

IMPLEMENTATION OF CULTURALLY SENSITIVE AND INFORMED HEALTH
EDUCATION AS A PART OF THE ‘WASH APPROACH’ TO CONTROLLING
SOIL-TRANSMITTED HELMINTH INFECTIONS IN THE RURAL VILLAGE
OF BATI KELO, EAST SHEWA ZONE, ADAMA WEREDA, ETHIOPIA

by

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in

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DEDICATION

First and foremost, I dedicate this doctoral scholarly project and paper to my Lord and Savior Jesus Christ. His love and sacrifice has changed my life forever, and ultimately, He is the one who has instilled in me this passion for touching lives and giving hope. Every step of the way, He has been in control and provided me the strength and perseverance necessary to see this project through to completion. Second, I want to dedicate this doctoral scholarly project and paper to my husband Mitch. Without your faithful love, encouragement, assistance, and unwavering faith in me, I would not have made it to this day. Mitch, I am forever grateful the Lord brought you into my life and for the privilege of being your wife! I also want to dedicate this project to my three families: the Joneses, Deans, and Nielsens. You all will never know how precious you are to me, and how thankful I am for each one of you and all you have done for me. And finally, to my close friends, Ethiopia medical team members, co-workers, managers/supervisors, professors, and students – thank you all for your tremendous support, prayers, patience, flexibility, and help over the past four years. I am deeply honored and truly in your debt.

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ABSTRACT

Problem Statement: A lack of population-specific approaches and interventions exist with regards to soil-transmitted helminth control measures, thus resulting in significantly reduced effectiveness and lasting impact.

Purpose: The purpose of this clinical project was to develop and implement a culturally sensitive and informed health education program to address the health practices of a rural high risk population as a method for controlling soil-transmitted helminth infections.

Methods: A culturally sensitive and informed health education program, utilizing the holistic method of the ‘WASH Approach,’ was implemented in the community of Bati Kelo, East Shewa Zone, Adama Wereda, Ethiopia. The project intervention consisted of three key components: 1) developing a culturally competent and population-specific KAP survey, 2) developing culturally competent health education material for the project population, and 3) conducting the KAP survey and health education sessions in a culturally competent manner. A convenience sample of 234 individuals was collected from the community. The project data were based on self-reported responses to the KAP survey. Ten key health behavior questions were utilized to evaluate the project: two on latrine usage, three on clean water usage, three on hand washing, and two on wearing shoes. Eighty-one surveys qualified for final inclusion. Data were analyzed using SPSS version 2.4. Descriptive statistics were utilized for the evaluation of the entire project. McNemar’s test was used to analyze the differences between pre and post intervention (survey) results involving dichotomous variables. Wilcoxon’s signed-rank test was used to analyze the differences between pre and post intervention (survey) results involving paired ordinal data.

Findings: Positive health behavior/practice change was demonstrated post-intervention in the areas of ‘latrine use,’ ‘clean water (treating water),’ and ‘handwashing;’ however, it was not shown in the area of ‘wearing shoes.’

Conclusions: The overall findings of this clinical project were consistent with prior research studies, which found the WASH approach impactful on STH infection prevention measures (health behavior practices). A gap in the literature regarding ‘cultural competence’ in health education as a part of the WASH approach and STH control measures still exists. Much more inquiry and work still remains to be done.

INTRODUCTION

Background and Significance

According to the CDC and WHO, it is estimated that nearly two billion people worldwide suffer from active soil-transmitted helminth (STH) infections, and that an additional four billion are at risk [3, 34-35]. STHs cause a significant burden of disease, particularly in third world countries. The WHO has labelled STHs as one of the world's most 'neglected tropical diseases' [35]. Awareness of the significance, along with the long-term health and economic ramifications of STH infections began to take center stage in the world of global health in the 1970s [1]. Many research studies and published literature reviews have been devoted to this topic. As time has passed, a more thorough understanding of these parasitic infections has enabled healthcare professionals and scientists to understand their very serious and harmful nature – not only for the individuals infected, but for communities and countries as a whole [1-7, 34-35]. STHs are responsible for malnutrition, stunted physical growth, impaired cognitive development, anemia, vitamin A deficiency (which contributes to blindness), intestinal obstructions and perforations, chronic cough and even pulmonary infiltrates, complications in pregnancy, fetal deformities, and synergistic effects with other diseases such as HIV, TB, and malaria [1-7, 34-35]. These health effects lead to decreased school attendance, lower education levels, and work to keep people trapped in a world of poverty and disease [1-2,6].

Over the past four decades, there has been a huge global push to implement control measures against STH infections [1]. These measures often include routine preventative chemotherapy, improved sanitation, and health education [1, 4, 8-35]. Many third world countries have received money from first world nations and international organizations in order to help them fund this massive effort.

Problem

With regards to STH control measures, the needs still exceed the current resources, and as a result, many people and communities are left completely untreated and without help. In addition to the insufficient resources, there is also a lack of population-specific approach and intervention. Thus far, the majority of STH control measures have been fairly identical across countries and populations, thus failing to be culturally competent. As a result, the effectiveness of the STH control measures is significantly reduced and a lasting impact undermined.

Purpose

The purpose of this clinical project was to develop and implement a culturally sensitive and informed health education program to address the health practices of a rural high risk population as a method for controlling soil-transmitted helminth infections.

Introduction to the Country

Ethiopia, Africa's tenth largest country, is located in the Horn of Africa and covers 1,104,300 square kilometers [36, pp. 1]. Five countries border Ethiopia: Eritrea, Djibouti, Somalia, Kenya, and Sudan [37]. In 2015, the total population of Ethiopia was estimated to be 98.9 million people, making it Africa's most populous country, and the 13th most populous country in the world [37]. Five sixths of the country's population still live in rural areas, many of which are fairly remote and lack resources and infrastructure [36, pp. 1].

Ethiopia is comprised of many distinct ethnic groups. The most prominent ethnic groups include the Oromo (33% of the population), Amhara (27%), Somali (6%), Tigray (6%), Sidama (4%), Gurage (2.5%), Welayta (2.2%), Afar (1.7%), Hadiya (1.7%), and Gamo (1.5%) [37]. There are also a large number of refugees currently living in Ethiopia, most of whom are from Somalia, Sudan, and Eritrea [37]. Although the national language is Amharic, over 80 different languages are spoken throughout the country [38, 39]. And in more remote rural areas, it is not uncommon to find people who only know how to speak their mother tongue [39]. English and Arabic are also commonly spoken in many areas, especially larger urban ones [38].

Like its ethnic and linguistic diversity, Ethiopia is also home to a variety of religions. The most common religions include Ethiopian Orthodox (44%), Muslim (34%), Evangelical Christian (19%), traditional animism and witchcraft (2.7%), and Catholic (0.7%) [37, 38]. Ethiopia has an enormously rich religious history, dating back to the 4th century [37]. As a result, most individuals are devoutly religious.

The government, since 1994, has been a Federal Democratic Republic, comprised of three main branches: the executive branch, the legislative branch, and the judicial branch [36, pp. 1-2]. The Executive branch includes the Prime Minister, the Council of Ministers, and the Council of State [36, pp. 1]. The legislative branch is a two-house Parliament: the House of Federation, and the House of People's Representatives [36, pp. 1-2]. The judicial branch encompasses both the federal and regional court systems [36, pp. 2]. The nine Regional States that make up Ethiopia are Tigray, Afar, Amhara, Benishangul-Gumuz, Gambella, Harari, Oromia, Somali, and Southern Nations and Nationalities Region [36, pp. 2].

Economically, although Ethiopia has been labelled an 'emerging third world nation,' it still is struggling. The economy depends greatly on agriculture, which is responsible for 43.2% of the Gross Domestic Product (GDP) and 80% of the country's exports [36, pp. 2]. Unfortunately, Ethiopia has historically been plagued with droughts, even to the extreme of causing severe famine [36, pp. 2]. The uncontrollable weather and climate changes, paired with poor and outdated agricultural practices, makes Ethiopia's economy very fragile and susceptible to collapse [36, pp. 2]. However, in spite of these challenges and uncertainties, the GDP has continued to increase, averaging 5% per year [36, pp. 2]. The Poverty Head Count Index has declined, particularly in urban areas, and the per capita earnings has slowly continued to rise [36, pp. 2]. It is difficult to know if these changes are sustainable in the years to come, but the future of the Ethiopian economy is looking hopeful.

Education and literacy levels, in the face of major national effort and progress, are still quite low [36, pp. 3]. Literacy is defined as the population age 15 years and over who can read and write [36, pp. 3; 38]. The approximate literacy rate of the total population is 39%, of which three fifths are men [36, pp. 3; 38].

The health status of the country is an ongoing concern as well. Even with the country's efforts to improve their population's health status, and the assistance of many foreign nations and organizations, Ethiopia still has a poor health status and high morbidity and mortality rates [36, pp. 3]. Health expenditures only account for 4.7% of the GDP, and it is estimated that there are only 0.03 physicians for 1,000 people [38]. Malnutrition, diarrheal diseases, malaria, HIV, TB, and many of the most common neglected tropical diseases account for much of the morbidity and mortality, as do pregnancy and delivery complications as well [35; 36, pp. 3-6].

Life expectancy in Ethiopia is 65.75 years, 63.74 years for males and 67.8 years for females [37]. The mean age for women at childbearing is 29.893 years [36, 38]. The ratio of male to female births is approximately one-to-one [37; 38; 36, pp. 1]. The infant mortality rate is 42.554 deaths per 1,000 live births [37]. The mortality rate of individuals under the age of five years is 60.862 deaths per 1,000 [37]. The average household size is 4.7 persons, with the national population growth increasing steadily at approximately three percent [36, pp. 1; 37]. When looking at the population breakdown by age, forty-four percent of the population is age zero to fourteen years, twenty percent is age fifteen to twenty-four, twenty-nine percent is age twenty-five to fifty-four, four percent is age fifty-five to sixty-four, and only three percent is age sixty-five and older [36, pp. 1; 38].

In 2015, S. Fikresilasie published an article in the American Journal of Health Research titled “Status of Soil-Transmitted Helminths Infection in Ethiopia” [83].

According to the data discussed in this article, research indicates that “Ethiopia stands out for having the largest number of Neglected Tropical diseases (NTD) cases following Nigeria and the Democratic Republic of Congo” [83]. Soil-transmitted helminth infections (STHs) are considered a NTD, and therefore, fall under this category. The latest data on the infection rates of STHs in Ethiopia are as follows [83]:

- *Ascariasis*: 26 million people infected (which is 15% of the entire burden of ascariasis in sub-Saharan Africa)
- *Trichuris trichiura*: 21 million people infected (which is 13% of the entire burden of ascariasis in sub-Saharan Africa)
- *Hookworm*: 11 million people infected (which makes Ethiopia to have the 3rd highest burden rank in sub-Saharan Africa)

Many research studies regarding STH infections in Ethiopia have been performed and published [18, 22, 36, 78-95]. Also, the Ethiopian government has collected and published specific data, mapping, and guidelines in order to direct the approach to STH control [36, 96-97]. However, overall, STH infection control in Ethiopia still has not been targeted [86, 95]. At the present time, the majority of STH control efforts have been focused on mass de-worming as a component of the ‘Enhanced Outreach Strategy’ [83].

Introduction to the Specific Community

Location

The specific community involved in the DNP scholarly project is the rural village of Bati Kelo, East Shewa Zone, Adama Wereda, Ethiopia. Bati Kelo is a remote village that lies along the eastern shore of Lake Koka, less than 100 miles southeast of the capital, Addis Ababa.

Population & Language

Although there is no official data on the population of Bati Kelo, residents estimate that approximately 4,500 live within this community [40; 41]. The native language of Bati Kelo is Afan Oromo, as they are of the Oromo tribe [40; 41].

Income/Jobs

The majority of Bati Kelo residents are either farmers or ranchers, as the local economy is based solely on agriculture [40]. They eat what they grow and raise, or sometimes use it to trade for goods, or perhaps sell it in the marketplace of a nearby town. There are a few individuals in the village who do not fit in this category. They are pastors, imams or witch doctors [40]. They make their living from the gifts of their congregation or followers, as well as by having a small farm or home business on the side. Regardless of their occupation, the villagers are extremely poor. According to the locals, on average, they live on less than one U.S. dollar per day [40; 41]. They live in mud huts scattered throughout the hillsides, and have no source of plumbing or electricity. The only 'vehicle' they may be lucky enough to own would be a bicycle. Due

to their economic status and remote location, very few of the villagers of Bati Kelo are able to access or afford medical care, even in a life and death situation [40, 41]. All their resources, all that they have, are used to house and feed their families as best they can. They have nothing ‘extra’ to spend on medical care or ‘comforts’ to improve their lives.

Education/Literacy

Education rates are extremely low in Bati Kelo. There is no school in Bati Kelo, and the closest school is in another village a few kilometers away, or in the town of Wonji, which is 20 kilometers away [40]. The majority of villagers are completely illiterate and have never attended any form of formal education [40, 41]. There is no accurate data regarding the literacy rates of this specific community; however, based on interactions and interviews during this project, only about one in fifteen to twenty people could read or write. Most of those who could read or write were either school children or people who had lived outside of the community for some time for work or school [40, 41].

Medical/Healthcare Status

Bati Kelo is quite a remote, underserved community. The closest medical facility is over 20 kilometers away in the town of Wonji, a journey usually made on foot [40]. This ‘hospital’ offers basic medical care such as intravenous fluids and medications. The next closest medical facilities are in the city of Adama, which is approximately 35 kilometers away. There are a few hospitals, including both private and government facilities, which possess better treatment, testing, and procedural capabilities [41].

Patients requiring advanced medical care or surgery must be taken to the capital city of Addis Ababa. Access to Bati Kelo is extremely difficult as there is only one road, which is not paved, and often is washed away during the rainy season by the heavy rains [40]. The villagers of Bati Kelo do not have motorized forms of transportation [40]. Rather, they rely solely on riding donkeys, horses, bicycles, or walking by foot. The community lacks clean water and the most basic forms of sanitation. The only sustainable water source is Lake Koka, which is highly polluted with chemicals as well as contaminated with bacteria and parasites [40-44]. There currently is no filtration system available for the community to use. Most of the villagers walk a few kilometers each day to fetch water. Due to a number of factors, but primarily the water source, lack of sanitation, and lack of medical care, the people of Bati Kelo suffer from severe soil-transmitted helminth infections [40, 41]. Currently, there are no efforts being made to prevent or treat these STH infections, and the effects on this community are deadly.

Current Events

In addition to these aforementioned factors, the community of Bati Kelo has also been adversely affected by a recent drought, ensuing famine, and political unrest. Three years ago in multiple areas of Ethiopia, including the Oromiya region and Bati Kelo, the rainy seasons began to be much shorter and the amount of rain fall less and less [45, 46]. This weather pattern progressed to the point of a drought, thus causing all the crops and most of the livestock to die off. Along with the famine, political tensions have increased. Over the past two years, political tension and unrest have continued to rise. Protests, riots, mass arrests, beatings and shootings continue to take place with increasing frequency

[45-47]. Since Bati Kelo is located in the Oromiya region, and the villagers are of the Oromo tribe, this political tension and unrest has affected the community of Bati Kelo as well.

REVIEW OF LITERATURE

Soil-transmitted Helminth Infections & Holistic Approach to Control

Background

Globally, soil-transmitted helminth infections (STHs) cause a significant burden of disease, particularly in third world countries. The WHO has labelled STHs as one of the world's most 'neglected tropical diseases' and estimates that nearly two billion people suffer from infection [3, 34-35]. Over the past four decades, there has been a huge global push to implement control measures against STH infections [1]. These measures often include routine preventative chemotherapy, improved sanitation, and health educations [1, 4, 8-35]. Many third world countries are given money by first world nations and the United Nations in order to help them fund this massive effort. However, the needs still outweigh these country's resources. As a result, many people and communities are left untreated and without help.

Objective

The objective of this literature review was to determine the most effective approach to controlling soil-transmitted helminth infections in high risk endemic populations.

Methods

A review of literature included Pubmed, CINAHL, Cochrane, Global Health, Medline, BioMed Central, African Journal of Infectious Diseases, Clinical Infectious

Diseases, International Journal of Infectious Diseases, WHO, and CDC. No limits, such as publication date or language, were set on the search. The search yielded over 60 articles. Of these, seven systematic reviews and meta-analyses, eight randomized control trials, seven non-randomized control trials, two cross-sectional studies, six review articles, and five background articles were included in the review of literature. The published recommendations of the CDC and WHO were also included. Key terms included: soil-transmitted helminth, helminth, hookworm, whipworm, roundworm, *Trichuris trichiura*, *Ascaris lumbricoides*. Albendazole, Mebendazole, Benzimidazoles, deworming, chemotherapy, cure rates, egg reduction rates, effectiveness, treatment, prevention, control, sanitation, hygiene, footwear, shoes, hand washing, soap, water, health education, behavior, WASH approach.

Guideline Recommendations

A review of the literature led to the formation of two evidence statements.

Evidence Statement #1

Soil-transmitted helminth infections (hookworm, whipworm, roundworm), are known to cause malnutrition, stunted physical growth, impaired cognitive development, anemia, vitamin A deficiency, intestinal obstructions, complications in pregnancy, fetal deformities, and synergistic effects with other diseases such as HIV, TB, and malaria.

Strength of Evidence: Grade B

According to the CDC and WHO, it is estimated that over one billion people worldwide suffer from active soil-transmitted helminth infections, and that an additional four billion are at risk [3, 34-35]. Awareness of the significance, along with the long-term health and economic ramifications of STH infections began to take center stage in the world of global health in the 1970s [1]. Many research studies and published literature reviews have been devoted to this topic. As time has passed, a more thorough understanding of these parasitic infections has enabled healthcare professionals and scientists to understand their very serious and harmful nature – not only for the individuals infected, but for communities and countries as a whole [1-7, 34-35]. STHs are responsible for malnutrition, stunted physical growth, impaired cognitive development, anemia, vitamin A deficiency (which contributes to blindness), intestinal obstructions and perforations, chronic cough and even pulmonary infiltrates, complications in pregnancy, fetal deformities, and synergistic effects with other diseases such as HIV, TB, and malaria [1-7, 34-35]. These health effects lead to decreased school attendance, lower education levels, and work to keep people trapped in a world of poverty and disease [1-2,6].

A search of the literature yielded approximately 20 studies related to STH infections, their worldwide disease burden, and the harmful effects of infection. Of these 20, seven were included in the literature review: one systematic review and meta-analysis, and six review and background articles. The published recommendations of the CDC and WHO were also included.

Evidence Statement #2

Control of soil-transmitted helminth infections (hookworm, whipworm, roundworm) necessitates routine chemotherapy, health education, access to clean water, improved sanitation, improved hygiene, and access to footwear.

Strength of Evidence: Grade A-

Initially, control programs for STH infections focused on routine chemotherapy [8, 12-2, 35]. Over time, however, based on research and project success, it has become apparent that a more holistic approach is necessary. This holistic approach is two-fold: 1) routine chemotherapy, and 2) the ‘WASH approach.’

The necessity of routine deworming has been reemphasized as research studies have found significant reinfection levels after three to six months [12, 20]. The drugs of choice recommended for mass deworming by the WHO and CDC have been Mebendazole and Albendazole [34-35]. Comparison of the two have shown that overall, Albendazole is more effective than Mebendazole (higher cure rates and egg reduction rates), even when considering single-dose therapy [13-24].

The acronym ‘WASH’ stands for “Water, Sanitation and Hygiene” [9]. The ‘WASH approach’ involves access to and improvements in clean water, sanitation, and hygiene, as well as hand washing, access to footwear, and health education [1, 4, 8-35]. Multiple studies have shown its’ effectiveness in lowering STH infection rates and burden of disease [9-11, 25-30].

Conclusion

There is a substantial amount of literature on the topic of STH infections and control measures. The CDC and WHO have labelled STH infections as a ‘neglected tropical disease’ (NTD) [34-35]. These NTDs most often occur in populations who live in extreme poverty and lack sanitation, clean water, access to healthcare, and education [35]. The deleterious effects of these diseases have been ignored for so long. Now the global community is demanding change, demanding that all nations, whether a first world or third world country, join together and work to fight, and if possible, eradicate these diseases. Current estimates state that approximately two billion people are infected with STHs, and another four billion are at risk of contracting the infections [3, 34-35]. Originally, research and the development of control programs focused solely on routine chemotherapy. Over time, however, it became apparent that a more all-inclusive method of control was necessary. In addition to routine chemotherapy, pilot projects and research supported the necessity of the ‘WASH approach.’ A multitude of studies reinforced the fact that it is essential for people not only receive treatment for current STH infection, but also that through the ‘WASH approach’ they are given the tools and education to prevent reinfection [9-11, 25-30]. In order for effective control of STH infections to occur, organizations and countries need to recognize this. They need to take this holistic strategy and work to develop effective, culturally appropriate, and sustainable STH control methods.

Cultural Competence

Background

Over the past four decades, there has been a significant focus internationally to implement control measures against STH infections [1]. These measures include routine chemotherapy partnered with the ‘WASH approach,’ which includes: access to clean water, sanitation, hygiene and health education (the ‘WASH approach’) [1, 4, 8-35]. However, there exists a significant lack of population-specific, culturally competent approaches and interventions to controlling STHs. As a result, the effectiveness of the STH control measures often is markedly reduced and the lasting impact undermined. Despite the fact that awareness of the concept of ‘cultural competence’ is growing globally, especially within the last two to three decades, there remains a significant gap in research and practice.

Methods

A review of literature included: CINAHL, Cochrane, Health & Wellness Resource Center, Medline, Web of Science Core Collections, Journal of Transcultural Nursing, Journal of Applied Nursing Research, PsycINFO, Global health. No date or language limit was used. However, due to limited literature specifically pertaining to designing and implementing culturally competent health education as a part of the ‘WASH approach,’ the search was expanded to include articles related to other interventions besides the ‘WASH approach’ as long as they addressed the cultural competence aspect. The search yielded 46 articles, but only 22 qualified for the review of

literature. Of these 22 articles, there were two systematic reviews, two mixed-methods/quasi-experimental studies, 13 qualitative-descriptive/participatory/exploratory studies, three pilot projects/case studies, and two perspective articles. Key terms included: community-based participatory research, third-world, international, health education, cultural competence, culturally sensitive, culturally informed, culturally appropriate, population-specific education, cross-cultural, development of culturally competent health education, Ethiopia, Africa, sanitation, hygiene, helminth, soil-transmitted helminth infections, WASH approach.

Guideline Recommendations

A review of the literature on the development and implementation of culturally competent health education led to the formation of this evidence statement:

Evidence Statement

Successfully designing and implementing a culturally competent health education project requires a thorough community assessment, an understanding and respect of the community's culture, relationship building within the community, approval of the project by the community and government, active participation of all key stakeholders throughout the project, tailoring the health education and delivery to the specific community, and a significant investment of time and resources.

Strength of Evidence: Grade B

Culturally competent care “refers to the explicit use of culturally based care and health knowledge in sensitive, creative, and meaningful ways to fit the general lifeways and needs of individuals or groups for beneficial and meaningful health and wellbeing, or to face illness, disabilities, or death” [70, pp. 42]. Cultural competence not only pertains to the physical skill portion of healthcare, but also to the education side. Cultural competence in health education is vital, especially if the desired outcome includes increased knowledge as well as attitude and behavior change [52, 69]. Achieving cultural competence requires a high level of commitment, perseverance, time, resources and investment [51, 59, 63, 65, 68].

Five critical strategies are necessary to employ the design and implementation of the health education to achieve cultural competence. The five key strategies include: peripheral, evidential, linguistic, constituent-involving, and sociocultural [48, 60]. Peripheral strategies work to make the health education program and materials appear culturally appropriate, such as by using particular pictures, font, colors, and titles [48]. Evidential strategies increase the apparent relevance of the health issue to the target population by providing supporting evidence of its impact on the specific population [48]. Linguistic strategies ensure that the health education is delivered in the language of the specific population, whether this is orally or in writing [48]. Constituent-involving strategies involve and heavily rely upon the members of the target population [48]. And lastly, sociocultural strategies find ways to discuss the health-related issue(s) in the social and cultural context of the population, thus ensuring that cultural values, beliefs, and behaviors are recognized and respected [48].

Examination of the articles included in this review of literature revealed repeated themes which can be categorized into twenty ‘vital steps’ essential to achieving cultural competence. These vital steps include [49-69]:

- 1) Building relationships within the community, establishing mutual trust and respect.
- 2) Completing a thorough community assessment as well as a generalized country assessment so that the factors of influence will be brought to light – “cultural interpretation.” Age, gender, education level, occupational and health status, nationality, tribe, native language, religious affiliation, area of residence, and marital status should be taken into consideration.
- 3) Collaboration with the community to identify their needs, resources, and feasible solution options.
- 4) Involving not only the general community, but specifically seeking out the involvement of community and religious leaders.
- 5) Mutually agreeing upon ‘problem issue(s),’ goals/objectives, plan of action, and solution(s).
- 6) Obtaining approval of the project from all the key stakeholders, as well as leaders at the local and national level.
- 7) Training community leaders who desire to actively participate. Then identify other community members who want to be committed participants and train them as well.

