfortable in your body, you should go do a check up. Nowadays that everyone is talking about high blood pressure”. FGD with Community, **ALAPERÉ**

“Prevention is better than cure, so preventing is better. Eating healthy food, drinking clean water. And because the country is bad, that doesn’t mean you shouldn’t eat healthy”. FGD with Community, **ALAPERÉ**

“Fumigating my environment, keeping my body clean, watching what I eat, and keeping the environment clean”. IDI with Community, **OWOROSHOKI**

“One needs to eat balanced diet, keep ones’ surroundings clean and observe good personal hygiene, wear clean clothes and engage in exercise to keep fit”. IDI with student, **COMPREHENSIVE JUNIOR HIGH SCHOOL ALAPERÉ**

In terms of practice, participants reported that they ensure treatment of intestinal worms when detected by getting deworming medicines from the hospital or seek treatment from traditional

healers. In other to reduce the risk of transmission, participants are willing to educate their relations, friends and community about soil transmitted helminths.

In terms of health programme being implemented in their communities to control diseases, participants stated that such health programmes undertaken to control diseases are not quite much, they could only report the immunization of children against polio on designated days by health workers.

“No health programme except that health workers occasionally give immunization to children”. FGD with Community, **KETU IKOSI**

“Well the Government has only provided health centres close to us here at Akinyemi and another one before you get to Ketu. These health centres go about immunizing children”. FGD with Community, **ALAPERERE**

“There is a health centre close by, they come around to give children vaccination doses. And adults go there to get treatment and they pay”. FGD with Community, **ALAPERERE**

“Even without the government doing any campaign, based on my knowledge, there is a health centre close by that one can go at Akinyemi here and another at Ketu, and they attend to people well there”. FGD with Community, **ALAPERERE**

3.5.6. Knowledge of COVID-19 and its effect on NTD awareness activities

This section was added to verify the knowledge of participant on COVID-19 and to unravel its' effect on the students' awareness activities on NTDs in their respective community. In terms of knowledge and awareness, the students and the adult residents equally demonstrated good knowledge as regards COVID-19. Most of them reported that coronavirus is an air-borne virus that is currently ravaging the world, which can also be transmitted from one person to another. Some responses below summarise and illustrate their knowledge of COVID-19.

“Yes I'm aware of the global pandemic called corona virus and COVID-19. It is a deadly virus that is airborne and can be transmitted from one

person to another". IDI with Community, **COMPREHENSIVE JUNIOR HIGH SCHOOL ALAPERE**

"COVID-19 is a global pandemic. It is a communicable disease that can spread from one person to another". IDI with Community, **IKOSI JUNIOR HIGH SCHOOL**

"I am fully aware of corona virus. It is an airborne virus that is currently spreading across the world.. COVID-19 means corona virus disease. The 19 means, the index case of the virus was reported in 2019".IDI with student, **IMMACULATE JUNIOR HIGH SCHOOL MARYLAND**

3.5.6.1. The signs/symptoms of COVID-19.

The participants knew and mentioned sneezing, cold, difficulty in breathing, fever, sore throat, loss of taste and coughing as major signs and symptoms of COVID-19 as revealed in responses of some students below:

"Fever, high temperature, fatigue, difficulty in breathing, coughing and sneezing". IDI with student, **IKOSI JUNIOR HIGH SCHOOL**

"Difficulty in breathing, coughing, sneezing". IDI with student, **IMMACULATE JUNIOR HIGH SCHOOL MARYLAND**

3.5.6.2. Mode(s) of transmission of COVID-19

The participants highlighted various means of transmission of COVID-19 which included transmission through physical contacts with an infected person and also through air droplets that an infected person releases into the air through sneezing, coughing and or talking.