- 8) Communicating effectively and involving the community are necessary throughout the project. This includes establishing and maintaining clarity of roles and responsibilities.
- 9) Providing opportunities for feedback and evaluation must be built into the project and honored.
- 10) Translating all communication and materials into the native language of the community.
- 11) Incorporating their everyday life into the project whenever possible – have a cultural emphasis in every way possible.
- 12) Respecting the community's culture, beliefs, values, practices, leaders, members.
- 13) Performing a field/pilot test of the project before implementing the entire project.
- 14) Addressing not only knowledge and attitudes change, but emphasize behavior change.
- 15) Including incentives or certificates of completion, as they greatly improve participation of the community.
- 16) Focusing on community empowerment so that project sustainability is achievable.
- 17) Seeking funding and external resources to assist communities may be necessary.

- 18) Understanding the time commitment needed to successfully design and implement the project, especially if you desire to achieve sustainability.
- 19) Remembering that projects of this nature must remain interactive, flexible and dynamic. ‘Unexpected challenges’ continually arise.
- 20) Disseminating findings locally, nationally, and internationally.

An additional theme discussed in the literature is that there truly is a significant gap in the literature regarding how to best design and implement culturally competent health education [56, 59, 69].

Conclusion

Despite a global effort to implement the ‘WASH approach’ as a means of STH control, a significant gap exists in the literature about implementing health education in a culturally appropriate and sensitive way. “Cookie-cutter” methods of health education administration largely lack efficacy and sustainability. Delivering health education that is truly culturally competent is necessary if the target populations are to experience increased knowledge, as well as attitude and behavior change [52, 69]. Although there were extremely few published articles related specifically to ‘culturally competent health education as a part of the WASH approach’, the broader topic of ‘culturally competent health education and projects’ did reveal more results. The common findings in these articles is that successfully designing and implementing a culturally competent health education project requires the following: a thorough community assessment, an understanding and respect of the community’s culture, relationship building within the

community, approval of the project by the community and government, active participation of all key stakeholders throughout the project, tailoring the health education and delivery to the specific community, and a significant investment of time and resources [49-69].

THEORETICAL UNDERPINNING

Havelock's Theory of Planned Change

Translating the current literature into an evidence-based practice project required a sound foundation. One such model was found - Havelock's Theory of Planned Change. Not only did it guide the project planning and implementation step by step, but it also was appropriate for cross-cultural settings. Havelock's Theory of Planned Change, categorized as a change theory, was developed in 1976, as a modified version of Lewin's Theory of Change [72, pp. 52]. Havelock's theory was comprised of seven components, or stages [71 pp. 11-15; 72, pp. 52]. The first component, "Stage 0: Care," involved attention to the need for change, or concern for needed change [71 pp. 11-12, 14]. The second component, "Stage 1: Relate," addressed the necessity of building relationships [71 pp. 11-12, 15]. The third component, "Stage 2: Examine," was comprised of diagnosing the problem [71 pp. 11-12, 15]. The fourth component, "Stage 3: Acquire," involved acquiring the relevant sources [71 pp. 11, 13, 16]. The fifth component, "Stage 4: Try" was choosing and implementing the solution [71 pp. 11, 13, 16]. The sixth component, "Stage 5: Extend," encompassed disseminating, diffusing, and gaining acceptance [71 pp. 11, 13, 17]. The seventh component, "Stage 6: Renew," dealt with actions required to stabilize and sustain the change [71 pp. 11, 13, 17]. This model is also known as the "C-R-E-A-T-E" or "re-C-R-E-A-T-E" model stages due to the names of each stage: "C" for 'Care,' "R" for 'Relate,' "E" for 'Examine,' "A" for 'Acquire,' "T"

for ‘Try,’ “E” for ‘Extend,’ and “Re” for ‘Renew’ [71, pp. 11 & 13]. Below is a visual model of Havelock’s Theory of Planned Change [71, pp. 11; 72, pp. 51]:

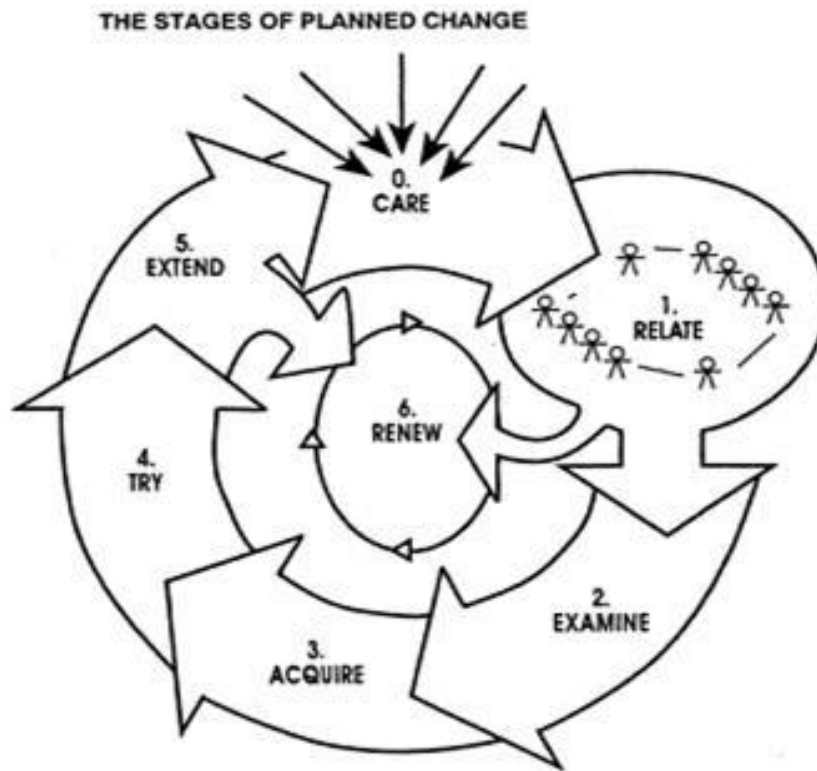


Figure 1. The stages of planned change

There are a number of reasons why Havelock’s Theory was selected as the model for this clinical project. The first is that the stages and overall process lent themselves to the steps required for a cross-cultural project, particularly the building relationships emphasis, and the community approach. Second, the stages incorporated situation/background, assessment, recommendation, and evaluation, all of which are crucial elements in the nursing profession, as well as for successful project implementation. Lastly, while there are individual ‘stages’ in this model, the process is

cyclical, which is ideal and truly realistic as ‘change’ is a dynamic and continual process.

The following table identifies each individual ‘stage’ in Havelock’s Theory of Planned Change, along with the specifics of each ‘stage’ in relation to this clinical project.

Table 1. Individual 'stage' in Havelock's Theory of Planned Change

<i>Stage</i>	<i>Application in Clinical Project</i>
<i>Stage 0: Care – attention to the need for change (concern for needed change)</i>	The author, after spending time in Bati Kelo, became concerned about the community’s health status. The author became aware that change needed to take place, although at this time, the specifics were not known. It was also at this time that the Bati Kelo village leaders approached the author to ask if they would be willing to help them address the health issues in their community.
<i>Stage 1: Relate – build relationships</i>	The author built relationships with the community of Bati Kelo (particularly the village leaders, spokesmen and spokeswomen), key contacts within the Ethiopian government and ministry of health, and in-country facilitators and translators. These relationships were strengthened over multiple visits by the author to Ethiopia over the course of four years.
<i>Stage 2: Examine – diagnose the problem</i>	The author conducted a community assessment of Bati Kelo. This was primarily performed through interviews. Other methods used included observation of the community (living their “normal” day to day life), water testing, assessment of sanitation facilities, and review of the medical records from the volunteer “bush clinic.” Verbal consent from participating individuals was given, and no personal identifiers were gathered. All the data collected revealed that the soil-transmitted helminth (STH) infection burden of disease was severe and causing significant deleterious effects on the entire community. The community assessment also shed light on the ‘factors’ contributing to the STH infections and burden of disease. These included lack of clean water, proper sanitation, personal hygiene, basic health/medical knowledge, routine deworming and medical care.

Table 1. Individual 'stage' in Havelock's Theory of Planned Change, Continued

Stage	Application in Clinical Project
Stage 3: Acquire – acquire the relevant sources	The author conducted a review of literature which included Pubmed, CINAHL, Cochrane, Global Health, Medline, BioMed Central, African Journal of Infectious Diseases, Clinical Infectious Diseases, International Journal of Infectious Diseases, WHO, and CDC. No limits, such as publication date or language, were set on the search. The search yielded over 60 articles. Of these, seven systematic reviews and meta-analyses, eight randomized control trials, seven non-randomized control trials, two cross-sectional studies, six review articles, and five background articles were included in the review of literature. The published recommendations of the CDC and WHO were also included. Key terms included: soil-transmitted helminth, helminth, hookworm, whipworm, roundworm, <i>Trichuris trichiura</i>, <i>Ascaris lumbricoides</i>. Albendazole, Mebendazole, Benzimidazoles, deworming, chemotherapy, cure rates, egg reduction rates, effectiveness, treatment, prevention, control, sanitation, hygiene, footwear, shoes, hand washing, soap, water, health education, behavior, WASH approach (which includes access to: clean water, sanitation, hygiene, footwear, & health education). The conclusions from the review of literature can be summarized in these two evidence statements:
Evidence Statement #1	
Soil-transmitted helminth infections (hookworm, whipworm, roundworm), are known to cause malnutrition, stunted physical growth, impaired cognitive development, anemia, vitamin A deficiency, intestinal obstructions, complications in pregnancy, fetal deformities, and synergistic effects with other diseases such as HIV, TB, and malaria.	
Strength of Evidence: Grade B	
Evidence Statement #2	
Control of soil-transmitted helminth infections (hookworm, whipworm, roundworm) necessitates routine chemotherapy, health education, access to clean water, improved sanitation, improved hygiene, and access to footwear (“The WASH Approach”).	

Table 1. Individual 'stage' in Havelock's Theory of Planned Change, Continued

Stage	Application in Clinical Project
<i>Stage 4: Try – choose the solution</i>	Strength of Evidence: Grade A- Based upon the conclusions from the literature review, the ‘solutions’ to the STH infection issue in Bati Kelo consisted of: routine chemotherapy, health education, access to clean water, improved sanitation, improved hygiene, and access to footwear. The “bush clinic” had already initiated routine chemotherapy, a group of engineers was already working on the water problem, and members of the “bush clinic” team were tackling the ‘access to footwear’ issue. The area that had yet to be addressed was the health education – health education specifically related to STH infections, transmission, preventative measures, and treatment options. The health education piece also encompassed the hygiene and sanitation issues as these are some of the major prevention methods. The author chose this as the solution/intervention they would undertake. At this point, the author returned to ‘<i>Stage 3: Acquire – acquire the relevant sources</i>’ as they now needed to perform a literature review on how to develop, deliver, and evaluate ‘culturally sensitive and informed health education.’ A review of literature included: CINAHL, Cochrane, Health & Wellness Resource Center, Medline, Web of Science Core Collections, Journal of Transcultural Nursing, Journal of Applied Nursing Research, PsycINFO, Global health. No date or language limit was used. However, due to limited literature specifically pertaining to designing and implementing culturally competent health education as a part of the WASH approach, the search was expanded to include articles related to other interventions besides the WASH approach as long as they addressed the cultural competence aspect. The search yielded 46 articles, but only 22 qualified for the review of literature. Of these 22 articles, there were two systematic reviews, two mixed-methods/quasi-experimental studies, 13 qualitative-descriptive/participatory/exploratory studies, three pilot projects/case studies, and two perspective articles. Key terms included: community-based participatory research, third-world, international, health education, cultural competence, culturally sensitive, culturally informed, culturally appropriate, population-specific education, cross-cultural, development of culturally competent health education, Ethiopia, Africa, sanitation, hygiene, helminth, soil-transmitted helminth infections, WASH approach.

Table 1. Individual 'stage' in Havelock's Theory of Planned Change, Continued

<i>Stage</i>	Application in Clinical Project
A review of the literature on the development and implantation of culturally competent health education led to the formation of this evidence statement:	Evidence Statement Successfully designing and implementing a culturally competent health education project requires a thorough community assessment, an understanding and respect of the community's culture, relationship building within the community, approval of the project by the community and government, active participation of all key stakeholders throughout the project, tailoring the health education and delivery to the specific community, and a significant investment of time and resources.
Strength of Evidence: Grade B With regards to finding 'practical guides' specifically for the implementation of a culturally competent implementation of the WASH approach (specifically the health education piece) the author found literature and materials published by the WHO, UNICEF, HANDICAP International, and Mediciens du Monde extremely helpful [73-77]. The primary method they recommended was using the 'KAP survey' partnered with the WASH approach. The KAP survey is a survey that assesses three key areas: knowledge, attitudes, and practice. Using the answers to these questions as a foundation, a culturally competent and population-specific WASH approach is then able to be designed and implemented. Based on these findings from the review of literature, the author then progressed to 'Stage 4: Try – choose the solution.' The 'solution' was two-fold: 1) to utilize the KAP survey to assess the baseline knowledge, attitudes, and practice, as well as to evaluate the health education intervention, and 2) deliver the health education in oral and a visual form. Both parts of the 'solution' were designed with input from key contacts within the Bati Kelo community so as to ensure they were culturally sensitive and informed.	

Table 1. Individual 'stage' in Havelock's Theory of Planned Change, Continued

Stage	Application in Clinical Project
<i>Stage 5: Extend – disseminate, diffuse, and gain acceptance</i>	Two 'survey and education session interventions' were held. These were held approximately six months apart, and the same procedure was performed for each one. It took approximately four hours to complete one entire session. 1) The participants assembled, information regarding the type of project will be given. The author answered questions that the participants had. Anyone from the community was allowed to attend; however, only individuals 12 years of age, with no cognitive disabilities, were allowed to participate. 2) The consent forms were distributed, filled out, and then collected (and any questions were answered). Participation being voluntary was very much emphasized. It was also emphasized that a person could withdraw at any time without any consequences. Due to the low literacy rates, the consent form was read aloud to all participants to ensure comprehension. (For the second set of sessions, returnees did not need to complete a new consent form. All they needed to have was their participant identification number.) 3) Consenting participants were 'checked in' – given an identification number (so that all surveys could be identified and tracked using the identification number, and not any personal information). 4) The KAP survey was filled out, and then collected by staff. Due to the low literacy rates, individuals from the community who could read and write were solicited to assist participants who could not read or write. Due to the high number of those who were illiterate, the individuals who were literate often had to help five to ten other participants at a time. 5) At this time there was a break. Participants had time to use the latrine facilities if needed. Food and water were also distributed to the participants, along with any children they had with them. 6) The health education was given, using the posters and verbal explanation. Following the presentation, a question discussion time was held. The opportunity for the participants to provide feedback and comments was also given. 7) After the second set of KAP survey and health education sessions, a small culturally appropriate thank you was given to the returning participants.

Table 1. Individual 'stage' in Havelock's Theory of Planned Change, Continued

	During this entire process, the author, along with the assistance of the translators and local community facilitators, worked to engage, teach, and assist the community in applying what they had learned. In between the 'intervention sessions,' the translators and local community facilitators continued to reinforce what was taught in the education sessions. They also encouraged and assisted the community members to begin practically applying what they had learned. Over time, with the continual encouragement and reinforcement, it is hoped that the education and practical ways to prevent STH infections would take root in the community, be applied, and make an impact. This stage is key in that it celebrates the accomplishment of bringing about practice change, but also in that it recognizes that change is a continual process. Change is not static, and therefore, if practice change is to continue, there must be a continual effort to reassess, improve/adjust, stabilize, and then sustain. During this stage, the author, along with the assistance of the Bati Kelo community, continued to re-evaluate and make needed improvements/adjustments to the practice change model so as to ensure sustainability – using the KAP survey results as well as feedback from the participants, assistants, leaders, and community as a whole. Also, during this stage the author finalized the training of key local community members so that they would be able to continue on educating and assisting their community, even when the author was no longer able to do so.
<i>Stage 6: Renew – stabilize and sustain capacity</i>	This stage is key in that it celebrates the accomplishment of bringing about practice change, but also in that it recognizes that change is a continual process. Change is not static, and therefore, if practice change is to continue, there must be a continual effort to reassess, improve/adjust, stabilize, and then sustain. During this stage, the author, along with the assistance of the Bati Kelo community, continued to re-evaluate and make needed improvements/adjustments to the practice change model so as to ensure sustainability – using the KAP survey results as well as feedback from the participants, assistants, leaders, and community as a whole. Also, during this stage the author finalized the training of key local community members so that they would be able to continue on educating and assisting their community, even when the author was no longer able to do so.

The theoretical underpinning of this clinical project was crucial, not only to the project design, but also to its implementation, evaluation, and impact on the project population. Havelock's Theory of Planned Change directed the author step by step in

how best to implement the project and make it sustainable as well as culturally sensitive and informed. The guidance provided by Havelock's Theory created a strong foundation and guiding force for the entire clinical project.

METHODS

Intervention

This clinical project was developed to provide a culturally sensitive and informed health education program to address the health practices of a rural high risk population as a method for controlling soil-transmitted helminth infections. The project intervention required several key components. These consisted of: 1) developing a culturally competent and population-specific KAP survey, 2) developing culturally competent health education material for the project population, and 3) conducting the KAP survey and health education sessions in a culturally competent manner. Because the author planned to evaluate impact of the health education, a pre and post survey were required. Therefore, two ‘survey and education session interventions’ were held. The sessions were held approximately six months apart, and the same survey and procedure were performed for each session. The rationale for the overall project, and each of the three key components, was derived from the two reviews of literature, one on STH control measures, and the other on developing and implementing culturally competent health education. The findings for each of the literature reviews were the guiding force for the four key components of this project intervention.

Culturally Competent and Population-specific KAP Survey

The use of the KAP survey as the means of identifying and evaluating differences in health behavior practices prior to and after ‘WASH’ education was determined early in the project. It first emerged in the review of literature on STHs, and then dominated the

literature in the arena of implementing the ‘WASH Approach.’ The KAP survey was the recommended tool for any project working with the ‘WASH Approach’ for STH control, as it gathered important background data on the sample population, provided a means of evaluating the efficacy of an intervention, and was able to be tailored to a specific sample and setting [73-77]. Since this project was focused on a culturally competent intervention, the tool used to gather data and evaluate the project was required to be individualized for the project population. The KAP survey method fulfilled this requirement.

The development of a culturally sensitive and informed KAP survey took nearly two years to complete. Initially, the author did not organize any formal meetings or information gathering. Rather, the author began going to Ethiopia approximately every six to twelve months, and spent time in Bati Kelo, learning about the culture, language, customs, values, and people. Over the course of multiple trips, the author began to build relationships with key members and leaders in the Bati Kelo community, as well as the neighboring areas. It was the foundation of these relationships and deeper understanding of the community that enabled the KAP survey development to take place. The author used resources and examples of KAP survey development from international organizations such as HANDICAP International, the WHO, UNICEF and Medicines du Monde [73-77]. The author then spent many months working with the Bati Kelo community leaders and members to write a KAP survey that was specific, applicable, and culturally sensitive and informed to their community. Not only was it written in their language, but the word choice and syntax was guided by the community leaders and members themselves.

The content of the survey questions and answers also were directed by the community leaders and members, to ensure that all of it specifically pertained to their community. The KAP survey, as the acronym delineates, addressed three areas related to holistic STH control: 1) knowledge level, 2) attitudes towards, and 3) health practices/behaviors. The KAP survey written for this project had a total of 71 questions. The survey included four types of questions: 1) demographics, 2) knowledge questions, 3) attitude questions, and 4) health practice/behavior questions. Based upon the focus of the ‘WASH approach’ and the input from the Bati Kelo community leaders and members, the survey content focused on these key areas: 1) water, 2) sanitation and hygiene (particularly latrine use, hand washing, wearing shoes), and 3) disease. To view the project KAP survey in its entirety, please see Appendix A (English version), Appendix B (Amharic version), and Appendix C (Afan Oromo version). However, since the purpose of this project was “to develop and implement a culturally sensitive and informed health education program *to address the health practices* of a rural high risk population as a method for controlling soil-transmitted helminth infections,” only the key health practice/behavior questions were used to evaluate the project. There were ten ‘key health practice/behavior questions.’ Two questions addressed latrine usage, three questions addressed clean water usage, three questions addressed hand washing, and two questions addressed wearing shoes.

Culturally Competent and Population-specific Health Education Material

The development of culturally competent health education material for the project required a large amount of time and collaboration with members of the community. The author began reviewing the literature on various education approaches and material development ideas for many months, before trialing various methods during visits to Bati Kelo. All this occurred in partnership with the Bati Kelo leadership and volunteer community members. Based on these key individuals' feedback, important changes were made in the health education content as well as the presentation of the material. During this process, it became apparent that literacy rates were extremely low. Therefore, the health education material needed to be given in oral and visual form, instead of written form. At this point, the author hired an illustrator, and together with the Bati Kelo community members and leaders, they designed and produced health education posters. Everything was based on the Bati Kelo community's daily life, setting, struggles, and cultural values. It was tailored specifically to them so that not only was it culturally competent, but also more understandable, applicable, and impactful. These posters, along with the verbal explanation by the author, fully communicated the necessary health education content. [To see the content of the oral health education material, please see Appendix D. To view a sample of the visual health education material (posters), please see Appendix E.]

Culturally Competent Conduction of Intervention

While it was crucial that the KAP survey and the health education material be population-specific and culturally competent, it was equally important that the delivery of them also be. A culturally offensive or insensitive delivery method would negate all the time and effort that went into designing the culturally competent KAP survey and health education material. To ensure that there was congruence in cultural competence throughout the project, the author worked constantly with contacts in Ethiopia and especially in the Oromiya region and Bati Kelo community. It was from their knowledge, expertise, and input that the structure of the project took shape. The areas of project implementation in which this was very evident included: how to announce and invite the entire community, who from their community to hire as translators and assistants, how to help illiterate individuals complete the KAP survey, the timing of the sessions, how to make the project participants feel valued, respected, and show appreciation for their attendance and participation.

Awareness of the project and the invitation to participate took place via word of mouth. The community leaders and members who had been involved in the planning stages told their family, friends, relatives, as well as to those at the local church, in the market place, at the lake, and in the fields. Often it was communicated in an informal manner, however, on a few occasions, it was announced at community and church meetings.

The choice of translators and assistants was based upon the recommendations of the Bati Kelo community leaders and those involved in the project planning. They were

able to identify individuals within the community or nearby who could speak Amharic and English, as well as those who could read and write Afan Oromo. The community leaders then approached these individuals, asking them for their assistance. Those who were willing were then informed in more detail of the project, the purpose, and method, before helping with the KAP survey and health education sessions.

Overcoming the literacy issue in order to complete the KAP survey was crucial. Based upon the community leaders' and key community members' input, as well as recommendations from KAP survey resources, it was decided that the best model for completing the KAP survey was to have one designated literate person, the "KAP survey assistant," help a number of illiterate persons. The "KAP survey assistant" would read aloud the question and, if necessary, explain it. The "KAP survey assistant" would then do the same for each of the possible answers. Once the survey participants had chosen their answer, the "KAP survey assistant" would help them circle it. Due to the low literacy rate of the community, often the "KAP survey assistant" had to help five to ten survey participants at a time.

The timing of the sessions proved to be very important for the community. Due to the community members having to travel on foot to the sessions, the start time was set for mid-to-late morning. The session's end time was set at mid-afternoon because sunset always came between five and five thirty. If the community members were still walking home after dark, they would be in danger of hyena attacks as well as lack daylight to find their way home.

Culturally, it was extremely important to show respect, appreciation, and value. This was primarily communicated through the sharing of food and drink, as well as by taking the time to have open, honest discussions. These were incorporated into the health education sessions by building in specific time slots to provide the participants with food and water, and by initiating open dialogue with the participants at each stage of the session about the project and health education content. In addition, to express gratitude to those who participated in the entire project (both KAP surveys and health education sessions), the author arranged for a ‘thank you gift’ of a jerry can to be given to each individual. This gift was not only congruent with cultural practices, but it also practically reinforced the health education content on clean water storage. [For the order of procedure for the intervention sessions, please see Appendix D.]

Ethical Considerations

A proposal for this project was submitted to the Institutional Review Board (IRB) of Montana State University. The official approval was granted in September 2015. Ethiopian government approval also was required as this project took place in Bati Kelo, Ethiopia. The project proposal was translated into the Amharic language and submitted to the Federal Democratic Republic of Ethiopia Ministry of Health, located in the capital city of Addis Ababa. The project proposal was also translated into the Afan Oromo language and submitted to the Oromiya Ministry of Health Bureau, located in the Oromiya regional capital Adama. The Federal Ministry of Health and the Oromiya

Ministry of Health Bureau approved the project proposal, and granted legal permission to carry out the project. [Please see Appendix F for the approval documents.]

This project presented no risks to the participants or adverse effects except for the time taken to participate in the study and any slight discomfort this might have caused. The time required to participate included both the completing the survey and attending the health education session. The surveys took approximately two hours to complete, and the health education session one hour, thus the combined time commitment was three hours total. Breaks were provided in order for the participants to be able to use the restroom, and snacks and water were provided as well. Participation in the project was completely voluntary. A village announcement, to the entire village, was made by the community members assisting with the project. The entire village was notified that a health education session and health education project was going to be offered, that it was free of charge, and they were welcome to attend. Participants were allowed to withdraw at any time without penalty, and also, they were allowed to attend the health education session even if they did not to complete the survey. A consent form, translated into Afan Oromo was signed by the participant if they chose to participate in both the KAP survey and the health education session. [Please see Appendix F for the copies of the consent forms.] There was no risk of privacy violation as all identification and tracking was done via a coded numerical tracking system. The numerical tracking system consisted of participants being assigned a number when they agreed to participate in the project, and that number was then used to track all their survey data and results. Personal identifiers were not collected.

Sample, Setting & Data Analysis

A convenience sample was collected from the community of Bati Kelo. Data were based on self-reported responses to the KAP survey. Due to the project purpose being to “to address the health practices of a rural high risk population as a method for controlling soil-transmitted helminth infections,” only the key health behavior questions were utilized to evaluate the project. As previously mentioned, this consisted of ten questions: two on latrine usage, three on clean water usage, three on hand washing, and two on wearing shoes. The answers to these ten questions were what underwent data analysis, and thus are the basis for the results of this project. Below is a table which lists and categorizes the questions.

Table 2. Category of 'Health Behavior Questions'

CATEGORY OF 'HEALTH BEHAVIOR QUESTION'	QUESTION #
<i>Latrine Use</i>	1
	2
<i>Clean Water</i>	3
	4
	5
<i>Hand Washing</i>	6
	7
	8
<i>Wearing Shoes</i>	9
	10

A total of 234 individuals agreed to participate in this project. Due to the high number of individuals wanting to participate, three separate sessions, approximately one week apart, were held for the ‘first intervention’ and completion of the ‘pre-survey.’ The

first group had 66 participants, and the second and third group sessions combined totaled 168 participants. However, due to a high fall out rate, only 88 of these same participants returned for the ‘second intervention,’ and completion of the ‘post-survey.’ These 88 individuals were split into two group sessions. The first group had 37 participants, and the second group had 51. Of these 88 participants’ surveys, 87 surveys were usable, as one of the surveys had an illegible participant identification number written on it, and thus was not able to be paired with the participant’s ‘pre-survey.’ Of those remaining, six were disqualified from the final inclusion and statistical analysis due to errors in filling out the answers to the key questions on the surveys. The errors included: leaving a question blank, answering illegibly, circling too many answers on a multiple choice question. Because of this, only 81 of the participants’ surveys qualified for final inclusion and statistical analysis. The final dropout rate was 65%. See below for a diagram of “inclusion” versus “fallout” for the project sample population.

The KAP survey data was analyzed using SPSS version 2.4. Descriptive statistics were utilized for the evaluation of the entire project. Due to the varying and complex format of many of the questions, all of them were analyzed using percentages and graphing. In order to analyze differences between pre and post intervention (survey) results the author selected standard statistical tests based on the study design and data type. McNemar’s test, generally considered the most appropriate test for data involving dichotomous variables and therefore matched pair/pretest-posttest studies, was used to analyze questions 3, 6, and 9 [98-100]. Wilcoxon’s signed-rank test, considered standard for determining a median difference between paired ordinal data results was used to

analyze questions 1, 4, 7, and 10 [98, 101-102]. Below is a table with the health behavior questions listed as well as the specific type of data analysis they underwent

Table 3. Health Behavior Questions & Type of Data Analysis

<u>Category</u>	<u>Question #</u>	<u>Graphing & Percentages</u>	<u>McNemar's</u>	<u>Wilcoxon's</u>
HEALTH BEHAVIOR QUESTIONS	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	3, 6, 9	1, 4, 7, 10

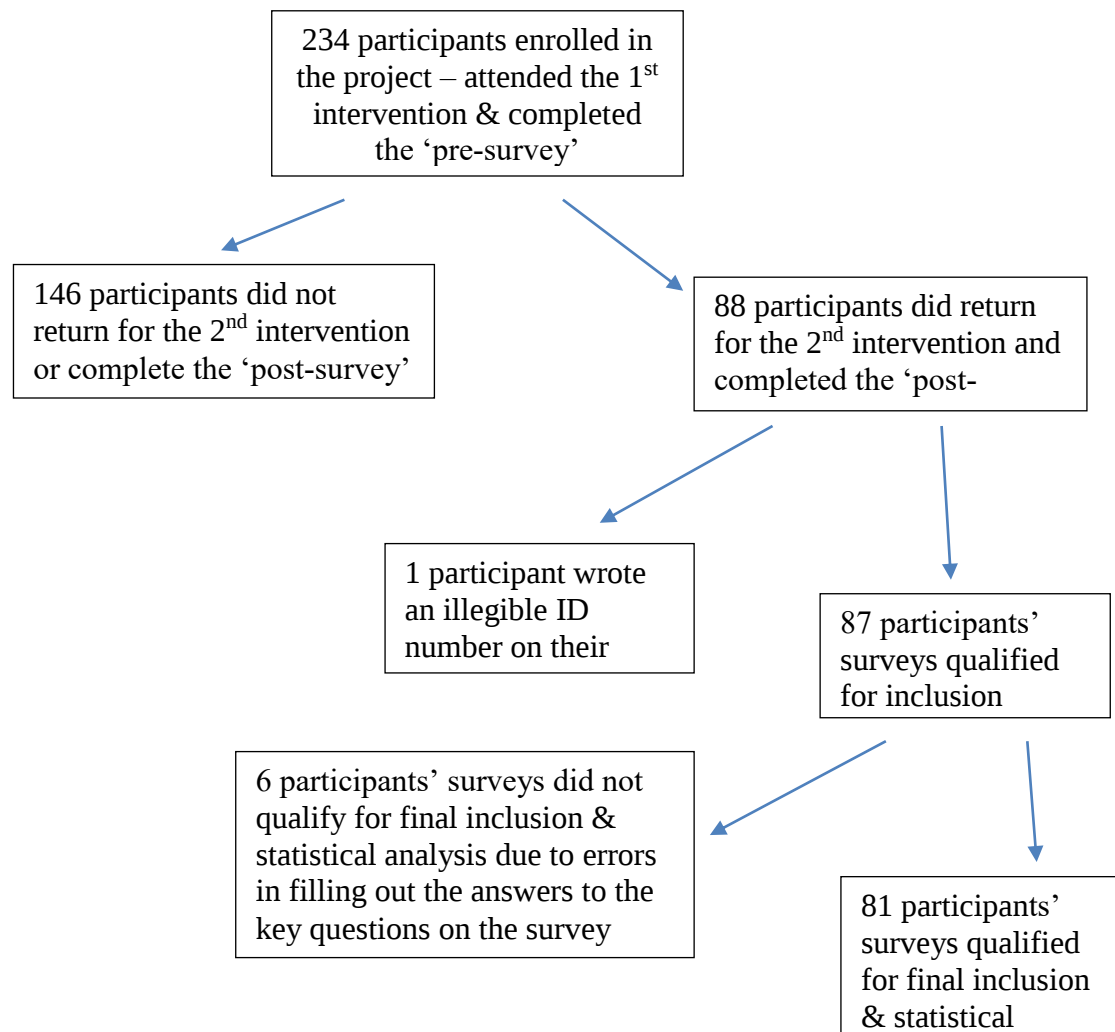


Figure 2. “Inclusion” Versus “Fallout” for the Project Sample Population

FINDINGS

Demographics

The project sample population varied in age, gender, and education level. On each survey, participants were required to report their age (given in ranges of a decade), gender, and education level achieved.

Age

Twelve individuals (14.8%) were age 12-19, twenty (24.7%) were age 20-29, twenty-five (30.9%) were age 30-39, fifteen (18.5%) were age 40-49, four (4.9%) were age 50-59, two (2.5%) were age 60-69, and lastly, two (2.5%) were age 70-79. One participant did not list their age, which consisted of 1.2% of the sample population.

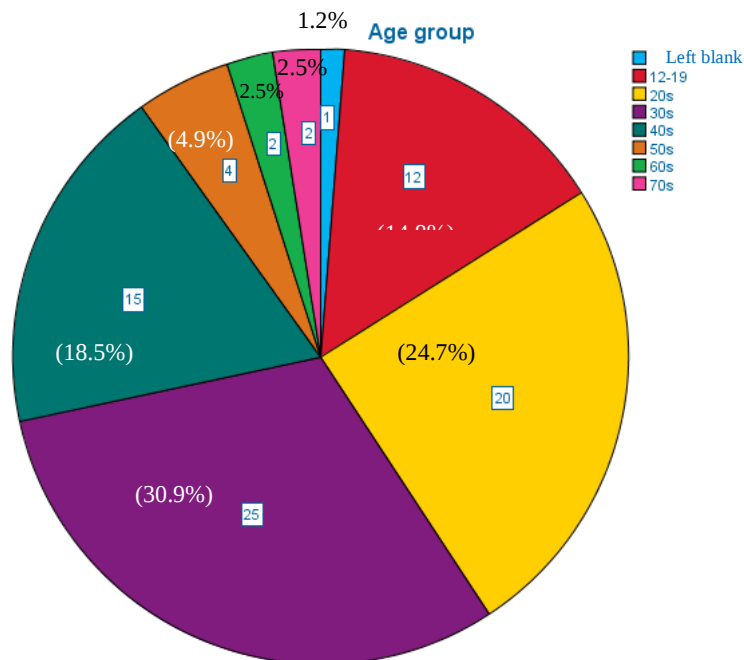


Figure 3. Age Group

Gender

With regards to gender, there was nearly a 1:1 ratio. Thirty-nine of the participants (48.1%) were male, and forty (49.4%) were female. Two of the participants (2.5% of the population) did not list their gender.

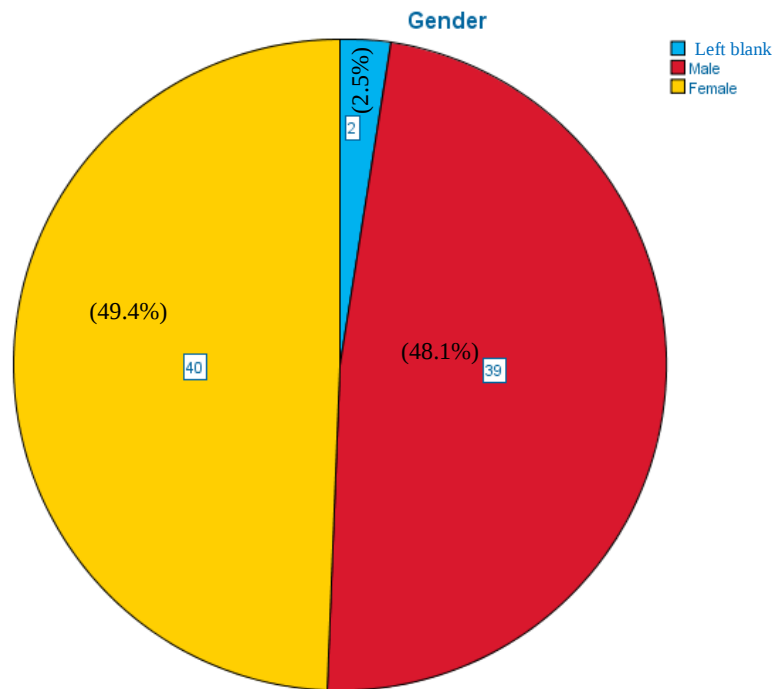


Figure 4. Gender Percentages

Education Level

As for the education level achieved, the numbers weighed heavily on the 'no-to-low education' level. Thirty-four of the participants (42%) reported no education at all, thirty-four (42%) reported attending primary school, ten (12.3%) reported attending secondary school, and only two (2.5%) reported schooling at higher than a secondary level. One participant (1.2%) did not report their education level.

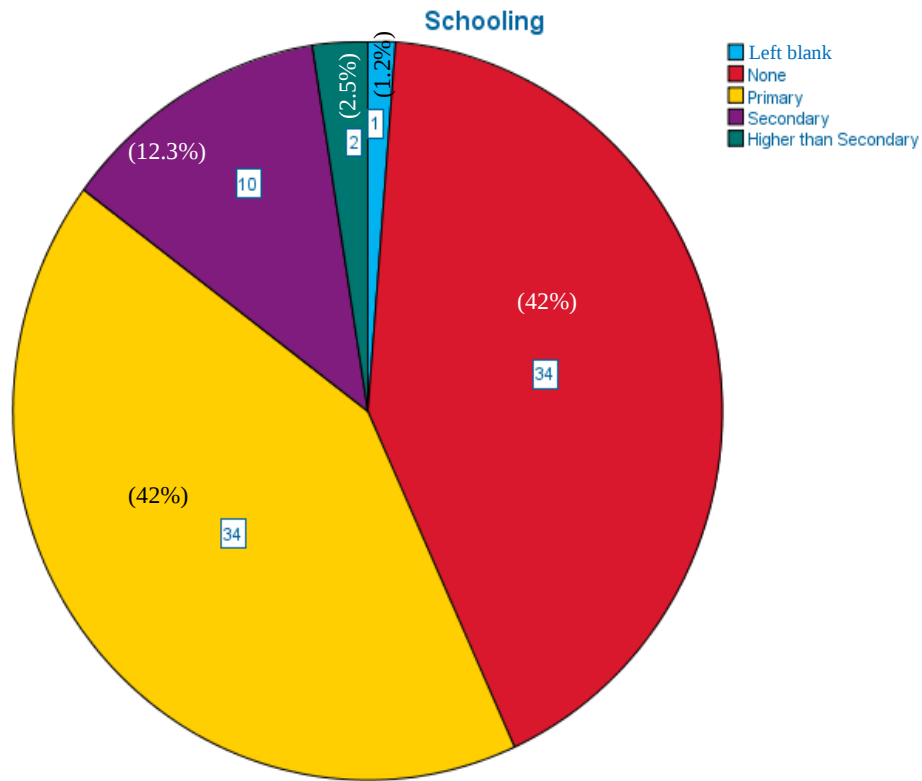


Figure 5. Education Level

Survey Findings

Latrine Use

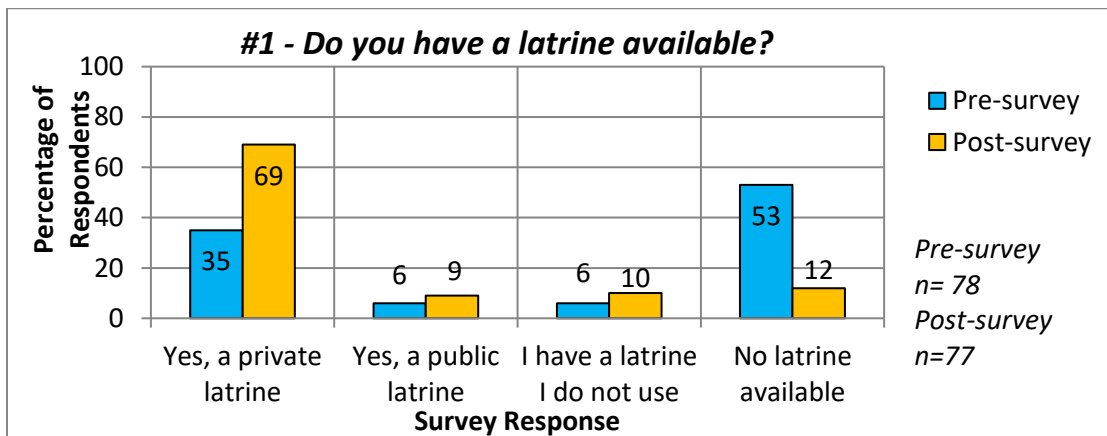


Figure 6. Latrine Availability

On the pre-survey, seventy-eight individuals responded to the question “do you have a latrine available?”. Twenty-seven (35%) selected ‘yes, I have a private latrine,’ five (6%) selected ‘yes, a public latrine,’ forty-one (53%) selected ‘no latrine available,’ and five (6%) chose ‘I have a latrine, I don’t use it.’ In total, 41% of the individuals have some type of latrine available that they use, and 59% either did not have a latrine or had one and chose not to use it. In the post-survey, seventy-seven individuals responded to the question. The results of their selections differed greatly from the pre-survey. Fifty-three (69%) reported ‘yes, I have a latrine,’ seven (9%) selected ‘yes, a public latrine,’ nine (12%) reported ‘no latrine available,’ and eight (10%) selected ‘I have a latrine, but I don’t use it.’ In total, 78% of the respondents had a latrine available and were using it; whereas only 22% reported either not having a latrine to use or choosing not to use the one they had available. Of the sixty-nine participants who answered both the pre and post survey, thirty-four had better availability to a latrine post-intervention, ten reported worse availability, and twenty-five had no change in their latrine situation. A Wilcoxon signed rank test determined that there was a statistically significant increase in participants reporting improved latrine availability between pre and post intervention, $z = -3.694$, $p > 0.001$.

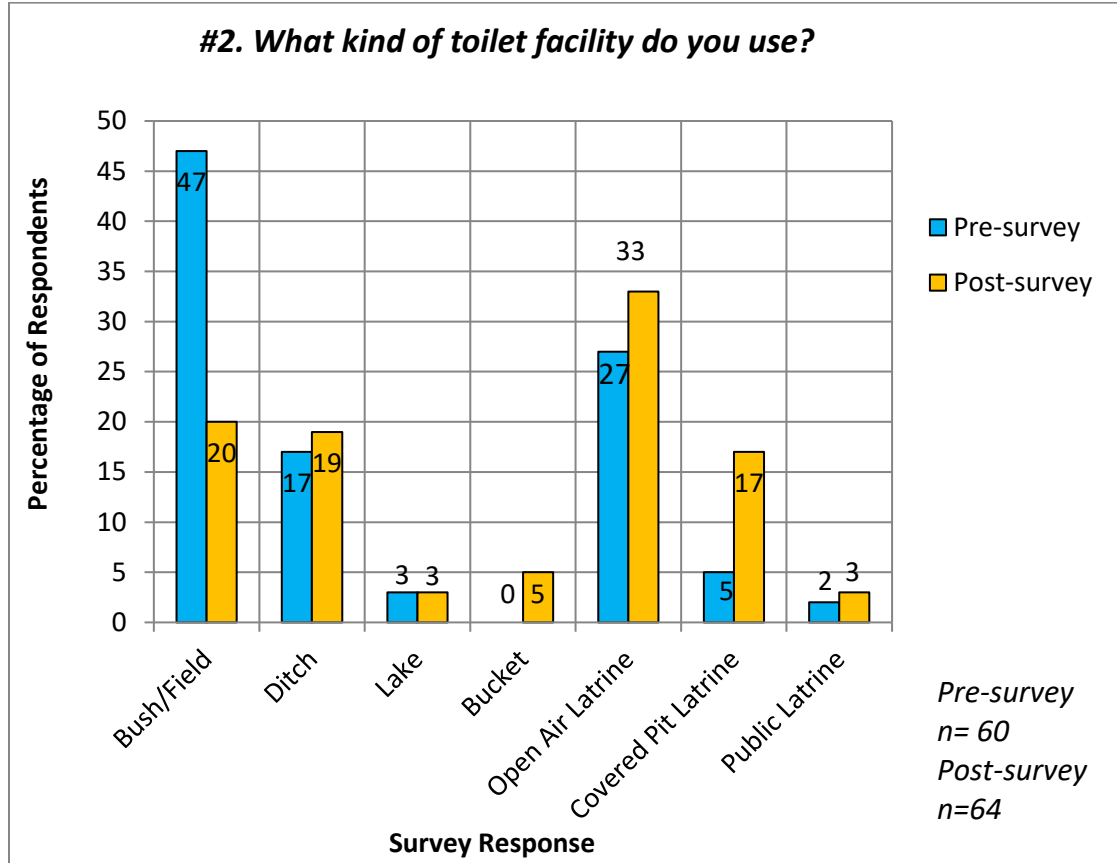


Figure 7. Type of Latrine Availability

Sixty individuals responded on the pre-survey to the question “what kind of toilet facility do you use?”. Twenty-eight (47%) selected ‘bush/field,’ ten (17%) selected ‘ditch,’ two (3%) selected ‘lake,’ zero (0%) selected ‘bucket,’ sixteen (27%) selected ‘open air latrine,’ three (5%) selected ‘covered pit latrine,’ and one (2%) selected ‘public latrine.’ In total, only 34% of the individuals used some sort of latrine for their toilet facility. In the post-survey, sixty-four individuals responded to the question. Thirteen (20%) selected ‘bush/field,’ twelve (19%) selected ‘ditch,’ two (3%) selected ‘lake,’ three (5%) selected ‘bucket,’ twenty-one (33%) selected ‘open air latrine,’ eleven (17%) selected ‘covered pit latrine,’ and two (3%) selected ‘public latrine.’ In total, 53% of

individuals now stated that they used some sort of latrine for their toilet facility. This was a 19% increase from the pre-survey.

Clean Water

On the pre-survey, seventy-eight individuals responded to the question “do you treat your drinking water to make it safer to drink?”. Only eleven (14%) individuals reported that ‘yes’ they do treat their water before drinking. Sixty-seven (86%) individuals reported that ‘no’ they do not treat their water to make it safer to drink. On the post-survey, seventy-seven individuals responded to this question. Fifty-five (71%) reported that ‘yes’ they do in fact treat their drinking water. Twenty-two (29%) reported ‘no’ they do not treat their water. These results on the post-survey are almost a complete reversal of the pre-survey results, indicating a substantial improvement in treating drinking water. The percentage of individuals treating their drinking water went from 14% on the pre-survey to a 71% on the post-survey. There were seventy-four respondents who answered this question both pre- and post-survey (pre-intervention, post-intervention). A McNemar's test with continuity correction was run to determine if there was a difference in the proportion of participants treating their drinking water pre- versus post-intervention [103]. The proportion of participants treating their drinking water increased from a pre-intervention value of 0.15 to 0.73 post-intervention, a statistically significant difference, $X^2 = 33.283$, $p < .001$.

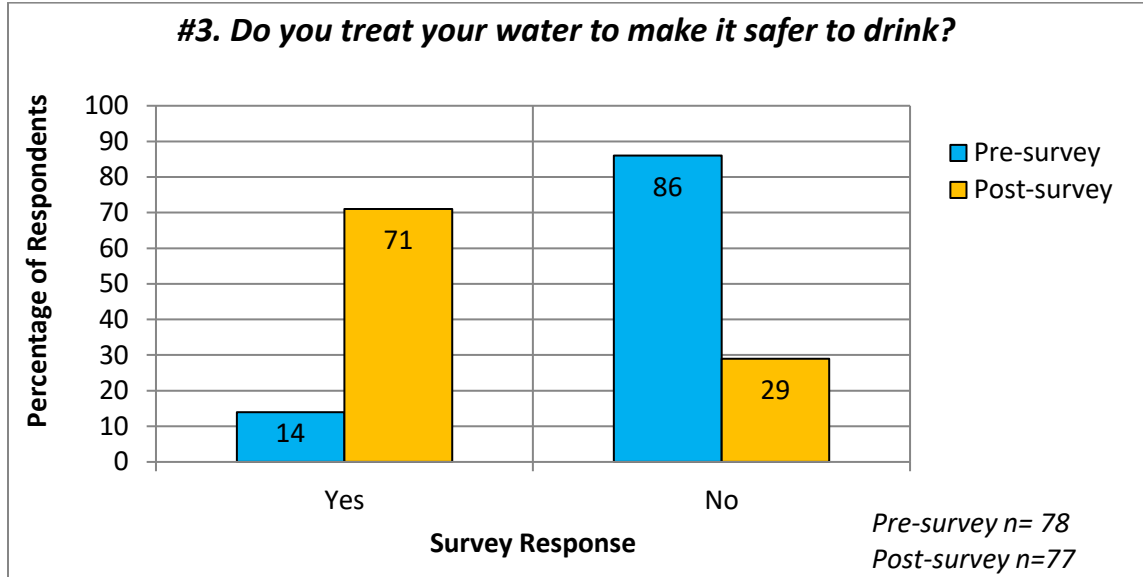


Figure 8. Treatment of Water

Analysis of the pre-survey responses indicated seventy-four total respondents to the question “how often do you treat your drinking water?”. Five individuals (7%) responded they treated their drinking water ‘every time,’ two (3%) responded ‘usually,’ nine (12%) responded ‘sometimes,’ four (5%) responded ‘occasionally,’ and fifty-four (73%) reported ‘never.’ Based on these results, only a few (10%) consistently treated their drinking water, some (17%) inconsistently treated their water, and the majority (73%) of participants never treated their drinking water. Analysis of the post-survey responses indicated a total of seventy-six respondents to this question. Nine (12%) individuals responded they treated their drinking water ‘every time,’ twenty-two (29%) responded ‘usually,’ twenty-five (33%) responded ‘sometimes,’ six (8%) responded ‘occasionally,’ and fourteen (18%) reported ‘never.’ Based on these results, nearly half (41%) reported consistently treating their drinking water, another nearly half (41%) reported inconsistently treating their drinking water, and less than a fifth (18%) reported

never treating their drinking water. This 41% on ‘consistent water treatment’ was a marked improvement from the original 10% on the pre-survey. Of the sixty-nine participants who answered both the pre and post survey, fifty-one indicated they treated their water more often, while eight answered they treated it less often, and ten reported no change. A Wilcoxon signed rank test determined that there was a statistically significant increase in participants reporting they treated their water more often between pre and post intervention, $z = -5.018$, $p > 0.001$.