"The virus can be transmitted through physical contacts and droplets on surfaces. It can be spread through handshake and hugging". IDI with student, **COMPREHENSIVE JUNIOR HIGH SCHOOL ALAPERE**

"Body contact, through sneezing, coughing". IDI with student, **COMPREHENSIVE JUNIOR HIGH SCHOOL ALAPERE**

“Sneezing and cough”. IDI with student, **IKOSI JUNIOR HIGH SCHOOL**

“COVID-19 can be transferred through droplets from an infected person through sneezing, physical contacts, hugging, shaking of hands and touching ones face, nose and mouth with the hand”. IDI with student, **IKOSI JUNIOR HIGH SCHOOL**

“Hand shaking, hugging, physical contact”. IDI with student, **IMMACULATE JUNIOR HIGH SCHOOL MARYLAND**

Participants highlighted ways in which the spread of COVID-19 can be curbed and their responses revealed that they have good knowledge about COVID-19 and also practice the prevention measures in their communities.

“Constant use of face mask, observe social and physical distancing, regular hand washing and use of hand sanitizer and one should be hygienic”. IDI with student, **COMPREHENSIVE JUNIOR HIGH SCHOOL ALAPERRE**

“Disinfecting your environment, washing your hands regularly, use of face mask and if you notice any symptoms go to isolation centre”. IDI with student, **IKOSI JUNIOR HIGH SCHOOL**

“Maintain social and physical distancing, avoid large gathering, wearing of face mask, sanitize your hands and constant hand washing”. IDI with student, **IKOSI JUNIOR HIGH SCHOOL**

When the students were asked if the outbreak of COVID-19 affected their taking action(s) to prevent the spread of NTDs in their communities, half (50%) of the students reported that the outbreak of COVID-19 prevented them from taking actions in going around to educate neighbours in their neighbourhoods to prevent the spread of NTDs while the other 50% reported that the outbreak didn't prevent them from sensitizing other community members.

“Yes. It affected me because I have to stay at home during the lockdown”. IDI with student, **COMPREHENSIVE JUNIOR HIGH SCHOOL ALAPERRE**

“No. It has not”. IDI with student, **COMPREHENSIVE JUNIOR HIGH SCHOOL ALAPERRE**

“Yes. It affected me especially during the lockdown everybody had to stay at home to keep safe from the pandemic”. IDI with student, **IKOSI JUNIOR HIGH SCHOOL**

“Yes, I had to stay indoor because of the lockdown”. IDI with student, **IMMACULATE JUNIOR HIGH SCHOOL MARYLAND**

4.0 DISCUSSION

The findings from the follow-up study given the high knowledge retention exhibited by most of the students and the adult residents reflect an improvement in their knowledge about the NTDs in focus (elephantiasis, schistosomiasis, soil-transmitted helminths) when compared to the findings at baseline. Similar to the findings of the post-intervention phase, the follow-up study showed that the most improved knowledge was observed in relation to elephantiasis, with slight improvement in knowledge with respect to schistosomiasis and soil transmitted helminths. The follow-up study showed higher knowledge of mosquito as the cause of elephantiasis, swollen arms and legs as the major sign of elephantiasis and the use of insecticide treated net as the most effective means of preventing elephantiasis.

In contrast to the pre- and post-intervention phases, the follow-up study showed increase in knowledge as well as change in the attitude and practices of the study populations concerning NTDs. The students in particular demonstrated good knowledge of knowing where to get help or suggest to affected individuals in case of any incidence of the disease. Although, misconceptions were noticed among some of them when highlighting the causes, the signs and symptoms of the three NTDs. The students’ willingness to acquire more knowledge on NTDs and serve as volunteers and peer educators in creating awareness in their respective community and also be a change agent and role models through their actions and practices in the community believing that all in the community can do something to stop the spread of NTDs particularly soil transmitted helminths is encouraging.

Participants were found to be favourably disposed towards educating their relations; friends and community on NTDs. While some reported to have started, others indicated otherwise and that they will start doing it henceforth. The gains of other existing and or previous health programmes implemented in the schools and the YEDI NTDs awareness intervention activities seemed to have rubbed off on the perception of the students as more of them

expressed positive attitudes towards the desire of engaging in health education activities emphasizing NTDs as voluntary community service in their communities after the intervention. The establishment of Youth Clubs in the schools will go a long way in engendering this interest among the pupils to sustain the zeal for community service by serving as peer health educators on NTDs and other health-related issues.