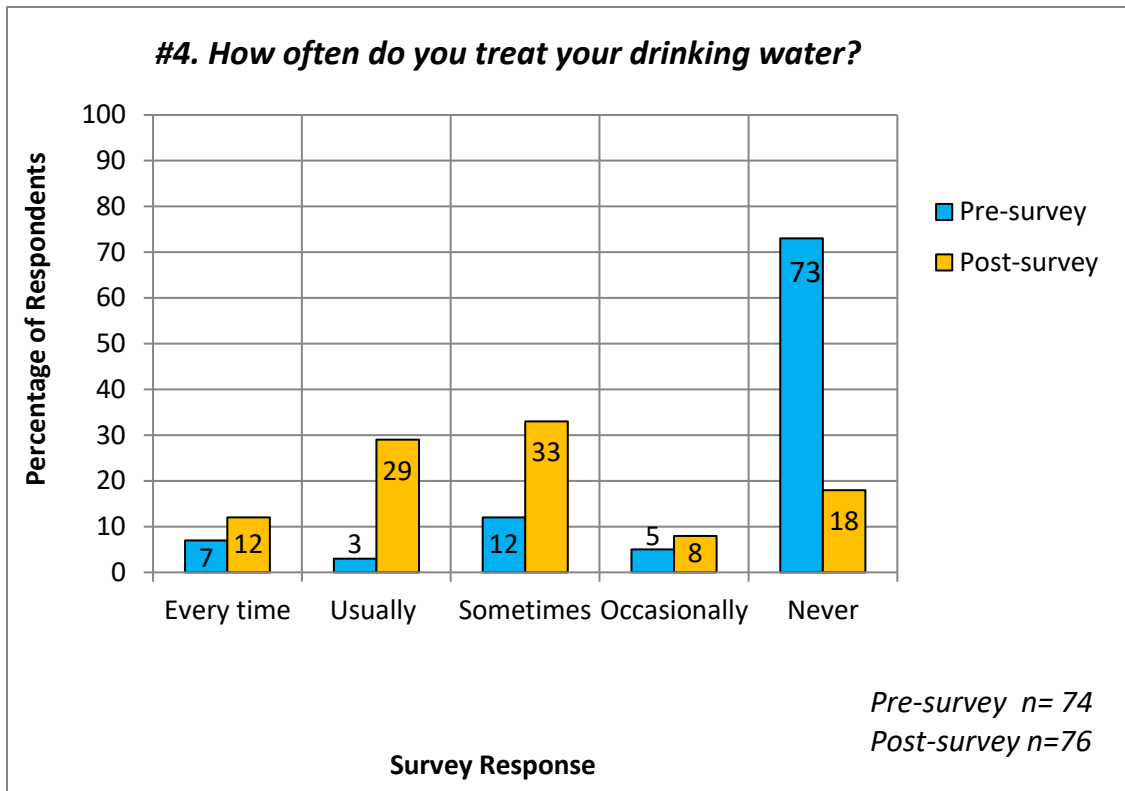


Figure 9. Frequency of Water Treatment

In response to the question “what do you currently do to make the water safe to drink (check all that apply)?”, seventy-eight individuals answered on the pre-survey. This

question was a ‘check all that apply’ and therefore, each individual was allowed to select as many of the answer as they chose. ‘Boil’ constituted 12% of the selections, ‘water treatment tablet’ 0%, ‘water filtration system’ 1%, ‘add bleach/chlorine’ 3%, ‘strain through cloth’ 8%, ‘expose to sun’ 1%, ‘let it stand/settle’ 10%, and ‘nothing’ 64%. On the survey, the majority (64% of the selected answers) did nothing to treat their drinking water. On the post-survey, seventy-seven individuals answered the question. ‘Boil’ constituted 39% of the selections, ‘water treatment tablet’ 4%, ‘water filtration system’ 12%, ‘add bleach/chlorine’ 10%, ‘strain through cloth’ 13%, ‘expose to sun’ 1%, ‘let it stand/settle’ 9%, and ‘nothing’ 12%. On the post-survey, there was great improvement as now 88% of the answers selected indicated that individuals were doing something to treat their drinking water.

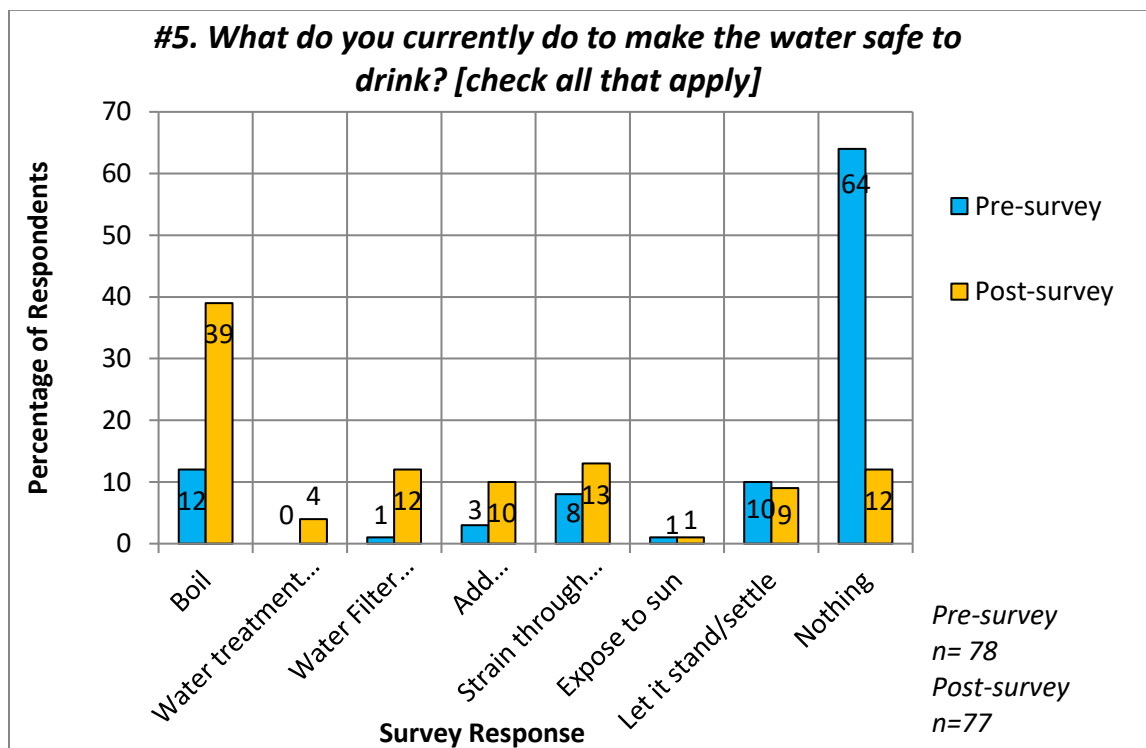


Figure 10. Treatment Used to make Water Safe to Drink

Hand Washing

On the pre-survey, seventy-four individuals answered the question “do you wash your hands?”. Of these seventy-four individuals, fifty-eight (78%) said that ‘yes’ they did wash their hands, and sixteen (22%) said that ‘no’ they did not wash their hands. On the post-survey, seventy-seven individuals answered the question. Of these seventy-seven individuals, seventy-five (97%) said that ‘yes’ they did wash their hands, and only two (3%) said that ‘no’ they did not wash their hands. Reported handwashing increased by 19% from the pre-survey to the post-survey. Seventy respondents answered this question on both the pre- and post-survey (pre-intervention, post-intervention). An exact McNemar's test was run to determine if there was a difference in the proportion of participants who practiced washing their hands pre- versus post-intervention. The proportion of participants washing their hands increased from a pre-intervention value of 0.77 to 0.98 post-intervention, a statistically significant difference, $p < .001$.

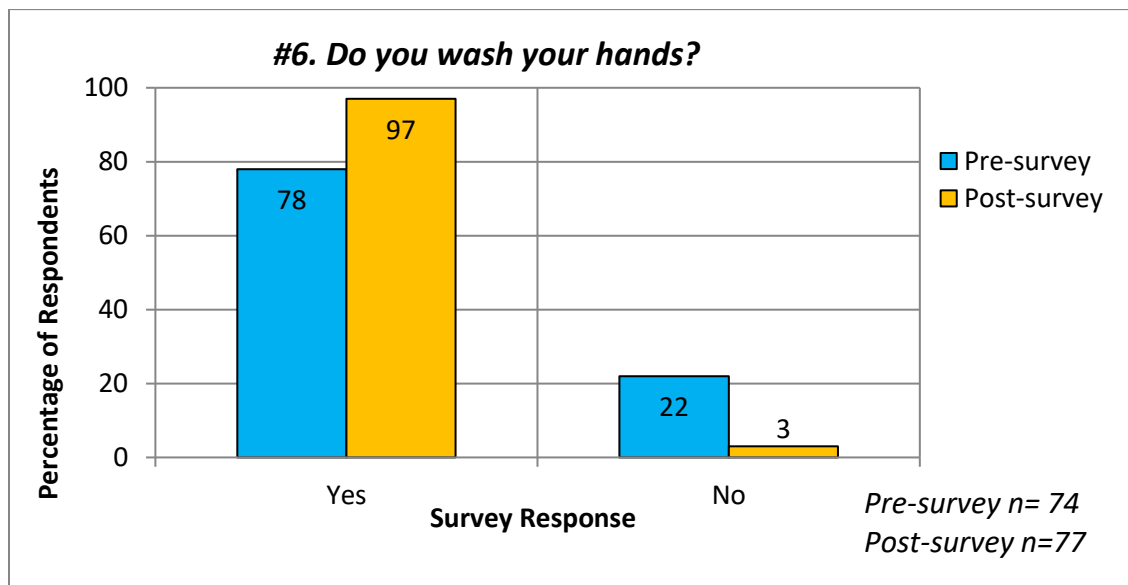


Figure 11. Percentage of Respondants that Wash Their Hands

Seventy-three individuals answered the question “what do you use to wash your hands?” on the pre-survey. Forty (55%) selected ‘soap,’ three (4%) selected ‘ash,’ twenty-six (36%) selected ‘water only,’ and Four (5%) selected ‘nothing.’ The majority of individuals (95%) reported washing their hands; however, only 59% used one of the recommended ‘handwashing materials,’ which were soap and ash. On the post-survey, sixty-seven individuals answered the question. Fifty-six (84%) selected ‘soap,’ one (1%) selected ‘ash,’ ten (15%) selected ‘water only,’ and zero (0%) selected ‘nothing.’ The reported handwashing improved from 95% to 100%, and the reported use of recommended ‘handwashing materials’ improved from 59% to 85%. Of the fifty-nine participants who answered both the pre and post survey, twenty indicated they used a better material for hand washing after intervention, while four reported less effective material, and thirty-five had no change in washing material. A Wilcoxon signed rank test determined that there was a statistically significant increase in participants reporting they used a better material for washing post intervention, $z = -2.891$, $p = 0.004$.

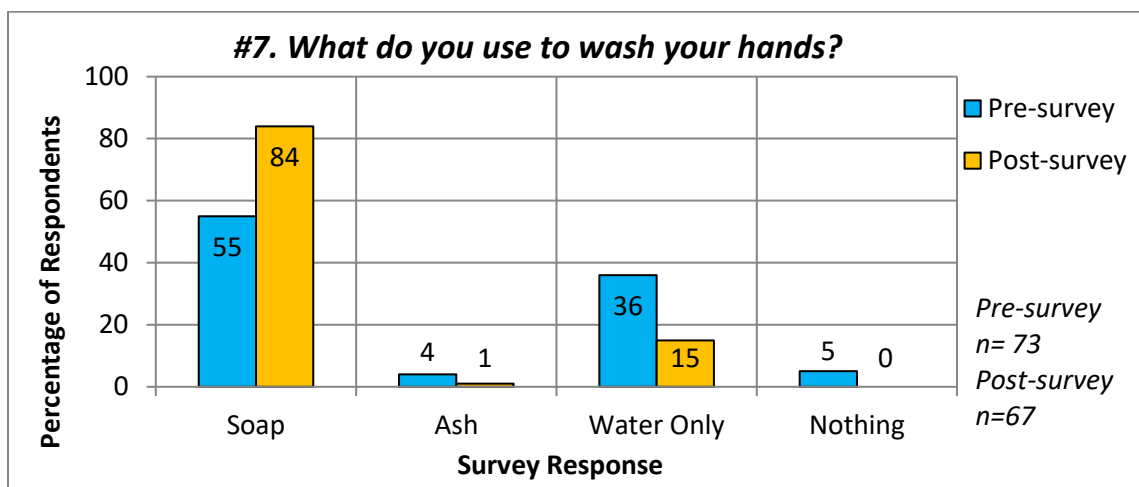


Figure 12. Handwashing Materials

On the pre-survey, seven-four individuals responded to the question “when do you wash your hands (check all that apply)?”. This question was a ‘check all that apply’ and therefore, each individual was allowed to select as many of the answer as they chose. ‘After bathing/washing’ constituted 1% of the selections, ‘after cleaning children and disposing of their fecal material’ 3%, ‘after defecation’ 5%, ‘after cooking’ 7%, ‘before cooking’ 14%, ‘after eating’ 27%, ‘before eating’ 42%, and ‘never’ 1%. Although 99% of the selected answers demonstrated handwashing, only 71% of the selections were the answers of ‘most importance’ and what were emphasized in the health education sessions. These included: before eating, before cooking, after cooking, after defecation, after cleaning children and disposing of their fecal material. On the post-survey, eighty individuals answered the question. ‘After bathing/washing’ constituted 2% of the selections, ‘after cleaning children and disposing of their fecal material’ 5%, ‘after defecation’ 15%, ‘after cooking’ 9%, ‘before cooking’ 22%, ‘after eating’ 13%, ‘before eating’ 31%, and ‘never’ 1%. As on the pre-survey, 99% of the selected answers demonstrated handwashing, and this time, 82% of the selections were the answers of ‘most importance’ (before eating, before cooking, after cooking, after defecation, after cleaning children and disposing of their fecal material). Interestingly, ‘before eating’ dropped from 42% to 31%. However, some areas did show improvement: ‘after defecation’ rose from 5% to 15%, and ‘before cooking’ went from 14% to 22%.

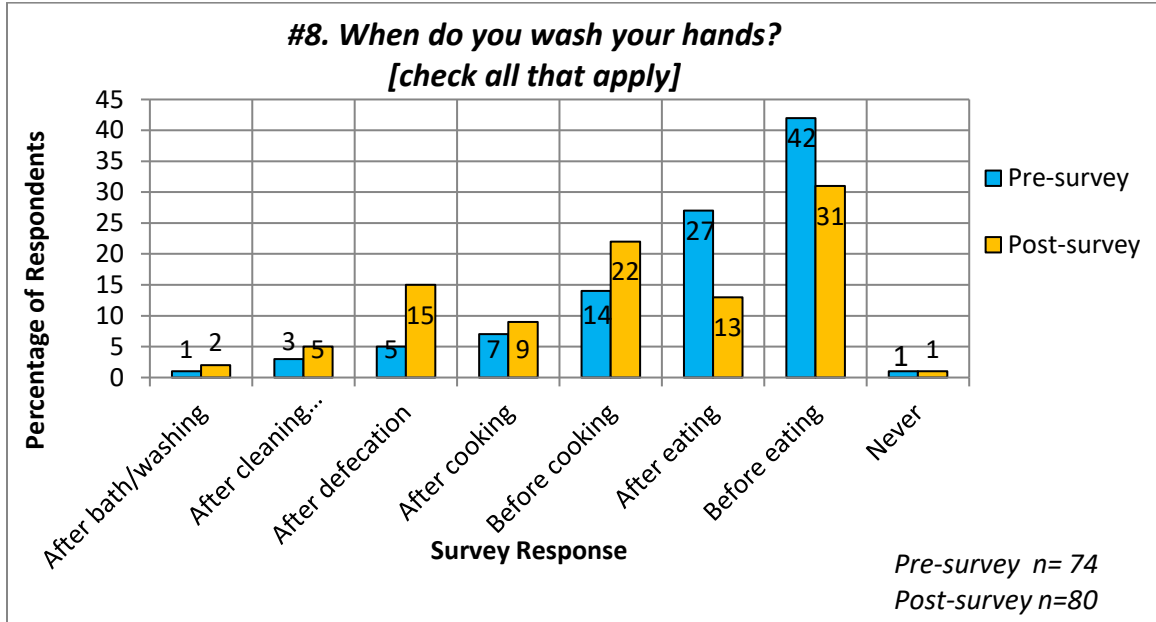


Figure 13. Respondents Handwashing Times

Wearing Shoes

On the pre-survey, seventy-six individuals answered the question “do you wear shoes?”. All seventy-six answered that ‘yes’ they wore shoes. On the post-survey, seventy-seven answered the question. Interestingly, seventy-five (97%) answered that ‘yes’ they wore shoes, and two (3%) answered that ‘no’ they did not. Due to 100% of survey participants reporting that they wore shoes, there was no need for or ability for improvement in this area. Despite a miniscule decline in reported shoe wearing from the pre-survey to the post-survey, there remained a high percentage (97%) of individuals who wore shoes. There were seventy-two respondents who answered this question both pre- and post-survey (pre-intervention, post-intervention). An exact McNemar's test was run to determine if there was a difference in the proportion of participants who wore shoes pre- versus post-intervention. All of the participants answered ‘yes’ pre-intervention

(100%) and only two said ‘no’ post intervention. Thus, the proportion of participants who answered they wear shoes was not statistically different, $p=.500$.

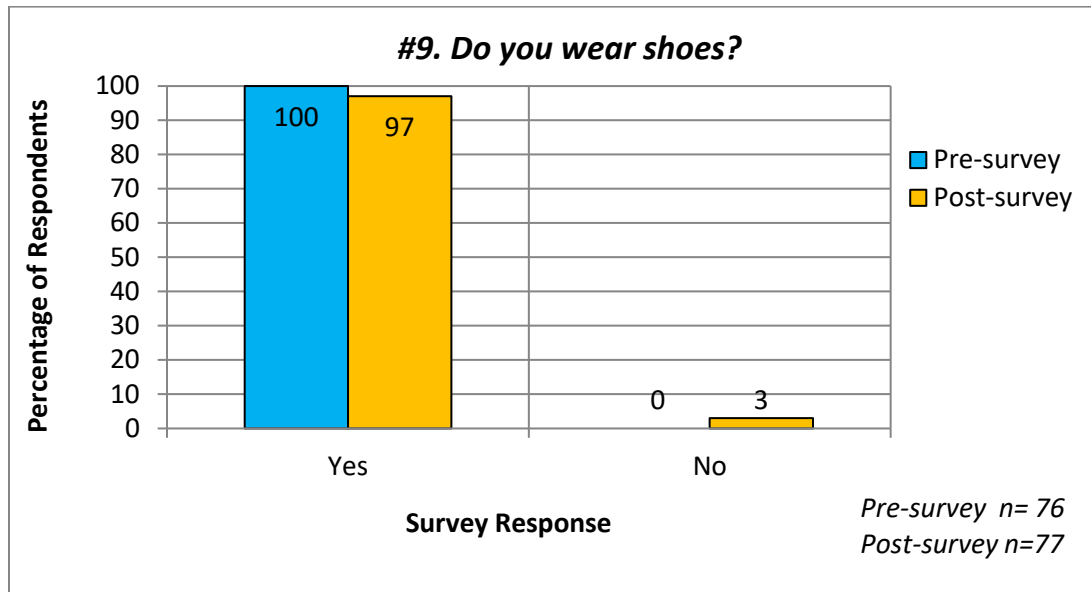


Figure 14. Respondents that Wear Shoes

On the pre-survey, seventy-six individuals answered question “how often do you wear shoes?”. Seventy-two (95%) answered ‘always,’ zero (0%) answered ‘most days,’ one (1%) answered ‘sometimes,’ one (1%) answered ‘rarely,’ and two individuals (3%) answered ‘never.’ On the post-survey, seventy-seven individuals answered the question. Sixty-nine (90%) answered ‘always,’ one (1%) answered ‘most days,’ one (1%) answered ‘sometimes,’ two (3%) answered ‘rarely,’ and four (5%) answered ‘never.’ Despite a slight decline in reported consistent shoe wearing from the pre-survey to the post-survey, there remained a high percentage (91%) of individuals who always, or almost always wore shoes. Of the seventy-three participants who answered both the pre and post survey, only four indicated they wore them more often post intervention and

seven less often, while sixty-two had no change. A Wilcoxon signed rank test determined that there was no statistical significant change in participants' frequency of shoe wear, $z = -1.042$, $p = 0.298$.



Figure 15. Frequency of Wearing Shoes

Summary of Findings

‘Latrine use,’ ‘clean water (treating water),’ and ‘handwashing,’ all showed behavior/practice change. This was not only demonstrated by the charts and percentages, but also by the McNemar’s and Wilcoxon’s tests performed, which found the behavior/practice changes statistically significant. ‘Wearing shoes,’ however, did not show behavior/practice change, as shown by the charts, percentages, McNemar’s and Wilcoxon’s tests.

Discussion

A gap in the literature regarding ‘cultural competence’ in health education as a part of the WASH approach and STH control measures still exists. Therefore, the specific findings of this clinical project were unable to be compared to similar ones. The overall findings of this clinical project, however, did demonstrate consistency with prior research studies, which found the WASH approach impactful on STH infection prevention measures (health behavior practices). Much more work needs to be done in this area of ‘culturally competent health education as a part of the WASH approach to STH control measures.’ There is a great deal that still needs to be explored, understood, and applied.

Numerous lessons were learned during the planning, implementation, and evaluation of this clinical project. The author believes that these lessons would prove of benefit to similar clinical projects in the future. The first lesson learned is the necessity of strong relationships within the project community. As challenges and unexpected events arise, it is only through the input, partnership and cultural understanding of the community that enable the project to move forward and overcome all the hurdles. The second key lesson learned is that it always takes more time than originally thought to complete the project. Multiple challenges are inherent in any clinical project, but this is a reality even more so with international and cross-cultural ones. Because of this, it is crucial to overestimate the time requirement for the clinical project, and work this into the project timeline. A third, and also very important lesson learned, is that international clinical projects often have many ‘hidden,’ or previously unknown, costs. These can include costs associated with international travel, in-country transportation, lodging, food

and drinking water (not only for the project leader, but also likely all the participants), hiring translators and project assistants, government applications and paperwork, project supplies, health education materials, and culturally appropriate thank you. Often, a number of these costs are not readily apparent, and only emerge as the project progresses. Therefore, it is important to plan for these ‘hidden’ costs as much as possible beforehand in the project budget and as funding is being sought. The input of the project community, local government officials and healthcare professionals are invaluable during this process. The fourth lesson learned is how important it is to have a ‘test group’ of community members evaluate the clarity and accuracy of the translated material and survey(s) before the official project intervention launching. If this is not done, confusion may develop during the project intervention, or even actual errors may be found. The fifth and final key lesson learned during this clinical project, is that it is preferable, and extremely beneficial, to have the same translators and project assistants for the entirety of the project. This allows for early and thorough training, as well as continuity throughout the project.

Addressing international health issues, especially in a culturally competent manner, requires a significant commitment of all participants. This fact should never be underestimated. A relationship with and understanding of the population must exist before the planning of an intervention can even begin. In addition, not only must the interested party and the community be fully engaged, but the government officials and healthcare professionals as well. This necessitates advanced communication, networking, and planning. It is crucial to understand that all of this takes a substantial amount of time,

often years. This length of time commitment makes having adequate funding and resource availability vital. Any project, intervention, or study involving an international health concern in another culture is never a quick and simple ‘in-and-out.’ Rather, it is a lengthy, complex, multi-faceted, heavily-involved endeavor. This may discourage the faint of heart; however, this work is critical. Developing cultural competence in addressing international health issues is necessary to ensure applicability, impact, and sustainability.

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APPENDICES

APPENDIX A

KAP SURVEY-ENGLISH VERSION

DEMOGRAPHIC QUESTIONS

1. How old are you?
 - a. 14-19
 - b. 20s
 - c. 30s
 - d. 40s
 - e. 50s
 - f. 60s
 - g. 70s
 - h. 80+
2. What gender are you?
 - a. Male
 - b. Female
3. How far did you go in school?
 - a. None
 - b. Primary
 - c. Secondary
 - d. Higher than secondary school

BASELINE QUESTIONS

4. How did you learn about this health education session?
 - a. Community announcement
 - b. From the church
 - c. From my friends
 - d. From family members
 - e. I saw people gathered and came to find out what was going on
 - f. Other [please specify]
5. In the last two weeks, have you or anyone in your family had diarrhea?
 - a. Yes
 - b. No
6. In the last two weeks, have you or anyone in your family had worms in your stool?
 - a. Yes
 - b. No
7. In the last two weeks, have you or anyone in your family been sick?
 - a. Yes
 - b. No

8. Do you have a latrine available?
 - a. Yes, a private latrine
 - b. Yes, a public latrine
 - c. No latrine available
 - d. I have a latrine, I don't use it
9. In the last year, did you see, hear, or get any messages or materials on sanitation and health?
 - a. Yes
 - b. No
10. If yes, what sanitation and health hygiene messages have you seen, heard, or received?
 - a. Build a latrine
 - b. Always use a latrine (stop open air defecation)
 - c. Safe disposal of human feces
 - d. Safe disposal of animal feces
 - e. Wash hands with soap
 - f. Good food hygiene
 - g. Wastewater management
 - h. Proper solid waste management
 - i. Wear shoes
 - j. Drink only safe water
 - k. Treat drinking water
 - l. Store drinking water safely
 - m. Don't know
 - n. Other [please specify]
11. If yes, where did you see, hear, or get these messages?
 - a. Posters or leaflets in village
 - b. Posters or leaflets in town
 - c. At community meetings
 - d. In government offices
 - e. When visiting a health facility
 - f. Material received at your home
 - g. On radio
 - h. On TV
 - i. On newspaper or magazines
 - j. Other [please specify]

12. If yes, when did you see, hear, or get these messages?
- a. Today
 - b. Yesterday
 - c. This week
 - d. This month
 - e. Within the past few months
 - f. This year
 - g. Don't know
 - h. Other [please specify]
13. If yes, where did you see, hear, or get these messages from?
- a. Village leader
 - b. Community council
 - c. Government agency
 - d. NGO
 - e. Volunteer organization
 - f. From family members
 - g. From neighbors
 - h. Don't know
 - i. Cannot remember
 - j. Other [please specify]

ATTITUDES

14. Why do you think you need to maintain good hygiene? [check all that apply]
- a. Be healthy/free from sickness
 - b. Be/feel clean
 - c. Feel good
 - d. Other [please specify]
15. How important is washing your hands to you?
- a. Not important
 - b. Somewhat important
 - c. Important
 - d. Extremely important
16. How important is drinking clean water to you?
- a. Not important
 - b. Somewhat important
 - c. Important
 - d. Extremely important

17. How important is wearing shoes to you?
 - a. Not important
 - b. Somewhat important
 - c. Important
 - d. Extremely important
18. How important is defecating in a latrine to you?
 - a. Not important
 - b. Somewhat important
 - c. Important
 - d. Extremely important
19. If you do not have a latrine, what is the reason?
 - a. Do not see it as important
 - b. Too expensive to build
 - c. It is too difficult to build one
 - d. Not applicable - I have a latrine
20. If you treat your drinking water, why do you do it? [check all that apply]
 - a. The water is contaminated with dirt
 - b. The water is contaminated with human and/or animal feces
 - c. The water is contaminated with germs, bacteria, viruses, and parasites
 - d. The water is contaminated with chemicals
 - e. Good for health
 - f. Animals use the water
 - g. Water smells bad
 - h. Water looks bad
 - i. Insects in the water
 - j. So I don't get sick
 - k. Don't know
 - l. Other [please specify]
21. In your opinion, what is the most effective method for you to learn about sanitation, hygiene, and health? [check all that apply]
 - a. Written presentation (reading)
 - b. Visual presentation (pictures)
 - c. Oral presentation (speaking)
 - d. Group discussion (with a leader)
 - e. Don't know
 - f. Other [please specify]

PRACTICESWATER

22. What is your main source of drinking water for your household?
 - a. Lake water
 - b. Rain Water
 - c. Well water
 - d. Filtered or Treated water
 - e. Bottled water
23. Do you use this main water source all year? or only part of the year?
 - a. Whole year
 - b. Dry season
 - c. Rainy season
24. During the other parts of the year, what is your main drinking water source?
 - a. It is the same
 - b. Lake water
 - c. Rain Water
 - d. Well water
 - e. Filtered or Treated water
 - f. Bottled water
25. What is your household's main source of water for cooking and hygiene?
 - a. Lake water
 - b. Rain Water
 - c. Well water
 - d. Filtered or Treated water
 - e. Bottled water
26. Who in your household usually collects the water?
 - a. Adult woman
 - b. Adult man
 - c. Female child
 - d. Male child
27. How do you store your drinking water?
 - a. In a jerry can
 - b. In a metal drum
 - c. In a plastic bottle
 - d. In a pottery container
28. How often do you wash the water storage container?
 - a. Every day
 - b. Every week
 - c. Every month
 - d. Rarely
 - e. Never

29. Do you treat your water to make it safer to drink?
- a. Yes
 - b. No
30. How often do you treat your drinking water?
- a. Never
 - b. Occasionally
 - c. Sometimes
 - d. Usually
 - e. Every time
31. What do you currently do to the make the water safe to drink? [check all that apply]
- a. Nothing
 - b. Boil
 - c. Strain through a cloth
 - d. Let it stand and settle
 - e. Add bleach & chlorine
 - f. Use a water filter or filtration system
 - g. Water treatment tablet
 - h. Expose water to sun for at least 6 hours

SANITATION & HYGIENE

32. What are things you do to maintain good sanitation? [check all that apply]
- a. Safe disposal of human feces
 - b. Safe disposal of animal feces
 - c. Proper disposal of garbage and waste water
 - d. No open defecation (meaning consistent use of latrines)
 - e. Clean house
 - f. Don't know
 - g. Other [please specify]
33. What kind of toilet facility do you use?
- a. None– use bush or field
 - b. None– use ditch
 - c. None– use lake
 - d. Bucket
 - e. Pit latrine – that is open to air
 - f. Pit latrine – that is covered
 - g. Public latrine
34. If you use a latrine, how close is the latrine to your water source?
- a. <15 meters
 - b. >15 meters
 - c. No latrine

35. Where do you dispose of children's fecal matter?
- a. No facilities – use bush or field
 - b. No facilities – use ditch
 - c. Bury
 - d. No facilities – use lake
 - e. Pit latrine – not covered, open to air
 - f. Pit latrine – covered
36. What material do you use to clean your bottom after defecation?
- a. Paper
 - b. Grass
 - c. Leaves
 - d. Stones
 - e. Cloth
 - f. Water
 - g. Nothing
37. Do you wash your hands?
- a. Yes
 - b. No
38. What do you use to wash your hands?
- a. Soap
 - b. Ash
 - c. Water only
 - d. Nothing
39. How many times a day do you wash your hands?
- a. 0
 - b. 1-2
 - c. 3-5
 - d. 6-10
 - e. >10
40. When do you wash your hands? [check all that apply]
- a. Never
 - b. Before eating
 - c. After eating
 - d. Before cooking
 - e. After cooking
 - f. After defecation
 - g. After cleaning children & disposing of fecal material
 - h. After bathing/washing

41. When do members of your family wash their hands? [check all that apply]
- a. Never
 - b. Before eating
 - c. After eating
 - d. Before cooking
 - e. After cooking
 - f. After defecation
 - g. After cleaning children & disposing of fecal material
 - h. After bathing/washing
42. At home, do you have a fixed hand-washing station?
- a. Yes
 - b. No
43. If you have a hand-washing station, where is it? [check all that apply]
- a. Inside the house
 - b. Outside the house
 - c. At or near the latrine
 - d. At or near the water source
 - e. In the cooking area
 - f. Other [please specify]
44. How often do you bathe?
- a. Every day
 - b. A few times a week
 - c. Once a week
 - d. Once a month
 - e. Every few months
 - f. Never
45. What do you use to bathe?
- a. Soap
 - b. Ash
 - c. Water only
 - d. Other
 - e. Nothing
46. How often do you wash your face?
- a. Every day
 - b. A few times a week
 - c. Once a week
 - d. Once a month
 - e. Every few months
 - f. Never

47. What do you use to wash your face?
- a. Soap
 - b. Ash
 - c. Water only
 - d. Other [please specify]
 - e. Nothing
48. How often do you wash your clothes?
- a. Every day
 - b. A few times a week
 - c. Once a week
 - d. Once a month
 - e. Every few months
 - f. Never
49. What do you use to wash your clothes?
- a. Soap
 - b. Water only
 - c. Other [please specify]
 - d. Nothing
50. How often do you wash your food before you eat it or cook it?
- a. Never
 - b. Rarely
 - c. Sometimes
 - d. Most of the time
 - e. Every time
51. How often to you cover your food to keep the flies off?
- a. Never
 - b. Rarely
 - c. Sometimes
 - d. Most of the time
 - e. Every time
52. How often do you cover your drinking and cooking water to keep it clean?
- a. Never
 - b. Rarely
 - c. Sometimes
 - d. Most of the time
 - e. Every time

53. What do you use to wash your food?
- a. Nothing
 - b. Water
 - c. Soap
 - d. Chemicals like bleach
54. Do you wear shoes?
- a. Yes
 - b. No
55. How often do you wear shoes?
- a. Never
 - b. Rarely
 - c. Sometimes
 - d. Most days
 - e. Every day
56. How often do the people in my family wear shoes?
- a. Never
 - b. Rarely
 - c. Sometimes
 - d. Most days
 - e. Every day
57. If you have children, how often do they wear shoes?
- a. Never
 - b. Rarely
 - c. Sometimes
 - d. Most days
 - e. Every day
58. What kind of shoes do you and your family wear? [check all that apply]
- a. Sandals
 - b. Flip flops
 - c. Tennis shoes
 - d. Boots
 - e. Dress shoes
 - f. No shoes

DISEASE QUESTIONS

59. In the last two weeks, have you or anyone in your family sought medical treatment?
- a. Yes
 - b. No
60. If you had medical treatment in the last two weeks, where did you go? [check all that apply]
- a. Hospital
 - b. Clinic
 - c. Pharmacy
 - d. Traditional medicine
 - e. Visiting medical team
 - f. Did not seek treatment

KNOWLEDGE QUESTIONS

SANITATION, HYGIENE, & WATER

61. How are germs and parasites spread? [check all that apply]
- a. Dirty hands
 - b. Dirty water
 - c. Flies
 - d. Solid waste
 - e. Unclean food
 - f. Dirty latrine
 - g. Open air defecation
 - h. Through animal feces
 - i. Through human feces
 - j. Through contaminated soil
 - k. Don't know
 - l. Other [please specify]
62. What are ways to maintain cleanliness? [check all that apply]
- a. Hand washing with soap
 - b. Treat drinking water (boil, filter, chemical treatment)
 - c. Use of latrines (no open air defecation)
 - d. Cook food well
 - e. Store water safely
 - f. Store food safely
 - g. Bathing
 - h. Clean the environment
 - i. Don't know
 - j. Others [please specify]

63. How do you know when there is poor sanitation in home/community? [check all that apply]
- a. Human feces
 - b. Animal feces
 - c. Garbage and waste water in area
 - d. Bad/foul smell in the village
 - e. No/lack of latrines
 - f. Open defecation
 - g. Don't know
 - h. Other [please specify]
64. What does hygiene and sanitation mean? [check all that apply]
- a. Hand washing/cleanliness
 - b. Food cleanliness (proper cooking, storing, preventing contamination of food, washing vegetables)
 - c. Safe disposal of feces (human and animal)
 - d. General cleanliness (laundry, cleanliness of surfaces, toilets, washing stations)
 - e. Clean/safe water.
 - f. Disposal of solid waste and control of wastewater
 - g. Personal cleanliness (washing face, bathing, clean clothes)
 - h. Don't know
 - i. Other [please specify]
65. When is it important to wash your hands? [check all that apply]
- a. After defecating
 - b. After using the latrine
 - c. After cleaning children's bottom
 - d. After handling children's feces
 - e. Before preparing meal
 - f. After touching animals
 - g. After handling animals' feces
 - h. Before feeding others
 - i. After taking care of sick family members
 - j. Before eating
 - k. Don't know
 - l. Other [please specify]

DISEASE

66. How does a person get diarrhea and parasites? [check all that apply]
- a. No hand-washing before eating
 - b. No hand-washing after defecation
 - c. No hand-washing after cleaning children's bottom
 - d. No hand-washing after disposing of human feces
 - e. No hand-washing after disposing of animal feces
 - f. Drinking untreated water
 - g. Walking with bare feet on the ground and through feces
 - h. Use of untreated or improperly stored water for drinking and cooking
 - i. Improper cooking food
 - j. Not cleaning/washing vegetables before cooking and/or eating
 - k. Don't know
 - l. Other [please specify]
67. What are the most important ways to prevent diarrhea and parasites? [check all that apply]
- a. Hand-washing with soap
 - b. Use of latrine to defecate
 - c. Dispose of children's feces in the latrine
 - d. Bury feces
 - e. Drink clean water
 - f. Store water safely
 - g. Prepare and protect food hygienically
 - h. Dispose of garbage in a pit
 - i. Wearing shoes
 - j. Don't know
 - k. Other [please specify]
68. Do germs and parasites make you sick?
- a. Yes
 - b. No
69. Can parasites and germs damage your heart, lungs, stomach, intestine, and liver?
- a. Yes
 - b. No
70. Can parasites and germs make you weak, dehydrated and malnourished?
- a. Yes
 - b. No
71. Can germs and parasites cause serious illness and even death?
- a. Yes
 - b. No

APPENDIX B

KAP SURVEY (AMHARIC)

KAP SURVEY

~“Implementation of culturally sensitive and informed health education as a part of the WASH approach in the rural village of Bati Kelo, Oromia, Ethiopia”~

Knowledge, Attitude and Practices (KAP) survey

ዕውቀት፣ አመለካከት እና ልማድ ላይ ያተኮረ መጠይቅ
የሕብረተሰብ ክፍል አሐዛዊ ገጽታን ለመረዳት የተዘጋጀ መጠይቅ
በተለያዩ የሕብረተሰብ ዘርፍ ባሕርያት ላይ ያተኮሩ ገምጋሚ ጥያቄዎች

1. ዕድሜህ/ዕድሜሽ ስንት ነው?

ሀ. 12

-19 ዓመት

ለ. በ20ዎች ውስጥ

ሐ. በ30ዎች ውስጥ

መ. በ40ዎች ውስጥ

ሠ. በ50ዎች ውስጥ

ረ. በ60ዎች ውስጥ

ሰ. በ70ዎች ውስጥ

ሸ. 80 እና ከ80 ዓመት በላይ

2. ጾታ?

a. ወንድ

b. ሴት

3. የትምሕርት ደረጃ/እስከ ስንተኛ ክፍል ተምረሃል/ተምረሻል?

a. ምንም

b. 1ኛ ደረጃ (ከ1ኛ እስከ 8ኛ)

c. 2ኛ ደረጃ (ከ9ኛ እስከ 12ኛ)

d. ከ2ኛ ደረጃ በላይ

መሠረታዊ ጥያቄዎች

4. ይህ የጤና አጠባበቅ ትምሕርት እንደሚሰጥ ከየት ሰማህ/ሰማሽ?

a. ከቀበሌ/ከመንደር አስተባባሪ

b. ከቤተ ክርስቲያን ሰማሁ

c. ከጓደኞቼ ሰማሁ

d. ከቤተሰቤ መካከል ያለ ሰው ነገረኝ

e. ብዛት ያላቸው ሰዎች አንድ ላይ ሆነው ሳይ፡ ምን እንደሆነ ለማወቅ መጥቼ አወቅሁ።

f. በሌላ መንገድ ነው ሕክምና መኖሩን ያወቅሁት። [ይህ ሌላው ያወክበት/ያወቅሸበት ሁኔታ ምን እንደሆነ ግለጥ/ግለጪ] _____

5. ባለፉት ሁለት ሳምንታት ውስጥ፡ አንተ/አንቺ ወይም ከቤተሰብ መካከል ተቅማጥ የነበረበት ሰው ነበረ?

a. አዎን

b. የለም

6. ባለፉት ሁለት ሳምንታት ውስጥ፡ አንተ/አንቺ ወይም ከቤተሰብ መካከል በዓይነ ምድር/ሰገራ ውስጥ ወስፋት አይታችኋል?

a. አዎን

b. የለም

7. ባለፉት ሁለት ሳምንታት ውስጥ፡ አንተ/አንቺ ወይም ከቤተሰብ መካከል የታመመ ሰው አለ?

a. አዎን

b. የለም

8. መጻዳጃ ቤት አለህ/አለሽ?

a. አዎን፡ አንድ ሰው በሩን ቆልፎ የሚጻዳዳበት ዓይነት እጠቀማለሁ።

b. አዎን፡ የሕብረተሰብ መጻዳጃ ቤት እጠቀማለሁ።

c. መጻዳጃ ቤት የለኝም፡ አልጠቀምም።

d. መጻዳጃ ቤት አለኝ ግን አልጠቀምም።

9. ባለፈው ዓመት ማለትም ባለፉት አሥራ ሁለት ወራት፡ ስለ ንጽሕና እና ጤና አጠባበቅ በዓይነት/በዓይነት ያየኸው/ያየሽው፣ ወይም የሰማኸው/የሰማሽው ወይም በጽሑፍ ያገኘኸው/ያገኘሽው ትምሕርት አለ?

a. አዎን

b. የለም

10. ከላይ ላለው ጥያቄ መልስህ አዎን ከሆነ፡ ምን ዓይነት የጤና እና የንጽሕና አጠባበቅ ትምሕርት ነው ያገኘኸው? (ከታች ከተዘረዘሩት ውስጥ፡ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

a. መጻዳጃ ቤት መሥራት

b. ሁልጊዜ መጻዳጃ ቤት ተጠቀም (በየሜዳው መጻዳጃት አቁም)

c. የሰው ዓይነት ምድርን ጤናን በማይበክል ዓይነት እንዴት ማስወገድ እንዳለብኝ

d. የእንሰሳት ዓይነት ምድርን ጤናን በማይበክል ዓይነት እንዴት ማስወገድ እንዳለብኝ

e. እጅን በሳሙና መታጠብ

- f. ጥሩ የምግብ ንጽሕና አጠባበቅ
- g. ፍሳሽ/ቆሻሻ ውሃን እንዴት ጤናን በማይጎዳ ዓይነት ማስወገድ እንደሚቻል
- h. ፍሳሽ ያልሆኑ ቆሻሻዎችን እንዴት ጤናን በማይጎዳ ዓይነት ማስወገድ እንደሚቻል
- i. ጫማ አድርግ
- j. የተጣራ/የታከመ ውሃ ብቻ ጠጣ
- k. ለመጠጥ የምትጠቀሙት ውሃ አክመው
- l. የመጠጥ ውሃን በጥንቃቄ ማስቀመጥ
- m. ምን እንደተማርኩ አላውቅም
- n. ሌላ ነገር ነው የተማርኩት (እባክዎ የተማሩትን ይግለጹ)

11. በተራ ቁጥር 9 ላይ ላለው ጥያቄ መልስህ አዎን ከሆነ፣ ትምሕርቱን ያየኸው፣ የሰማኸው ወይም የተማርከው የት ነው?

- a. በመንደራችን በተበተኑ ትላልቅ ፖስተሮች/ስዕሎች እና በራሪ ጽሑፎች
- b. ከተማ ውስጥ በተበተኑ ትላልቅ ፖስተሮች/ስዕሎች እና በራሪ ጽሑፎች
- c. በገበሬ ማኅበር ወይም በቀበሌ ማኅበር ስብሰባ ላይ ሲነገር ሰማሁ
- d. በመንግስት መሥሪያ ቤት ውስጥ ማስታወቂያ ተለጥፎ አየሁ
- e. የጤና ጣቢያ ለራሴ ጉዳይ በሄድኩ ጊዜ
- f. ሰው ቤቴ ድረስ ባመጣልኝ በጽሑፍ የተዘጋጀ የጤና ትምሕርት
- g. በሬዲዮ ሲነገር ሰማሁ
- h. በቴሌቪዥን ሰማሁ
- i. በጋዜጣ ወይም በመጽሔት ውስጥ
- j. በሌላ መንገድ ነው የተማርኩት (ይህ ሌላው የተማርከበት መንገድ ምን እንደሆነ ግለጽ።)

12. ቁጥር 9 ላይ ላለው ጥያቄ መልስህ አዎን ከሆነ፣ ትምሕርቱን ያየኸው፣ የሰማኸው ወይም የተማርከው መቼ ነው?

a. ዛሬ

b. ትናንት

c. በዚህ ሳምንት

d. በዚህ በያዝነው ወር ውስጥ

e. ባለፉት ጥቂት ሳምንታት ውስጥ

f. በዚህ ዓለት

g. መቼ እንደሆነ አላውቅም

h. ሌላ (ከላይ ከተጠቀሱት ጊዜያት በተለየ ጊዜ ከሆነ፣ መቼ እንደሆነ ግለጽ።)

13. በተራ ቁጥር 9 ላይ ላለው ጥያቄ መልስህ አዎን ከሆነ፣ ትምሕርቱን ያየኸው፣ የሰማኸው ወይም የተማርከው ከማነው?

a. ከመንደር አስተባባሪ

b. ከገበሬ ማኅበር አባል

c. ከመንግሥት ተወካይ

d. ከግል የእርዳታ ድርጅት

e. በፈቃደኝነት በጎ አድራጎች ሥር ከሚሠራ ድርጅት

f. ከቤተሰብ መካከል ከሆነ ሰው

g. ከጎረቤቱ

h. እንዴት እንደሰማሁ አላውቅም

i. ከማን እንደሰማሁ አላስታውስም

j. ሌላ (ከላይ ከተጠቀሱት ውጪ ከሆነ ከታች ዳፈው።)

ግንዛቤ/አመለካከት

14. የግል ንጽሕናን ሁልጊዜ መጠበቅ ያለብህ ለምን ይመስልሃል? (ከታች ከተዘረዘሩት መካከል መልስህ የትኞቹ እንደሆኑ አመልክት)

a. ☐ ጤነኛ ሆኜ ለመቆየት/ከበሽታ ነጻ ለመሆን

b. ☐ ንጹሕ ለመሆን/የንጽሕና ስሜት እንዲኖረኝ

c. ☐ ንጹሕ ከመሆኔ የተነሳ የደስታ ስሜት እንዲሰማኝ

d. ☐ ሌላ ምክንያት _____

15. እጅን መታጠብ ምን ያህል አስፈላጊ ነው ብለህ ታምናለህ?

a. ☐ አስፈላጊ አይደለም

b. ☐ በመጠኑ አስፈላጊ ነው

c. ☐ አስፈላጊ ነው

d. ☐ እግጅ በጣም አስፈላጊ ነው።

16. ንጽሕ ውሃ መጠጣት ምን ያህል አስፈላጊ ነው ብለህ ታምናለህ?

a. ☐ አስፈላጊ አይደለም

b. ☐ በመጠኑ አስፈላጊ ነው

c. ☐ አስፈላጊ ነው

d. ☐ እግጅ በጣም አስፈላጊ ነው።

17. ጫማ ማድረግ ምን ያህል አስፈላጊ ነው ብለህ ታምናለህ?

a. ☐ አስፈላጊ አይደለም

b. ☐ በመጠኑ አስፈላጊ ነው

c. ☐ አስፈላጊ ነው

d. ☐ እግጅ በጣም አስፈላጊ ነው።

18. በመጻዳጃ ቤት ውስጥ መጻዳዳት ምን ያህል አስፈላጊ ነው ብለህ ታምናለህ?

a. ☐ አይደለም

b. ☐ በመጠኑ አስፈላጊ ነው

c. ☐ አስፈላጊ ነው

d. ☐ እግጅ በጣም አስፈላጊ ነው።

19. መጻዳጃ ቤት ከሌለህ፣ እንዳይኖርህ የሆነበት ምክንያት ምንድነው?

a. ያን ያህል አስፈላጊነቱ ስለማይታየኝ

b. መጻዳና ቤት ለመሥራት ውድ ስለሆነ/ወጪው ብዙ ስለሆነ

c. መጻዳጃ ቤት ለመሥራት በጣም ከባድ ስለሆነ

d. መጻዳጃ ቤት አለኝ፤ ይህ ጥያቄ እኔን አይመለከትም

20. የምትጠጣውን ውሃ የምታጣራ ወይም የምታክም ከሆነ፤ ለምንድነው ውሃውን የምታጣራው ወይም የምታክመው? (ከታች ከተዘረዘሩት ውስጥ፤ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

- a. ውሃው በአቧራ ስለተበከለ
- b. ውሃው በእንስሳና በሰው ዓይነ ምድር (ሠገራ) ስለተበከለ
- c. ውሃው የውስጥና የውጭ አካል ጎጂ በሆኑ ሕዋሳት (በጀርም፣ በክቴሪያ፣ ቫይረስ እና ወስፋት [ፓራሳይት]) ስለተበከለ
- d. ውሃው በመርዛማ ኬሚካሎች ስለተበከለ
- e. ለጤና ጥሩ ስለሆነ
- f. ውሃው ውስጥ እንስሳት ስለሚገቡ
- g. ውሃው መጥፎ ሽታ ስላለው
- h. ውሃው ሲያዩት ንጽሑ ስላይደለ
- i. ውሃው ውስጥ ትሎችና ሌሎች ሕዋሳት ስለሚታዩ
- j. እንዳያመኝ
- k. የምጠጣውን ውሃ ለምን እንደማጣራና እንደማክም አላውቅም
- l. ሌላ ምክንያት አለኝ _____