This intervention made use of interpersonal communication (training of students as peer educators) and education-entertainment (football events) as strategies to impact knowledge, attitude and practice of the participants. While these approaches are by themselves helpful, evidence suggests that using multiple Social and Behaviour Change Communication (SBCC) approaches and channels tend to yield more successful results (USAID, 2014).

Lamstein *et al* (2014) in an assessment of SBCC approaches to maternal health interventions found that the effectiveness of behaviour change communication interventions was directly related with the use of multiple approaches (interpersonal communication, community mobilization and the use of media-based approaches such as posters, flyers and stickers). A 2015 intervention to improve men's involvement in the use of modern contraceptive methods in urban communities of three African countries that included Kenya, Nigeria, and Senegal found that the use of mass media such as radio and television, print media, and interpersonal communication, and community events significantly improved men's participation in contraceptive behaviours.

While past studies showed the benefits of using multiple approaches in health intervention, researchers affirmed that the success of health promotion interventions is determined by a variety of factors that may include how much access the target audience has to information and whether the target audience has acquired sufficient knowledge and skills to perform the behaviours. It is also important to note that targets understand issues at different pace. There is therefore a need to infuse other approaches into this intervention to complement existing ones. It is suggested that future similar programme should be infused with the provision and access to media-based approaches including posters, flyers, stickers, information boards, bill boards, radio, television, and social media for the trained students as teaching aids to enhance their awareness creation activities in the community. The choice of what media is best suited for this intervention, should be based on findings from the formative research conducted at the initial stage of this study which should reveal the targets' most preferred media and which ones give value for money. The use of education-entertainment should be explored further to

stimulate individual and collective interest of the young people in their desire for community service.

Knowing that literature revealed that school-based SBCC approach contribute to improving the public awareness of health issues such as the Water, Sanitation and Hygiene (WASH), HIV/AIDS and malaria prevention (NetWorks, 2014; Farnsworth, 2014), the NTD Awareness Pilot Project in selected schools of Lagos is laudable given the resulting effects reported in the evaluation reports so far and there is the need for its expansion to other schools for more pupils to benefit and serve as catalysts of change as it concerns efforts to effectively control in order to attain the target of reducing the burden of NTDs by 2030 as enshrined in the World Health Organisation's new road map on NTDs for 2021-2030 (World Health Organization, 2020) which is expected to guide countries towards the achievement of Sustainable Development Goal target 3.3 on NTDs (Lee and Pollitzer, 2016).

5.0 CONCLUSION

The follow-up study showed good retention in knowledge of NTDs among the study populations and most importantly the willingness on the part of the students to invest their time and energy sensitization activities in the community. However, there is a need to adopt and maintain a multi-pronged approach such as mass media education, social media, the use of mobile applications, peer education, education-entertainment, and community mobilization to stimulate the individual and collective interest of the young people towards achieving their desire.

5.1 RECOMMENDATIONS

1. YEDI needs to adopt and maintain a multipronged approach to information, education and communication to facilitate knowledge retention. This can include mass media education, social media, use of mobile applications, peer to peer education, education-entertainment, community mobilization.
2. A state wide scale up should be considered to increase general public awareness, knowledge and practice regarding the diseases.

3. YEDI in sustaining the knowledge attained by the students should consider formation of anti-NTDs awareness clubs or promote the inclusion of NTDs sessions in their health clubs.
4. Teachers from selected school should be trained on NTDs and be utilized as coordinators of the clubs.
5. More emphasis should be laid on schistosomiasis and helminths because of the complex nature of comprehending the disease by young students and community members.

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PHOTO GALLERY



IDI SESSION WITH A FEMALE STUDENT



IDI SESSION WITH A MALE STUDENT



IDI SESSION WITH A FEMALE STUDENT



IDI SESSION WITH A FEMALE STUDENT



COVID 19 PRECAUTION SIGN AT IKOSI JUNIOR HIGH SCHOOL (STUDY LOCATION)



IDI SESSION WITH A MALE STUDENT



ONE OF THE STUDY LOCATIONS: COMPREHENSIVE JUNIOR HIGH SCHOOL, ALAPERE



FGD SESSION WITH ADULT FEMALE COMMUNITY MEMBERS



FGD SESSION WITH ADULT MALE COMMUNITY MEMBERS