21. በአንተ አስተያየት፤ በምን ዓይነት መንገድ ስለ ጤና አጠባበቅ ትምሕርት ብትማር ነው በቀላሉ ልረዳና ሊገባኝ ይችላል ብለህ ትገምታለህ? (ከታች ከተዘረዘሩት ውስጥ፤ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

- a. ☐ በጽሑፍ በተዘጋጀ ማስተማሪያ (እያነበብኩ)
- b. ☐ በስዕል በተዘጋጀ ማስተማሪያ (ስዕሎች)
- c. ☐ በቃል አስተማሪ እየተናገረ
- d. ☐ በቡድን ውይይት በማድረግ (የውይይት መሪ ኖሮ)

e. ☐ በየትኛው መንገድ ይበልጥ ልማር እንደምችል አላውቅም

f. ☐ ከላይ ከተጠቀሱት ሌላ _____

ልማዳዊ ተግባሮች

ውሃ:-

22. ለአንተና ለቤተሰብህ ዋና የመጠጥ ውሃ ምንጮችህ ከየት ነው?

a. የሐይቅ ውሃ

b. የዝናብ ውሃ

c. የጉድጓድ ውሃ

d. የተጣራ ወይም የታከመ ውሃ

e. በላስቲክ ጠርመስ ታሽጎ የሚቀርብ ውሃ

23. ይህን የመጠጥ ውሃ ምንጮችህን ዓመቱን በሙሉ ነው ወይስ ከፊል ዓመት ነው የምትጠቀሙት?

a. ዓመቱን በሙሉ

b. በድርቅ/በጋ ጊዜ

c. በዝናባማ/ክረምት ወቅት

24. የመጠጥ ውሃ ምንጮችህን በማትጠቀሙበት ወቅት፡ ሌላው የመጠጥ ውሃ ምንጮችህ (ውሃ የምታገኙት) ከየት ነው?

a. ያው ነው

b. የሐይቅ ውሃ

c. የዝናብ ውሃ

d. የጉድጓድ ውሃ

e. የተጣራ ወይም የታከመ ውሃ

f. በላስቲክ ጠረፎስ ታሽጎ የሚቀርብ ውሃ

25. ለአንተና ለቤተሰብህ ምግብ ለማብሰልና ለንጽሕና ጥበቃ ውሃ የምታገኙበት ቦታ የት ነው?

a. የሐይቅ ውሃ

b. የዝናብ ውሃ

c. የጉድጓድ ውሃ

d. የተጣራ ወይም የታከመ ውሃ

e. በላስቲክ ጠረፎስ ታሽጎ የሚቀርብ ውሃ

26. ከቤተሰብ መካከል ብዙ ጊዜ ለመጠጥ የሚሆናችሁ ውሃ ከምታገኙበት ቦታ የሚቀዳና የሚያመጣ ማነው?

a. በቤት ውስጥ ያለች ትልቅ ሴት

b. ውስጥ ያለ ትልቅ ወንድ

c. በቤት ውስጥ ያለች ሴት ልጅ

d. በቤት ውስጥ ያለ ወንድ ልጅ

27. የመጠጥ ውሃችሁን ቤት ውስጥ በምንድነው የምታስቀምጡት?

a. በጀሪካን ውስጥ

b. ከብረት በተሠራ በርሜል

c. በፕላስቲክ ጠርመሶች

d. ከሸክላ በተሠራ የውሃ ማስቀመጫ

28. ውሃ የምታስቀምጡበትን ዕቃ በየስንት ጊዜ ነው የምታጥቡት?

a. በየቀኑ

b. በሳምንት አንድ ጊዜ

c. በወር አንድ ጊዜ

d. አልፎ አልፎ

e. አጥቤ አላውቅም

29. ጤናን እንዳያውክ የምትጠጣውን ውሃ ታጣራለህ/ታክማለህ?

a. አዎን

b. አላክምም/አላጣራም

30. በየስንት ጊዜ ነው የምትጠጣውን ውሃ የምታጣራው/የምታክመው?

a. አክሜ/አጣርቼ አላውቅም

b. ሲመቸን/ትዝ ሲለን

c. አንዳንድ ጊዜ ብቻ

d. አብዛኛውን ጊዜ

e. ውሃ ቀድተን ባመጣን ጊዜ ሁሉ

31. በአሁኑ ጊዜ የምትጠጣው ውሃ ጤናን እንዳያውክ የምታደርገው ምንድነው? (ከታች ከተዘረዘሩት ውስጥ፡ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

- a. ምንም አላደርግም
- b. ውሃውን አፈላለሁ
- c. ውሃውን በጨርቅ ማጥለል
- d. ውሃው ውስጥ ያለው ቆሻሻ እሲኪዘቅጥ መቆየት
- e. ውሃውን ለማከም ክሎሪን እና በረኪና ጨምራለሁ
- f. የውሃ ማጣሪያ ዘዴ እጠቀማለሁ
- g. የውሃ ማከሚያ ኪኒን እጠቀማለሁ
- h. ውሃውን ቢያንስ ለስድስት ሰዓታት ጸሐይ ላይ አደርጋለሁ።

የአካባቢ እና የግል ንጽሕና አጠባበቅ

32. ጥሩ የቤት ውስጥና የአካባቢ ንጽሕናን ለመጠበቅ የምታደርጋቸው ነገሮች ምንድናቸው? (ከታች ከተዘረዘሩት ውስጥ፡ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

- a. የሰው ዓይነ ምድር ከሰው እንዳይነካካ አርቅቆ ማስወገድ
- b. የእንስሳት ዓይነ ምድር ከሰው እንዳይነካካ አርቅ ማስወገድ
- c. የአካባቢን ቆሻሻና እጣቢ ውሃን በጥንቃቄ ማስወገድ
- d. ሜዳ ላይ አለመጸዳዳት (ይህ ማለት ሁልጊዜ መጸዳጃ ቤት መጠቀም)
- e. ንጽሕናው የተጠበቀ ቤት
- f. አላውቅም
- g. ሌላ (ምን እንደሆነ ግለጽ) _____

33. የምትጠቀመው መጸዳጃ ቤት ምን ዓይነት ነው?

a. መጻዳጃ ቤት አልጠቀምም፤ የምጻዳዳው ቁጥቋቶ መሃል ወይም እርሻ ሜዳ ላይ ነው።

b. መጻዳጃ ቤት አልጠቀምም፤ ጎድጓዳ ቦታ ሄጄ ነው የምጻዳዳው

c. መጻዳጃ ቤት አልጠቀምም፤ ሐይቅ አጠገብ ነው የምጻዳዳው

d. በዕቃ ላይ / በፖፖ ነው የምጻዳዳው

e. ሜዳ ላይ በተቆፈረ መጻዳጃ እጠቀማለሁ (ሽፋን የሌለው ሽንት ቤት)

f. ሜዳ ላይ በተቆፈረ መጻዳጃ እጠቀማለሁ (ግድግዳና ጣሪያ ሽፋን ያለው ሽንት ቤት)

g. የጅምላ/የአካባቢው ነዋሪ ሁሉ የሚጠቀምበት መጻዳጃ ቤት

34. መጻዳጃ ቤት የምትጠቀም ከሆነ፤ መጻዳጃ ቤቱ የመጠጥ ውሃ ከምትቀዳበት ምን ያህል ይርቃል

a. ከ 15 ሜት ያነሰ ይርቃል

b. ከ 15 ሜት በላይ ይርቃል

c. ውሃ የምቀዳበት አካባቢ መጻዳጃ ቤት የለም

35. ቤት ውስጥ ያሉ ልጆች ሲጻዳዱ ሰገራቸውን የምትጥሉት የት ነው?

a. መጻዳጃ ቤት የለም -- ቁጥቋጦ ውስጥ/ሜዳ ላይ እንጥላለን

b. መጻዳጃ ቤት የለም -- ጎድጓዳማ ቦታ ውስጥ እንጥላለን

c. ጉድጓድ ቆፍረን እንቀብራለን

d. መጻዳጃ ቤት የለም፤ ሐይቅ ውስጥ እንጥላለን

e. ሜዳ ላይ በተቆፈረ መጻዳጃ እጠቀማለሁ (ሽፋን የሌለው ሽንት ቤት)

f. ሜዳ ላይ በተቆፈረ መጻዳጃ እጠቀማለሁ (ግድግዳና ጣሪያ ሽፋን ያለው ሽንት ቤት)

36. ከተጻዳዳህ/ከተጻዳዳሽ በኋላ ራስህን/ራስሽን የምታጸዳው/የምታጸፂው በምንድነው?

a. በወረቀት

b. በሣር

c. በቅጠል

d. በድንጋይ

e. በጨርቅ

f. በውሃ

g. ምንም አልጠቀምም

37. ከተጻዳዳሪ በኋላ እጅህን ትታጠባለህ?

a. አዎን

b. አልታጠብም

38. እጅህን የምትታጠበው በምንድነው?

a. በሳሙናና ውሃ

b. በአመድና በውሃ

c. በውሃ ብቻ

d. በምንም አልታጠብም

39. በቀን ስንት ጊዜ እጅህን ትታጠባለህ?

a. ዜሮ

b. ከአንድ እስከ ሁለት ጊዜ

c. ከሦስት እስከ አምስት ጊዜ

d. ከስድስት እስከ አሥር ጊዜ

e. ከአሥር ጊዜ በላይ

40. እጅህን የምትታጠበው መቼ ነው? (ከታች ከተዘረዘሩት ውስጥ፤ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

a. ፈጽሞ አልታጠብን

b. ምግብ ከመብላቴ በፊት

c. ምግብ ከበላሁ በኋላ

d. ምግብ ማብሰል/መሥራት ከመጀመሪያ በፊት

e. ምግብ አብስዬ/ሠርቼ ከጨረስኩ በኋላ

f. ሽንት ቤት ከተጠቀምኩ (ከተጸዳዳሁ) በኋላ

g. ልጆቼን ካጸዳሁና ሰገራቸውን ከጣልኩ በኋላ

h. ገላጭን ከታጠብኩ በኋላ

41. ቤተሰብህ ውስጥ ያሉ ሰዎች (ሚስት፣ ልጆች፣ እናት፣አባት፣ አብሮ የሚኖር ዘመድ) እጃቸውን የሚታጠቡት መቼ ነው? (ከታች ከተዘረዘሩት ውስጥ፤ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

a. ፈጽሞ አልታጠብን

b. ምግብ ከመብላቴ በፊት

c. ምግብ ከበላሁ በኋላ

d. ምግብ ማብሰል/መሥራት ከመጀመሪያ በፊት

e. ምግብ አብስዬ/ሠርቼ ከጨረስኩ በኋላ

f. ሽንት ቤት ከተጠቀምኩ (ከተጸዳዳሁ) በኋላ

g. ልጆቼን ከጸዳሁና ሰገራቸውን ከጣልኩ በኋላ

h. ገላጮን ከታጠብኩ በኋላ

42. በቤትህ ውስጥ ወይም በራፍ ላይ መደበኛ ሆኖ የተደቀነ የእጅ መታጠቢያ ስፍራ አለ?

a. አለ

b. የለም

43. መደበኛ ሆኖ የተደቀነ የእጅ መታጠቢያ ካለ፣ ይህ መታጠቢያ የተቀመጠው የት ነው? (ከታች ከተዘረዘሩት ውስጥ፣ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

a. ቤት ውስጥ

b. ከቤት ውጪ በራፍ አካባቢ

c. መጻዳጃ ቤት አጠገብ ወይም አቅራቢያው

d. ውሃ ከሚገኝበት ቦታ ወይም አካባቢው

e. ምግብ በማበስልበት ቦታ

f. ከላይ ከተጠቀሱት ሌላ _____

44. በየስንት ጊዜው ባቾ ትወስዳለህ (ገላህን ትታጠባለህ?)

a. በየቀኑ

b. በሳምንት ሁለት ሶስት ጊዜ

c. በሳምንት አንድ ጊዜ

d. በወር አንድ ጊዜ

e. በሁለት ወይም በሦስት ወር አንድ ጊዜ

f. ገላጭን አልታጠብም

45. ገላህን ለመታጠብ ምን ትጠቀማለህ?

a. ሳሙና

b. አመድ

c. በውሃ ብቻ

d. ሌላ ነገር ነው የምጠቀመው

e. ምንም አልጠቀምም

46. በየስንት ጊዜ ነው ፊትህን የምትታጠበው?

a. በየቀኑ

b. በሳምንት ሁለት ሶስት ጊዜ

c. በሳምንት አንድ ጊዜ

d. በወር አንድ ጊዜ

e. በሁለት ወይም በሦስት ወር አንድ ጊዜ

f. አልታጠብም

47. ፊትህን ለመታጠብ ምን ትጠቀማለህ?

a. ሳሙና

b. አመድ

c. በውሃ ብቻ

d. ሌላ ነገር ነው የምጠቀመው

e. ምንም አልጠቀምም

48. በየስንት ጊዜ ነው ልብስህን የምታጥበው?

a. በየቀኑ

b. በሳምንት ሁለት ሶስት ጊዜ

c. በሳምንት አንድ ጊዜ

d. በወር አንድ ጊዜ

e. በሁለት ወይም በሦስት ወር አንድ ጊዜ

f. አላጥብም

49. ልብስህን ለማጠብ የምትጠቀመው ምንድነው?

a. ሳሙና

b. በውሃ ብቻ

c. ሌላ ነገር እጠቀማለሁ _____

d. ምንም አልጠቀምም

50. ከሙብላትህ ወይም ከማብሰልህ በፊት የምታበስለውን ነገር መቼ መቼ ነው የምታጥበው?

a. አጥቤ አላውቅም

b. በጣም አልፎ አልፎ

c. አንዳንድ ጊዜ ብቻ

d. አብዛኛውን ጊዜ

e. ሁልጊዜ አጥባለሁ

51. ዝንብ እንዳይነካው የምትበላውን ወይም ልትበላ ያለውን ምግብ መቼ መቼ ነው የምትሸፍነው?

a. አልሸፍንም

b. በጣም አልፎ አልፎ

c. አንዳንድ ጊዜ ብቻ

d. አብዛኛውን ጊዜ

e. ሁልጊዜ እሸፍናለሁ

52. ንጹሕ ሆኖ እንዲቆይ የምትጠጣውንና ምግብ የምታበስልበትን ውሃ መቼ መቼ ነው የምትሸፍነው?

a. አልሸፍንም

b. በጣም አልፎ አልፎ

c. አንዳንድ ጊዜ ብቻ

d. አብዛኛውን ጊዜ

e. ሁልጊዜ እሸፍናለሁ

53. ልታበስል ያለውን ነገር የምታጥበው በምንድነው?

a. አላጥብም

b. በውሃ

c. በሰሙና

d. እንደበረኪና ባለ ኬሚካል

54. ጫማ ታደርጋለህ?

- a. አዎን
- b. አላደርግም

55. ምን ያህል ጊዜ ጫማ ታደርጋለህ?

- a. ጫማ አላደርግም
- b. በጣም አልፎ አልፎ
- c. አልፎ አልፎ
- d. አብዛኛውን ቀናት በሳምንት ውስጥ
- e. በየቀኑ

56. ቤተሰብህ ውስጥ ያሉ ሰዎች ምን ያህሉን ጊዜ ጫማ ያደርጋሉ?

- a. ጫማ አላደርግም
- b. በጣም አልፎ አልፎ
- c. አልፎ አልፎ
- d. አብዛኛውን ቀናት በሳምንት ውስጥ
- e. በየቀኑ

57. ልጆች ካሉህ/ካሉሽ፣ ጫማ ያደርጋሉ?

- a. ጫማ አላደርግም

b. በጣም አልፎ አልፎ

c. አልፎ አልፎ

d. አብዛኛውን ቀናት በሳምንት ውስጥ

e. በየቀኑ

58. አንተና በአተሰብህ የምታደርጉት ጫማ ምን ዓይነት ጫማ ነው?

(ከታች ከተዘረዘሩት ውስጥ፡ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

a. ከቆዳ ወይም ከላስቲክ የተሠራ ጥልፍልፍ ጫማ

b. ነጠላ ጫማ

c. (ስኒከር)

d. የወታደር የሚመስል ቆዳ ጫማ

e. ቆዳ ጫማ

f. ጫማ አላደርግም

ከበሽታ ጋር የተያያዙ ጥያቄዎች

59. ባለፉት ሁለት ሳምንታት ውስጥ፡ ሐኪም ዘንድ የሚያስኬድ ጉዳይ ገጥሞአችኋል?

a. አዎን

b. አልገጠመንም

60. ባለፉት ሁለት ሳምንታት ውስጥ ሐኪም ቤት ሄድህ ከሆነ፡ የሄድከው የት ሐኪም ቤት ነው?

(ከታች ከተዘረዘሩት ውስጥ፡ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

a. ሆስፒታል

b. ክሊኒክ

c. ፋርማሲ

- d. የአገር ባሕል መድሐኒት ቤት
- e. ከሌላ ቦታ መጥተው ነጻ ሕክምና የሚሰጡበት ቦታ
- f. ባለፉት ሁለት ሳምንታት ሐኪም ቤት አልሄድኩም

ዕውቀት ነክ ጥያቄዎች

የአካባቢ ንጽህና፣ የግል ንጽህና ጥበቃ እና ውሃ

61. ጎጂ ሕዋሳት፣ ጀርቆችና ወስፋት የሚጋባው/የሚተላለፈው እንዴት ነው? (ከታች ከተዘረዘሩት ውስጥ፣ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

- a. ቆሻሻ እጆች
- b. ቆሻሻ ውሃ
- c. ዝንቦች
- d. ዓይነ ምድር
- e. ንጽሕናው ያልተጠበቀ ምግብ
- f. ቆሻሻ መጸዳጃ ቤት
- g. ሜዳ ላይ መጸዳጃት
- h. በእንስሳት ዓይነ ምድር በኩል
- i. በሰው ዓይነ ምድር በኩል
- j. በሰገራና በሌላ ቆሻሻ በተበከለ አፈር
- k. እንዴት እንደሚተላለፍ አላውቅም
- l. ሌላ (ግለጽ) _____

62. ምን በማድረግ ንጽሕናን ለመጠበቅ እንችላለን?

(ከታች ከተዘረዘሩት ውስጥ፣ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

a. እጅን በሳሙን መታጠብ

b. የመጠጥ ውሃን ለጤና እንዲስማማ ማድረግ (ማፍላት፣ በማጣሪያ ማጣራት፣ ኬሚካል በመጨመር ማጣራት)

c. መጻዳጃ ቤት መጠቀም (ሜዳ ላይ አለመጻዳዳት)

d. ምግብን በደንብ ማብሰል

e. የመጠጥ ውሃን በጥንቃቄ በንጹሕ ዕቃ ማስቀመጥ

f. ምግብን በጥንቃቄ በንጹሕ ዕቃ ማስቀመጥ

g. ገላ መታጠብ

h. አካባቢን ማጽዳት

i. አላውቅም

j. ሌላ (ግለጽ) _____

63. በቤት ወይም በሕብረተሰቡ ውስጥ ያለው የንጽሕና ጉዳይ በጣም መጥፎ ነው/ደካማ መሆኑን የምናውቀው እንዴት ነው?

a. የሰው ዓይነ ምድር በየቦታው ስናይ

b. የከብቶች እዳሪ በየቦታው ሲገኝ

c. የአካባቢ ቆሻሻ እና የቆሻሻ ውሃ ፍሳሽ ሲታይ

d. መጥፎ ሽታ በመንደር ውስጥ ሲሸት

e. የመጻዳጃ ቤቶች አለመኖር ወይም ለነዋሪው በቂ አለመሆኑ

f. ሜዳ ላይ መጸዳዳት

g. አላውቅም

h. ሌላ (ግለጽ) _____

64. የግል ንጽሕና (ሃይጂን) እና የአካባቢ ንጽሕና ሲባል የምትረዳው/የሚገባህ ምንድነው?

(ከታች ከተዘረዘሩት ውስጥ፡ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

a. እጅ መታጠብ / ሁለንተናን ንጽሕና አድርጎ መጠበቅ

b. የምግብን ንጽሕና መጠበቅ (በንጽሕና ማብሰል፣ በጥንቃቄ ማስቀመጥ፣ ከመጥፎ ነገር ጋር እንዳይነካካና እንዳይበላሽ መጠንቀቅ፣ አትልክቶችን በደንብ ማጠብ)

c. የሰውና የእንስሳት ዓይነምድርን አርቆ ማስወገድ

d. አጠቃላይ ንጽሕና (ልብስ ማጠብ፣ የወለልና የጠረጴዛ ንጽሕና መጠበቅ፣ የመጸዳጃ ቤት ንጽሕና፣ መደበኛ የእጅ መታጠቢያ ቦታ ማግኘት)

e. ንጹሕ/ጤና የማያውክ የመጠጥ ውሃ

f. ሠገራና ቆሻሻ ፍሳሽ ውሃ

g. የግል ሁለንተናዊ ንጽሕና (ፊትን መታጠብ፣ ገላ መታጠብ፣ ልብስን በየሳምንቱ ማጠብ)

h. አላውቅም

i. ሌላ (ግለጽ) _____

65. መቼ ነው እጅን መታጠብ አስፈላጊ የሚሆነው?

(ከታች ከተዘረዘሩት ውስጥ፡ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

a. ከተጸዳዱ

b. ሽንት ቤት ከተጠቀሙ በኋላ

c. ትናንሽ ልጆችን ተጸዳድተው ሲጨርሱ ከጠራረግናቸው በኋላ

d. የልጆችን ዓይነት ምድር/ሠገራ ከጣልንና ካጸዳን በኋላ

e. ምግብ ማብሰል ከመጀመራችን በፊት

f. የቤት እንስሳትን በእጅ ከነካካን በኋላ

g. የከብቶችን እበት/እዳሪ በእጅ ከነካን በኋላ

h. ሌሎችን ከመመገባች/ከማጉረሳችን በፊት

i. በሽታ ያለበትን ሰው ካስታመምን በኋላ

j. ምግብ ከመብላታችን በፊት

k. አላውቅም

l. ሌላ (ግለጽ) _____

በሽታ

66. አንድ ሰው ተቅማጥ የሚይዘው እንዲሁም በሆዱ ወስፋት የሚገኘው ከምን የተነሳ ነው?

(ከታች ከተዘረዘሩት ውስጥ፡ የእኔ መልስ ነው የምትለውን ሁሉ አመልክት)

a. ከመመገቡ በፊት እጄን ጥሩ አርጎ ባለመታጠቡ

b. ከተጸዳዳ በኋላ እጄን ጥሩ አርጎ ባለመታጠቡ

c. የልጆችን ዓይነት ምድር/ሠገራ ከጣልንና ካጸዳን በኋላ እጄን ጥሩ አርጎ ካለመታጠብ

d. የሰው ዓይነት ምድር/እዳሪ ከጣልን በኋላ እጄን ጥሩ አርጎ ካለመታጠብ

e. የከብቶች ዓይነት ምድር/እዳሪ ከጣልን በኋላ እጄን ጥሩ አርጎ ካለመታጠብ

f. ያልታከመ/ያልተጣራ ውሃ ከመጠጣት

g. በአፈር ላይ በባዶ እግር ከመሄድና ድንገት በባዶ እግር ሜዳ ላይ ያለ ሠገራ በመርገጥ

h. ያልታከመ፣ ያልተጣራ ወይም በንጽሑ ፅቃ ውስጥ ያልተቀመጠ ውሃ በመጠጣትና ለምግብ ማብስቢያ በመጠቀም

i. ምግብን ንጽሕና በጎደለው ሁኔታ ካለማብሰል

j. ከመብላት ወይም ከማብሰብ በፊት አትክልቶችን በሚገባ ካለማጠብብ የተነሳ

k. አላውቅም

l. ሌላ (ግለጽ/አብራራ) _____

67. ተቅማጥና ወስፋት እንዳያገኘን ማድረግ ያሉብን ሦስት ዋነኛ ነገሮች ምንድናቸው?

(ከታች ከተዘረዘሩት ውስጥ፣ ሦስት ዋነኛ መልሶች ናቸው የምትላቸውን ብቻ ምረጥ)

a. እጅን በውሃን በሳሙና በደንብ መታጠብ

b. (ሠገራ ለመውጣት) ሽንት ቤት ብቻ መጠቀም

c. የልጆችን ሠገራ በሽንት ቤት ጉድጓድ ውስጥ ብቻ መጣል

d. ሠገራን ምድር ውስጥ መቅበር

e. ንጹሕ ውኃ መጠጣት

f. የመጠጥ ውኃ በንጽሑ ፅቃ ውስጥ

g. ምግብ ሲሠራ/ሲበስል ንጽሕናው በተጠበቀ ዓይነት መሥራትና በንጽሑ ቦታ ማስቀመጥ

h. ቆሻሻን በተወሰነለት ጉዳጓድ ውስጥ መጣል (በየሜዳው አለመጣል)

i. ጫማ ማድረግ

j. አላውቅም

k. ሌላ (ግለጽ) _____

68. ጀርሞችና ወስፋቶች የሚያሳምሙህ ይመስልሃል?

a. አዎን ያሳምሙኛል

b. አያሳምሙኝም

69. ጀርሞችና ወስፋቶች ልብህን፣ኩላሊትህን፣ ሳምባህን፣ ጨዋራህን፣ አንጀትህንና ጉበትህን የሚጎዱ ይመስልሃል?

a. አዎን የሚጎዱኝ ይመስለኛል

b. አይጎዱኝም

70. ጀርሞችና ወስፋቶች ሰውነትህ እንዲዝል፣ ውስጥህ ድርቅ እንዲልና ሰውነትህ እንዲከሳ ምክንያት የሚሆኑ ይመስልሃል?

a. አዎን

b. አይመስለኝም

71. ጀርሞችና ወስፋቶች የጡና ሕመም የሚያደርሱብህ፣ አልፎም ሞት ሊያደርሱብህ የሚችሉ ይመስልሃል?

a. አዎን ሊያደርሱብኝ ይችላሉ

b. አያደርሱብኝም

APPENDIX C

KAP SURVEY – AFAN OROMO VERSION

Qo'annoo KAP

Ganda Baaddiyyaa Baati Qalloo, Oromiyaa, Itiyoophiyaatti Barumsa Fayyaa
Barmaatilee Mirkanaa'aaf Yaadoo fi Beeksiisaa Ta'an Kutaa Waash Appiroochii
Taasiisuun
Gaaffii Beekumsaa, Ilaalchaa Fi Barmaatilee Irratti Xiyyeeffate Dha.

Fakkii kakkoofsa kutaa hawaasaa hubachuuf gaaffii qophaa'e Gaaffiilee gamaaggama amala Kutaalee
 hawaasaa adda addaa irratti xiyyeeffate

1. Umuriin kee meeqa?
 - a. Waggaa 12-19,
 - b. Waggaa 20'n keessatti,
 - c. Waggaa 30'n keessatti,
 - d. Waggaa 40'n keessatti,
 - e. Waggaa 50'n keessatti,
 - f. Waggaa 60'n keessatti,
 - g. Waggaa 70'n keessatti,
 - h. Waggaa 80 fi 80 olii
2. Saala?
 - a. Dhiira,
 - b. Dubartii
3. Sadarkaa barumsaa/hanga kutaa meeqaatti baratee/barate jirtaa?
 - a. Gonkumaa hinbarannee,
 - b. Sadarkaa $1^{ffaa}(1^{ffaa}$ hanga $8^{ffaa})$
 - c. Sadarkaa $2^{ffaa}(9^{ffaa}$ hanga $12^{ffaa})$
 - d. Sadarkaa 2^{ffaa} olii

Gaaffiilee Bu'uuraa

4. Barnoonnii Eegumsaa fayyaa kun akka kennamu Eessa irraa dhageetee/dhageette?
 - a. Ganda/Qindeessaa Qe'ee irraa,
 - b. Mana Amantaa irraan dhagahe,
 - c. Hiriyoota kiyyaa irraan dhagahee,
 - d. Miseensa maatii keessa jiru irraan dhagahee,
 - e. Nammotni hedduun walitti ta'an ennaa arguu maal akka ta'e dhufee beekke,
 - f. Karaa biraatiin barumsii kun jiraachu isaa beekke.(karaan biraa haala itti beektee/beekte maal akka ta'e ibsii/ibsi).

5. Torbaan lamaan darban keessatti ati ykn maatii keessaa nama albaatiin qabee ni jira?
 - a. Eeyyeen,
 - b. Hinjiru
6. Torbaan lamaan darban keessatti atii ykn maatii keessaa udaan keessaa maagaa nama argee jira?
 - a. Eeyyeen,
 - b. Hinjiru
7. Torbaan lamaan darban keessatti atii ykn maatii keessaa dhukkubsate jira? a. Eeyyeen
 - b. Hinjiru
8. Mana Fincaanii ni qabdaa?
 - a. Eeyyeen namni tokko cufee kan itti fayyadamu niin qaba.
 - b. Eeyyeen hawaasni wali irratti mana fincaannii itti fayyadamu niin qaba.
 - c. Mana fincaannii hinqabu, hinfayyadamu.
 - d. Mana fincaannii niin qaba, garuu itti hinfayyadamu.
9. Bara darbee jechuunis Ji'oota kudha lamaan darban keessaa barnootaa waa'ee qulqullinaa fi eegumsaa fayyaa ija keetiin kan agartee/agarte yookaan kan dhageettee/dhageette yookaan barreeffamaan kan agartee/agarte jira? a. Eeyyeen,
 - b. Hinjiru.
10. Deebii armaan olitti jiruuf deebiin keessan eeyyeen yoo ta'e barnoota fayyaa fi eegumsa fayyaa akaakuu kami agartee?
 - a. Mana Fincaanii ijaaru,
 - b. Yeroo hundaa mana fincaanii fayyadamii(diree irratti mana fincaan bahuu dhaabii),
 - c. Udaan namaa haala fayyaa namaa hinmidhneen akkamitti gatuu akka qabu,
 - d. Udaan beeyiladaa haala fayyaa namaa hinmidhneen akkamitti gatuu akka qabu,
 - e. Harka saamunaan dhiqachuu,
 - f. Eegumsaa qulqullina nyaataa gaarii,
 - g. Dhagalaa'oon/ bishaan balfaa haala fayyaa namaa hinmidhneen akkamitti gatuu akka danda'amu,
 - h. Balfaa dhagalaa'oo hintaanee haala fayyaa namaa hinmidhneen akkamitti gatuu akka danda'amu,
 - i. Kophee kaayyadhu,
 - j. Bishaan qulqullaa'e/waldhaanname qofa dhugii,
 - k. Bishaan dhugaatiif fayyadamtu waldhaanii,
 - l. Bishaan dhugaatii of-eeggannoon kaa'u,
 - m. Maal akka baradhee hinbeeku,
 - n. Waan biraan baradhee,(waan baratan ibsaa).
11. Gaaffii lakkoofsa 9 jalatti jiruuf deebiin kee eeyyeen yoo ta'e barumsicha kan agartee, kan dhageettee ykn kan baratee eessaa?

- a. Barreeffamoota gurguddoo, postaraa, fakkiwwan fi biroosharoota ganda keenya keessatti bittinneeffameen,
 - b. Barreeffamoota gurguddoo, postaraa, fakkiwwan fi biroosharoota magaala keessatti bittinneeffameen,
 - c. Waldaa qonnaan bulaa ykna waldaa gandaa keessatti waligahii irratti eennaa himamuun dhagahee,
 - d. Waajjira mootummaa keessatti beeksiisaa irratti maxxanfameen argee,
 - e. Buufata fayyaa dhimma ofiif deemeen argee,
 - f. Barumsaa barreeffamaa qophaa'e namni hanga manattii naaf fidee,
 - g. Raadiyoon ennaa himamu,
 - h. Teeleevizhiniin dhagahee,
 - i. Gaazeexaa ykn matsiyeetii keessaa,
12. Karaa biraatiin baradhee,(karaa biraatiin kan itti baratee kana ibsii). 12. Gaaffii lakkoofsa 9 irratti jiruuf deebiin kee eeyyeen yoo ta'e barumsa kana kan agartee, dhageettee, ykn kan baratee yoomii?
- a. Hardhaa,
 - b. Kale,
 - c. Turbaan kana keessaa,
 - d. Ji'a amma qabnee keessatti,
 - e. Ji'ootan muraasa darban keessaa,
 - f. Bara kana,
 - g. Yoomi akka ta'e hinbeeku,
 - h. Yeroo armaan olitti ibsamaniin alaa yoo ta'e yoomi akka ta'e ibsii,
13. Gaaffii lakkoofsa 9 irratti jiruuf deebiin kee eeyyeen yoo ta'e barumsa kana eenyuu irraa agartee, dhageettee, ykn kan baratee?
- a. Qindeessaa gandaa irraa,
 - b. Miseensaa waldaa qonnaan bulaa irraa,
 - c. Bakka bu'aa mootummaa irraa,
 - d. Dhaabbata gargaarsaa dhunfaa irraa,
 - e. Dhaabbata hojii abba gaar feedhiin hojjatan irraa,
 - f. Miseensa maatii nama ta'ee irraa,
 - g. Olla irraa,
 - h. Akkamitti akka dhagahee hinbeeku,
 - i. Eenyyu irraa akka dhagahee hinbeeku,
 - j. Kan biraa(ibsii),

Hubannaa/Ilaalchaa

14. Qulqullinaa dhunfaa gaarii yeroo hundaa eeguu kan qabduu maaliif sitti fakkaataa?(kan armaan gaditti tarreeffaman keessaa deebiin kee kam akka ta'an agarsiisii)
- ☐ Fayyaa ta'ee turuuf/dhukkuba irraa bilisa ta'uuf,
 - ☐ qulqulluu ta'uudhaaf/miirrii qulqullinaa akka natti dhagahamu,
 - ☐ qulqulluu ta'uu kiyyaan miira gammachuu akka natti dhagahamu,
 - ☐ sababa biraa,
15. Harka dhiqachuun hangam barbaachisaa dha jette amantaa?
- ☐ barbaachisaa miti,
 - ☐ hanga ta'een barbaachisaa dha,
 - ☐ barbaachisaa dha,
 - ☐ haalaan barbaachisaa dha.
16. Bishaan qulqulluu dhuguun hangam barbaachisaa dha jettee amantaa?
- ☐ barbaachisaa miti,
 - ☐ hanga ta'een barbaachisaa dha,
 - ☐ barbaachisaa dha,
 - ☐ haalaan barbaachisaa dha
17. Kophee kaayyachuun hangam barbaachisaa dha jettee amantaa?
- ☐ barbaachisaa miti,
 - ☐ hanga ta'een barbaachisaa dha,
 - ☐ barbaachisaa dha,
 - ☐ haalaan barbaachisaa dha
18. Mana Fincaan keessatti tajaajilamuun hangam barbaachisaa dha jette amantaa?
- ☐ barbaachisaa miti,
 - ☐ hanga ta'een barbaachisaa dha,
 - ☐ barbaachisaa dha,
 - ☐ haalaan barbaachisaa dha
19. Mana Fincaanii kan hinqabnee yoo ta'ee akka hinqabaannee kan sii taasissee sababni maalii?
- Hangas maraa barbaachisummaan isaa waan natti himudhaneef,
 - Mana fincaanii ijaaruuf qaalii waan natti ta'eef/baasiin isaa hedduu waan ta'eef,
 - Mana fincaan ijaaruun haalaan ulfaataa waan ta'eef,
 - Mana fincaanii ni qaba, gaaffiin kun na hinlaallatu,
20. Bishaan dhugduu kan qulqulleessitu ykn kan waldhaantuu taanaan maaliif bishaan kana dhimbibtaa ykn waldhaantaa?(armaan gaditti tarreeffaman keessaa deebii kiyyaa jettuu hundaa agarsiisii)
- Bishaan dhukkeedhaan/abuwaaraan waan balfameef,
 - Bishaan udaan horii fi namaatiin waan balfameef,
 - Bishaan lubbuu qabeenyaa qaama namaa alaa fi keessaa midhaniin/jarmii, baakteeriyaa, vaayirasii fi maagaan/paaraasaayitiin/ waan balfameef,
 - Bishaan keemikaalaa summii ta'aniin waan midhameef,
 - Fayyaaf gaarii waan hintaanneef,
 - Bishaan keessaa beeyiladni waan seenuuf,

- g. Bishaan follee badaa waan qabuuf,
 - h. Bishaan yoo ilaallamu qulqulluu waan hintaanneef,
 - i. Bishaan keessatti raammoo fi lubbuu qabeeyyiin biroo waan muldhataniif,
 - j. Akka na hindhukkubsannee,
 - k. Bishaan dhuguu maaliif akka dhinbiibuu fi waldhaannuu hin beekuu.
 - l. Sababa biraan qaba.
21. Akkaataa ilaalcha keetiin haala kamiin barumsaa eegumsa fayyaa yoon baradhee karaa salphaatiin hubachuu fi naaf galuu danda'a jettee tilmaamtaa? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii)
- a. ☐ barsiisaa barreeffamaan qophaa'een/dubbisaa/
 - b. ☐ barsiisaa fakkiidhaan qophaa'ee/Fakkiwwaniin/
 - c. ☐ barsiisaa jechaan dubbatuun,
 - d. ☐ marii gareen taasiifamuu/mari'achisaan jiraatee/
 - e. ☐ karaa kaminnuu caalmaan barachuu akka danda'u hinbeeku,
 - f. ☐ kan armaan olitti caqafaman alaa,

Gocha Barmaatilee Bishaan

22. Sii fi maatii keetiif bishaan dhugaatii bu'uuraa maddii keessan eessaa?
- a. Bishaan haroo,
 - b. Bishaan roobaa,
 - c. Bishaan bollaa,
 - d. Bishaan dhiimbibamee ykn waldhaannamee,
 - e. Bishaan laastikaan/qaruraan saamsamamee dhiyaatu,
23. Madda bishaan dhugaati keessan kana waggaa guutuu itti fayyadamtu moo cinaa waggaa itti fayyadamtu? a. Waggaa guutuu,
- b. Yeroo goggaa/bonaa,
 - c. Yeroo roobaa/gannaa,
24. Yeroo madda bishaanii kana itti hinfayyadamneetti, madda bishaanii kan biraa/bishaan kan argatan/ eessa irraa?
- a. Isuma,
 - b. Bishaan haroo,
 - c. Bishaan roobaa,
 - d. Bishaan bollaa,
 - e. Bishaan dhimbibamee ykn waldhaannamee,
 - f. Bishaan laastikaan/qaruraan saamsamamee dhiyaatu,
25. Bilcheessuu fi dhiqachuuf maddii bishaan maatii kee isa kamii?
- a. Bishaan haroo,
 - b. Bishaan roobaa,

- c. Bishaan bollaa,
 - d. Bishaan dhiimbibamee ykn waldhaanname,
 - e. Bishaan laastikaan/qaruraan saamsamamee dhiyaatu,
26. Miseensa maatii keessaa yeroo hedduu bishaan dhugaatii itti argatan irraa waraabee kan fiduu eenyu?
- a. Dubartii guddoo mana keessaa jiraatu,
 - b. Dhiira guddaa mana keessaa kan jiraatu,
 - c. Ijoollee dubartii mana keessaa kan jiraatu,
 - d. Ijoollee dhiiraa mana keessaa kan jiraatu,
27. Bishaan dhugaati keessan mana keessatti maliin kaawwatu?
- a. Jeerikaan keessatti,
 - b. Barmeela sibilaa irraa tolfamee,
 - c. Qaruraa pilaastikaatiin,
 - d. Meeshaa kaawwata bishaan suphee irraa tolfame,
28. Meeshaa bishaan itti kaawwatan turtii meeqa keessatti dhiqxuu?
- a. Guyyaa guyyaan,
 - b. Torbaan keessaa al-tokko,
 - c. Ji'aan al-tokko,
 - d. Darbee darbee,
 - e. Dhiqee hinbeeku.
29. Fayyaa kee akka hinminnee, bishaan dhugduu ni dhimbiibdaa/ni waldhaantaa?
- a. Eeyyeen,
 - b. Hindhimbibuu/hinwaldhaanuu,
30. Turtii meeqa keessatti bishaan dhugduu dhimbiibdaa/waldhaantaa?
- a. Dhimbiibee/waldhaanne hinbeeku,
 - b. Ennaa natty toluu/yaadadhu,
 - c. Yeroo tokko tokko qofa,
 - d. Yeroo baay'ee,
 - e. Yeroo bishaan waraabbanee finnu hundaa,
31. Yeroo ammaa kana bishaan dhugduu akka fayyaa hinminee maal gotaa? ? (armaan gaditti tarreeffaman keessaa deebii kiyyaa jettuu hundaa agarsiisii)
- a. Humaa hingodhuu,
 - b. Bishaan niin daffisaa,
 - c. Bishaan huccuudhaan niin dhimbibiibaa,
 - d. Qoshaashaan bishaan keessa jiru hanga jala hafuutti tursiisuu,
 - e. Bishaan waldhaanuuf kiloorii fi barakinaa niin naqaa,
 - f. Toftaa dhimbibiibbaa bishaanii niin fayyadamaa,
 - g. Kiniinii waldhaansaa bishaanii niin fayyadamaa,
 - h. Bishaan yoo xinnaate sa'aa 6'tiif aduu keessatti niin tursiisaa.

Eegumsaa Qulqullinaa Fayyaa Naannoo fi Dhunfaa

32. Eegumsaa Qulqullina mana keessaa fi kan naannoo gaarii ta'e atii taasiftuu malii dha? (armaan gaditti tarreeffaman keessaa deebii kiyyaa jettuu hundaa agarsiisii)
- Udaan namaa nama waliin akka walii hintuqnee fageessanii gatuu,
 - Balfa beeyiladaa nama waliin akka walii hintuqnee fageessanii gatuu,
 - Qoshaashaa naannoo fi bishaan itti dhiqamee of eeggannoon maqsuu,
 - Dirree irratti mana fincaanii fayyadamu dhisuu(kana jechuun yeroo hundaa mana fincaan keessatti fayyadamu)
 - Mana qulqullinni isaa eeggame,
 - Hinbeeku,
 - Kan biraa.
33. Mana fincaanii itti fayyadamaa jirtuu maal fakkaataa?
- Mana fincaanii hinfayyadamu, kan tajaajilam husii ykn die lafa qonnaa irratti,
 - Mana fincaanii hinfayyadamu, naannoo lafa dhoqaa irrattin fayyadamaa,
 - Mana fincaanii hinfayyadamu, naannoo haroottiin fayyadamaa,
 - Meeshaa irratti/popoottiin fayyadama,
 - Mana fincaanii diree irratti qotamee keessattiin fayyadama/mana fincaanii uwwisa qabu,
 - Mana fincaanii diree irratti qotame keessattiin fayyadama/mana fincannii gidaaraa fi gidgidaa qabu/
 - Kan gamtaa/mana fincaanii namoota naannoo itti fayyadamu/
34. Mana fincaanii kan fayyadamtuu taanaan, manni fincaanii bishaan dhugaati irraa hangam fagaataa?
- Meetira 15 oli ni fagaataa,
 - Meetira 15 gadi ni fagaataa,
 - Naannoo bishaan itti waraabbadhu manni fincaanii hinjiru,
35. Ijoolleen mana keessatti jiran yoo udaanan, udaan isaanii eessa gatuu?
- Mana fincaanii hinjiru-husii keessatti,diree irratti ni drbinaa,
 - Mana fincaanii hinjiru-naannoo dhoqa ta'eetti ni gatnaa,
 - Bolla qotnee ni darbinaa,
 - Mana fincaanii hinjiru-haroo keessatti ni darbinaa,
 - Mana fincaanii diree irratti qotame keessatti niin fayyadama/mana fincaanii uwwiisa hinqabnee/
 - Mana fincaanii diree irratti qotamee niin fayyadamaa, /gidaaraa fi gidgidaa kan qabu/
36. Erga mana fincaanii seentee/seente booda ofii kee maaliin qulqulleessitaa?
- Waraqaadhaan,
 - Citaadhaan,
 - Baalaadhaan,
 - Dhagaadhaan,
 - Huccuudhaan,
 - Bishaaniidhaan,
 - Humaa hinfayyadamu,

37. Erga Mana fincaanii dhaqxee booda harka kee ni dhiqataa?
- Eeyyeen,
 - Hindhiaqadhuu
38. Harka kee maaliin dhiqataa?
- Bishaan fi saamunaan,
 - Daaraa fi bishaaniin,
 - Bishaaniin qofa,
 - Waan tokkootiin illee hindhiaqadhu,
39. Guyyaatti harka kee si'aa meeqa dhiqataa?
- 0 duwwaa,
 - 1-2 si'a tokko hanga lamaa,
 - 3-5 si'a sadii hanga shanii,
 - 6-10 si'a jahaa hanga kudhanii,
 - >10 si'aa kudhan olii
40. Harka kee kan dhiqatuu yeroo kamii? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii)
- Gonkummaa hindhiaqadhu,
 - Nyaata nyaachuun kiyyaa duraa,
 - Nyaata erga nyaadhee booda,
 - Nyaata bilcheessuu/qopheessuun kiyyaa dura,
 - Nyaata bilcheessee/hojjadhee erga fixeen booda,
 - Mana fincaannii erga fayyadameen/qulqullaa'ee/ booda,
 - Ijjoollee kiyyaa erga qulqulleessee fi udaan isaanii ergan gatee booda,
 - Erga qaama kiyyaa dhiqadhee booda,
41. Namoota maatii keessatti kan jiran(niitii, dhiirsaa, firootan waliin jiraatan) harka essaannii yoom dhiqatan? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii)
- Gonkummaa hindhiaqadhu,
 - Nyaata nyaachuun kiyyaa duraa,
 - Nyaata erga nyaadhee booda,
 - Nyaata bilcheessuu/qopheessuun kiyyaa dura,
 - Nyaata bilcheessee/hojjadhee erga fixeen booda,
 - Mana fincaannii erga fayyadameen/qulqullaa'ee/ booda,
 - Ijjoollee kiyyaa erga qulqulleessee fi udaan isaanii ergan gatee booda,
 - Erga qaama kiyyaa dhiqadhee booda,
42. Mana kee keessatti ykn ulaa kee duratti meeshaa harka itti dhiqatan kan qophaa'ee ni jira?
- Ni jira,
 - Hinjiru,

43. Meeshaan harka itti dhiqatan kan qophaa'e yoo jiraate, kan qophaa'e eessatti dha? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii)
- Mana keessaa,
 - Manaan alaa, naannoo ulaa irratti,
 - Naannoo mana fincaani dhiyootti,
 - Iddoo naannoo bishaan itti argamuutti,
 - Naannoo nyaata itti qophaa'u,
 - Kan armaan olitti kan ibsaman alaa,
44. Torbaan keessaa si'a meeqa qaama kee ni dhiqataa?
- Guyyaa guyyaan,
 - Torbaan keessaa si'a lama sadii keessaa,
 - Torbaan keessaa si'a tokko,
 - Ji'a keessaa al-tokko,
 - Ji'a lamaa sadii keessaa al-tokko,
 - Qaama kiyyaa hindhiqadhuu,
45. Qaama kee dhiqachuuuf maal fayyadamtaa?
- Saamunaa,
 - Daaraa,
 - Bishaan qofa,
 - Waan biraatiin fayyadamaa gaa,
 - Waan tokko illee hinfayyadamu,
46. yeroo hangam hangamitti fuula kee dhiqataa?
- Guyyaa guyyaan,
 - Torbaan keessaa si'a lama sadii keessaa,
 - Torbaan keessaa si'a tokko,
 - Ji'a keessaa al-tokko,
 - Ji'a lamaa sadii keessaa al-tokko,
 - Qaama kiyyaa hindhiqadhu
47. Fuula kee dhiqachuuuf maal fayyadamtaa?
- Saamunaa,
 - Daaraa,
 - Bishaan qofa,
 - Waan biraatiin fayyadamaa,
 - Waan tokko illee hinfayyadamu,

48. yeroo hangam hangamitti huccuu kee dhiqtaa?
- Guyyaa guyyaan,
 - Torbaan keessaa si'a lama sadii keessaa,
 - Torbaan keessaa si'a tokko,
 - Ji'a keessaa al-tokko,
 - Ji'a lamaa sadii keessaa al-tokko,
 - huccuu kiyyaa hindhiquu
49. Huccuu kee dhiquuuf maal fayyadamtaa?
- Saamunaa,
 - Bishaan qofa,
 - Waan biraatiin fayyadamaa,
 - Waan tokko illee hinfayyadamu,
50. Nyaachuun kee ykn bilcheessuun kee duraa waan bilcheessituu yoom yoom dhiqxaa?
- Dhiqee hinbeeku,
 - Haalan darbee darbee,
 - Yeroo tokko tokkoo qofa,
 - Yeroo hedduu,
 - Yeroo hundaa niin dhiqaa,
51. Nyaata nyaatu ykn nyaachuuf qopheessite kana akka roobnii hintumnee yoom yoom uwwiistaa?
- hinuwwiisuu
 - Haalan darbee darbee,
 - Yeroo tokko tokkoo qofa,
 - Yeroo hedduu,
 - Yeroo hundaa niin uwwisaa,
52. Bishaan dhugduu fi nyaata itti qopheessituu qulqulluu ta'e akka turuu yoom yoom uwwiistaa?
- hinuwwiisuu
 - Haalan darbee darbee,
 - Yeroo tokko tokkoo qofa,
 - Yeroo hedduu,
 - Yeroo hundaa niin uwwisaa,
53. Waan bilcheessuuf deemtuu maaliin dhiqxaa?
- Hindhiquu,
 - Bishaaniin,
 - saamunaadhaan,
 - keemikaalaa akka barakinaa jiru,
54. kophee ni kaayyataa?
- Eeyyeen
 - hinkaayyadhuu,

55. yeroo meeqaaf kophee kaayyataa?
- Kophee hinkaayyadhuu,
 - Haalaan darbee darbee,
 - Darbee darbee,
 - Torbaan keessaa guyyoota hedduuf,
 - Guyyaa guyyaan
56. Namoota mmaatii keessa jiran yeroo hangamiif kophee kaayyatu?
- Kophee hinkaayyadhu,
 - Haalaan darbee darbee,
 - Darbee darbee,
 - Torbaan keessaa guyyoota hedduuf,
 - Guyyaa guyyaan
57. Ijjoollee yoo qabaatee/qabaate kophee ni kaayyatu?
- Kophee hinkaayyadhu,
 - Haalaan darbee darbee,
 - Darbee darbee,
 - Torbaan keessaa guyyoota hedduuf,
 - Guyyaa guyyaan
58. Sii fi maatiin kee kophee kaayyatan kan akkamii? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii)
- Kophee mamaramaa gogaa fi laastikaa irraa hojjetamee,
 - Kophee haphii,
 - Isneekarii
 - Kophee gogaa kan waraanaa fakkaatu,
 - Kophee gogaa,
 - Kophee hinkaayyadhu,

Gaaffii Dhukkubaa Waliin Kan Walqabatan.

59. Torbaan lamaan darban keessaa dhimma ogeessa fayyaa biratti geessiisuu isiin mudateera?
- Eeyyeen,
 - Na hinmuddannee,
60. Torbaan lamaan darban keessaa mana yaalaa yoo dhaqxan mana yaalaa kamii keessatti deemtee? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii)
- Hospitaalaa,
 - Kiliniikaa,
 - Faarmaasii,
 - Mana qorichaa aadaa,
 - Naannoo biraa irraa dhufanii waldhaansa fayyaa bilisaa kennaniitti,
 - Torbaan darban lameen keessaa mana yaalaa hindeemnee,

Gaaffii Beekumsaa

Eegumsaa Qulqullina Naannoo, Qulqullinaa Dhunfaa fi Bishaan

61. Lubbuu qabeeyyii, jarmoota fi maagaa midhaa geessan akkamitti daddarbuu, ykn seenan? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii)
- Harka xurii,
 - Bishaan xurii,
 - Rooba,
 - Udaan,
 - Nyaata qulqulliinni isaa hineegamnee,
 - Mana fincaanii xurrii qabu,
 - Diree irratti mana fincaan bahuu,
 - Udaan beeyiladaa,
 - Udaan namaatiin,
 - Biyyee xuriin fi mana fincaaniin balfamee,
 - Akkamitti akka darbuu hinbeeku,
 - Kan biraa,
62. Maal gochuun qulqullina eegu dandeenyaa? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii)
- Harka saamunaan dhiqachuu,
 - Bishaan dhugaatii fayyaaf akka mijaa'u taasiisuu(danfisuu, dhimbibbaan dhimbiiibuu, keemikaalaa naquun dhimbiiibuu),
 - Mana fincaanii fayyadamu(diree irratti mana fincaanii bahuu dhisuu)
 - Nyaata sirriitti bilcheessuu,
 - Bishaan dhugaatii meeshaa quqlulluu ta'een sirnaan kaa'u,
 - Nyaata sirnaan qulqulluu ta'een kaa'u,
 - Qaama dhiqachuu,
 - Naannoo qulqulleessuu,
 - Hinbeekuu,
 - Kan biraa,
63. Mana ykn hawaasaa keessatti dhimma qulqullina jiru haalaan badaa dha?(badaa ta'usaa akkamitti beeknaa).
- Udaan bakka hundaa yoo agaruu,
 - Udaan horii bakka hundaa ennaa ilaalluu,
 - Xurii fi bishaan xuriin itti dhaqamee naannootti ennaa muldhatu,
 - Ajajawaan badaa ganda keessatti enaa ajaa'u,
 - Mana fincaanii jiraachuu dhabu ykn jiraattootaaf gahaa ta'u dhabuu,
 - Diree irratti mana fincaan fayyadamu,
 - Hinbeeku,
 - Kan biraa

64. Qulqullina dhunfaa/Hayijinii/ fi qulqullina naannoo ennaa jedhamu kan hubatuu/sii galuu akkamii? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii)
- Harka dhiqachuu/waan hundaa qulqulluu godhanii eeguu,
 - Qulqullina nyaataa eeguu(qulqullinaan bilcheessuu, of eeggannoon kaa'u, waan badaa waliin akka waliin hintuqnee fi akka hinbannee of eeggannoo taasisuu, fuduraa fi muduraa sirriitti dhiquu),
 - Udaan namaa fi balfa beeyiladaa fageessanii gatuu,
 - Waligala qulqullina (huccuu micuu, qulqullinaa lafaa fi kan xarapheezaa eeguu, qulqullina mana fincaanii, iddoo dhiqata harkaa dhaabbii ta'ee argachuu),
 - Bishaan dhugaatii qulqulluu/fayyaa kan hinminnee,
 - Mana fincaanii fi xurii bishaan dhangalaa'oo,
 - Qulqullina qaama dhunfaa(fuula dhiqachuu, qaama dhiqachuu, huccuu torbaan torbaaniin dhiquu),
 - Hinbeeku,
 - Kan biraa(ibsii)_____
65. Harka dhiqachuun barbaachisaa kan ta'u yoomii? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii) a. Erga qulqulloofnee booda,
- Erga mana fincaanii deebinee booda,
 - Daa'imman xiqiqqaan qulqullaa'anii ennaa fixanii haxoofnee booda,
 - Erga nyaata qopheessuu eegallee booda,
 - Udaan daa'immanii erga darbinee fi qulqulleessinee booda,
 - Erga bineensota manaa harkaan tutuqnee booda,
 - Erga balfa horii harkaan tutuqnee booda,
 - Erga kan biro nyaachifnee/gursinee booda,
 - Erga nama dhukkubsatee dhukkubsiisnee booda,
 - Nyaata erga nyaannee booda,
 - Hinbeekuu,
 - Kanbiraa(ibsii)_____.

Dhukkuba

66. Namnii tokko albaatiin kan qabu ykn garaa keessaa raammoon/maagaan argamu maal irraa kan ka'ee dha? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii)
- Erga nyaata nyaate booda harka isaa sirrii godhee waan hindhiqqanneef,
 - Erga mana fincaanii fayyadamee booda harka isaa sirrii godhee waan hindhiqqanneef,
 - Udaan daa'immanii erga darbinee fi qulqullofnee booda harka isaa sirrii godhee waan hindhiqqanneef,
 - Erga udaan namaa darbiinee booda harka isaa sirrii godhee waan hindhiqqanneef,
 - Erga balfa horii darbiinee booda harka isaa sirrii godhee waan hindhiqqanneef,
 - Bishaan hinwaldhaanamnee/hinqulqulloofnee dhuguudhaan,
 - Biyyee irratti miila qullaan deemuun fi akka tasaatti udaan dirree irratti jiru miila qullaan irratti ijachuun,
 - Bishaan hinwaldhaannamne, hinqulqulloofnee fi meeshaa qulqulluu keessatti kaa'amee dhuguu fi nyaata bilcheessuuf fayyadamuun,

- i. Nyaata hirdhina qulqullina qabuun bilcheessuun,
 - j. Fuduraa fi muduraa nyaachuun ykn bilcheessuun duraa sirriitti dhiquu dhabuun,
 - k. Hinbeekuu,
 - l. Kan biraa(ibsii)_____
67. Albaatii fi raammoon akka nuu hinargannee wantoota sadii gochuu qabnuu maal faa dha? (kan armaan gaditti tarreeffaman keessaa deebii kiyyaa kan jettuu agarsiisii)
- a. Harka bishaanii fi saamunaadhaan sirriitti dhiqachuu,
 - b. Mana fincaanii bahuuf mana fincaanii sirrii ta'e qofa fayyadamu,
 - c. Udaan daa'immanii bolla mana fincaanii keessatti qofa darbuu,
 - d. Udaan lafa keessaa awwaaluu,
 - e. Bishaan qulqulluu dhuguu,
 - f. Bishaan dhugaatii meeshaa qulqulluu keessatti kaa'u,
 - g. Nyaata ennaa hojjetamu/bilcheeffamu haala qulqullinnii isaa eegameen hojjechuu fi kaa'u,
 - h. Xurrii/qoshaashaa bolla murtaa'e keessatti darbuu(bakkuma argameetti darbuu dhisuu)
 - i. Kophee kaayyachuu,
 - j. Hinbeeku,
 - k. Kan biraa(ibsii)_____ 68. Jarmootaa fi Raammoolleen kan sii dhukkubsiisan sitti fakkaataa?
 - a. Eeyyeen na dhukkubsiisuu,
 - b. Na hindhukkubsiisan,
69. Jarmootaa fi raammooleen/maagaa/ onnee, kallee, sombaa, ujummoo gara fi tiruu kee kan midhan sitti fakkaataa?
- a. Eeyyeen kan na midhan natti fakkaataa,
 - b. Na hinmidhanii,
70. Jarmootaa fi raammooleen/maagaan/qaamni kee akka laaffatuu, keessii kee akka goggooguu, fi qaamni kee akka huqqatuu sababa kan ta'uu sitti fakkaataa?
- a. Eeyyeen,
 - b. Natti hinfakkaatu,
71. Jarmootaa fi raammoolee/maagaan/ dhukkuba cimaa kan si irratti dhaqqabsiisan darbees du'a kan sii irratti dhaqqabsiisuu danda'an sitti fakkaataa?
- a. Eeyyeen narratti dhaqqabsiisuu ni danda'u,
 - b. Natti hindhaqqabsiisanii

APPENDIX D

INTERVENTION SESSION ORDER OF PROCEDURE
& HEALTH EDUCATION SESSION CONTENT

Intervention Sessions Order of Procedure

- 1) The participants assembled, information regarding the type of project will be given.

The author answered questions that the participants had. Anyone from the community was allowed to attend; however, only individuals 12 years of age, with no cognitive disabilities, were allowed to participate. The age of 12 was decided upon due to the fact that in Bati Kelo, at 12 years of age, an individual is considered to be a young adult.

- 2) The consent forms were distributed, filled out, and then collected (and any questions were answered). Participation being voluntary was very much emphasized. It was also emphasized that a person could withdraw at any time without any consequences. Due to the low literacy rates, the consent form was read aloud to all participants to ensure comprehension. (For the second set of sessions, returnees did not need to complete a new consent form. All they needed to do was have their participant ID number.)

- 3) Consenting participants were ‘checked in’ – given an identification number (all surveys were identified and tracked using the identification number, no personal identifiers were used).

- 4) The KAP survey was filled out, and then collected by staff. Due to the low literacy rates, individuals from the community who could read and write were solicited to assist participants who could not read or write. Due to the high number of those who were illiterate, the individuals who were literate often had to help five to ten other participants at a time. Not only was this what was practical for the Bati

Kelo community, but it also followed the recommended ‘group survey method’ for KAP surveys from HANDICAP International [73].

- 5) At this time there was a break. Participants had time to use the latrine facilities if needed. Food and water were also distributed to the participants, along with any children they had with them.
- 6) The health education was given, using the posters and verbal explanation. Following the presentation, a question discussion time was held. The opportunity for the participants to provide feedback and comments was also given.
- 7) After the second set of KAP survey and health education sessions, a small culturally appropriate thank you gift that was practical and that also reinforced the health education was given to the returning participants. In the Bati Kelo culture, it is customary to show appreciation by giving a small token or gift. Otherwise, it would be considered offensive or ‘using’ the other person.

Health Education Session Content

- I. Greeting
 - a. Thank you
 - b. Purpose of this health education:
 - i. To help you understand the three main parasite diseases that you are infected with so that you can know better how to prevent disease and improve your health

- ii. To develop good education material for rural villages that struggle with these parasite infections – so that we can help teach other people about these things as well.

II. Intro

- a. Explain that these three worms are the parasites that they have.
- b. Nearly 2 billion people worldwide suffer from active infections of these parasites and another 4 billion people are at risk of contracting them.
- c. *ETHIOPIA INFECTION RATES (as of 2015 data)*
 - i. *Whipworm (Trichuris trichiura)*: 21 million people infected (which is 13% of the entire burden of ascariasis in sub-Saharan Africa)
 - ii. *Hookworm*: 11 million people infected (which makes Ethiopia to have the 3rd highest burden rank in sub-Saharan Africa)
 - iii. *Roundworm (Ascariasis)*: 26 million people infected (which is 15% of the entire burden of ascariasis in sub-Saharan Africa)

III. Health Effects

- a. The effects of these parasitic infections: abdominal pain, constipation, diarrhea, bloody diarrhea, malnutrition, intestinal obstructions and perforations, rectal prolapse, chronic cough, fluid in the lungs, stunted physical growth, impaired cognitive development, anemia, vitamin A deficiency (which contributes to blindness), complications in pregnancy, fetal deformities, and worsening HIV, TB, and malaria infections.

- b. These health effects lead to decreased school attendance, lower education levels, and work to keep people trapped in a world of poverty and disease.
- c. As you can see, and as you all have experienced, STH infections are very serious and harmful – not only for the individuals infected, but for communities and countries as a whole.

IV. Life Cycles

- a. Whipworm: Ingestion of worm eggs via contaminated hands or food → eggs hatch in small intestine, where they grow into adults → adult worms go into large intestine, where they lay eggs → eggs are excreted in the feces → the eggs go into the soil → then the cycle begins again. *(no migration to the lungs)*
- b. Hookworm: The baby worms in the soil penetrate through the feet → the baby worms then travel in the blood to the heart and lungs → then they travel to the throat where they are swallowed into the intestines → in the small intestine the baby worms attach and grow into adults → the worms suck blood from the intestines causing anemia → the adult worms lay eggs which go into the stool and are excreted with the feces → the eggs go into the soil and mature into baby worms → then the cycle begins again.

- c. Roundworm: Ingestion of water or food that have been contaminated by fecal matter containing the worm eggs → the eggs are swallowed and go into the small intestine, where they hatch into baby worms → the baby worms burrow through the wall of the small intestine and get into the blood and travel to the lungs, where they mature into adult worms → then they travel to the throat where they are swallowed and travel to the small intestine → the adult worms attach to the small intestine, where they lay eggs → eggs are excreted in the feces → the eggs go into the soil → then the cycle begins again. *These worms can also go and damage the pancreas, gall bladder, liver.*

V. Transmission Methods

- a. Hookworm: Baby worms in the soil penetrate through the feet
- b. Roundworm: Ingestion of water or food that have been contaminated by fecal matter containing the worm eggs
- c. Whipworm: Ingestion of worm eggs via contaminated hands or food

VI. Prevention

- a. Clean Water & Clean water storage
- b. Personal hygiene (especially emphasizing hand washing)

- c. Utilizing covered Latrines (and keeping far from their water source to prevent contamination)
- d. Wearing Shoes

VII. Treatment

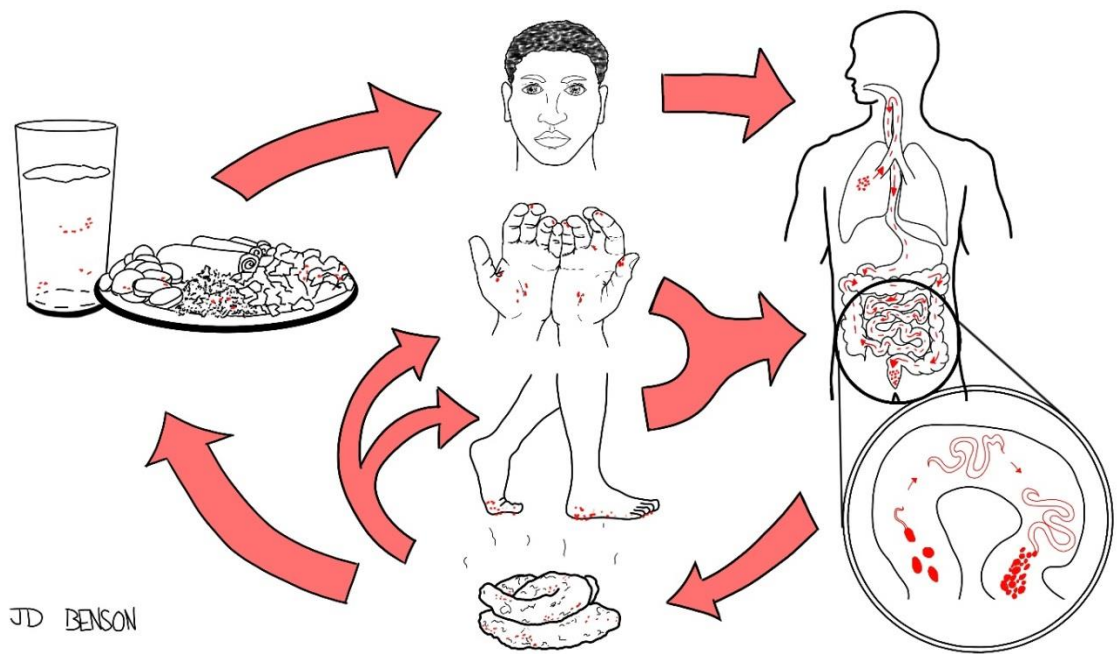
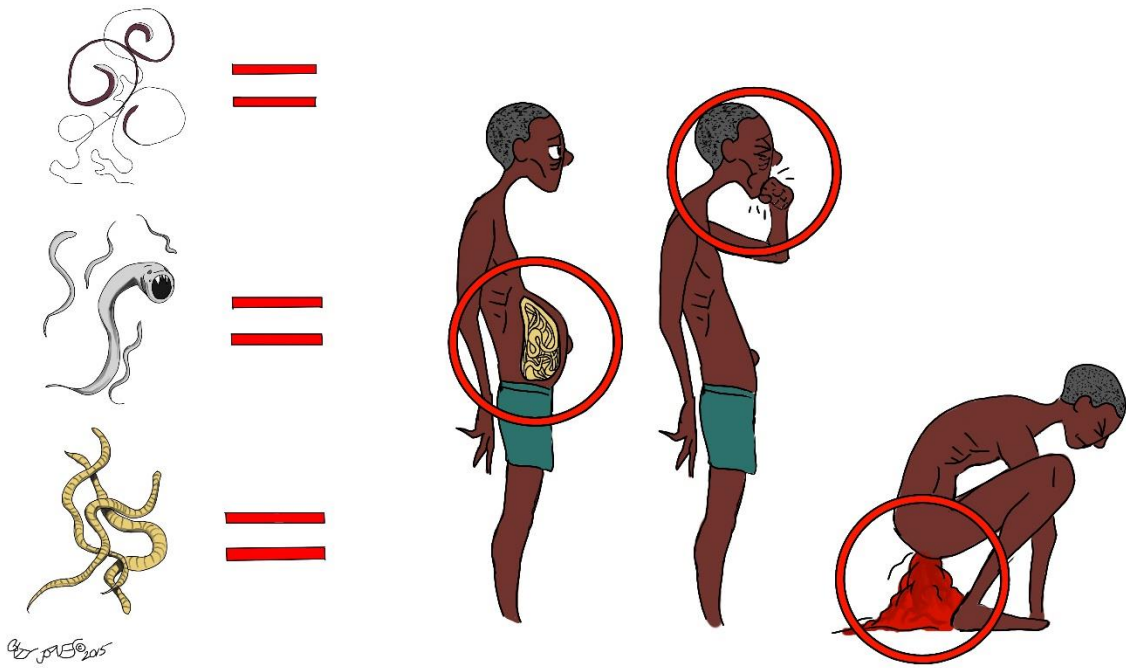
- a. The medications found to be most effective in treating all three parasite infections.
- b. Reinfection can occur in 3-6 months, therefore it is recommended that deworming takes place at least every 3-6 months.

VIII. Conclusion

- a. Questions/Discussion
- b. Recap
 - i. The effects of infection
 - ii. The transmission routes
 - iii. The prevention measures
 - iv. The treatment recommendations

APPENDIX E

SAMPLE OF PROJECT HEALTH EDUCATION POSTERS







APPENDIX F

IRB APPROVAL AND CONSENT FORMS



INSTITUTIONAL REVIEW BOARD
For the Protection of Human Subjects
FWA 00000165

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 c/o Immunology & Infectious Diseases
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Chair: Mark Quinn
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 Administrator:
 Cheryl Johnson
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MEMORANDUM

TO: Courtney Jones and Elizabeth Kinion

FROM: Mark Quinn *Mark Quinn*
 Chair, Institutional Review Board for the Protection of Human Subjects

DATE: September 30, 2015

SUBJECT: *Implementation of Culturally Sensitive and Informed health Education as a Part of the 'WASH Approach' in the Rural Village of Bati Kelo, East Shewa Zone, Adama Wereda, Ethiopia* [CJ093015]

The above proposal was reviewed by expedited review by the Institutional Review Board. This proposal is now approved for a period of one-year.

Please keep track of the number of subjects who participate in the study and of any unexpected or adverse consequences of the research. If there are any adverse consequences, please report them to the committee as soon as possible. If there are serious adverse consequences, please suspend the research until the situation has been reviewed by the Institutional Review Board.

Any changes in the human subjects' aspects of the research should be approved by the committee before they are implemented.

It is the investigator's responsibility to inform subjects about the risks and benefits of the research. Although the subject's signing of the consent form, documents this process, you, as the investigator should be sure that the subject understands it. Please remember that subjects should receive a copy of the consent form and that you should keep a signed copy for your records.

In one year, you will be sent a questionnaire asking for information about the progress of the research. The information that you provide will be used to determine whether the committee will give continuing approval for another year. If the research is still in progress in **3 years**, a complete new application will be required.

**SUBJECT CONSENT FORM
FOR
PARTICIPATION IN HUMAN RESEARCH AT
MONTANA STATE UNIVERSITY**

Implementation of culturally sensitive and informed health education as a part of the 'WASH Approach' in the rural village of Bati Kelo, East Shewa Zone, Adama Wereda, Ethiopia.

Greetings! My name is Courtney Jones and I am a doctoral student at Montana State University-Bozeman, USA. You are being asked to participate in survey about health education as a part of the 'WASH Approach' to control soil-transmitted helminth infections. You will be asked to answer survey questions, it will take about 30-60 minutes. You will also attend a 1 hour health education session and then answer the same survey questions after the education session. Each time we meet we will only be doing one education session. There will be three sessions in total, one session every six months. Each session will contain the same educational material. The project will take place over the years of 2015 and 2016. The information you provide will help us deliver health education related to soil-transmitted helminth infections, hygiene, sanitation, and clean water. No personal identifiers will be collected. All records will be anonymous and will remain confidential. This data will not be used for anything other than this project. There is no penalty from withdrawing, and you are able to do so at any time. You are welcome to attend the health education sessions even if you do not want to participate in the surveys. The estimated time for completing the surveys is 1-2 hours total, and attending the health education sessions is approximately 1 hour. Thank you.

Should you have questions about the project, you can contact Courtney Jones BSN, RN, CMSRN through her in-country contact Misiker Kebede at +251-91-154-9723. If you have additional questions about the rights of human subjects you can contact the Chair of the Institutional Review Board, Mark Quinn, 1-406-994-4707 [mquinn@montana.edu].

AUTHORIZATION: I have read the above and understand the discomforts, inconvenience and risk of this project. I, _____ (name of participant), agree to participate in this project. I understand that I may later refuse to participate, and that I may withdraw from the project at any time. I have received a copy of this consent form for my own records.

Signed: _____
Investigator: _____
Date: _____

OR

(For the participation of a child or other person not able to give consent for themselves.)

AUTHORIZATION: I have read the above and understand the discomforts, inconveniences and risks of this study. I, _____ (name of parent or guardian), related to the subject as _____ relationship, agree to the participation of _____ (name of subject) in this research. I understand that the subject or I may later refuse participation in this research and that the subject, through his/her own action or mine, may withdraw from the research at any time. I have received a copy of this consent form for my own records.

Parent or Guardian Signature: _____
Child's Assent Signature: _____ (if applicable)

APPROVED
MSU IRB
09/02/2016
Date approved

**በዋጋታና ስቴት ዩኒቨርሲቲ ሥርቴ
የጤና ነክ ትምህርት ለመስጠት እንዲሁም የሰዎችን የጤና ይዘትና አጠባበቅ
ለመገምገም የሚረዱ መረጃዎችን ለመሰብሰብ የሚያስችል
የተሳታፊዎች የፈቃደኝነት ማረጋገጫ ቅጽ**

*ለባህልና ለልምድ ከበፊታና ጥንቃቄ በማድረግ፣ የ ዋሽ አፕሪኖ ወይም
'ውሃ' የአካባቢ ንጽሕና አጠባበቅና የግል ጤና/ንጽሕና አጠባበቅ በመግል
የሚታወቀውን የጤና ትምሕርት በሽዋ ዞን፣ በአዳማ ወረዳ በምትገኘው በባቲ ቀሎ ስለመሰጠት*

ጤና ይሰጣልኝ፤

እኔ ወይም ሌላ ሰው እንደ እኔ በአካባቢዬ በሚገኝ የዋጋታና ስቴት ዩኒቨርሲቲ የሕክምና ይዘትና ልምድ በመግባት ላይ የምሽት ተግባር ሂሳብ በዚህ የተሳታፊ ፈቃደኝነት ማረጋገጫ ቅጽ ላይ ፈቃደኝነት የምጠቀሰውን ጉዳይ ነኝ፤ በአፈሪ ወሰን ወደ ሰውነት በመግባት ጤናን የሚያወቅ ሕመምን ለመቆጣጠር የሚያስችል በ ዋሽ አፕሪኖ (ውሃ) የአካባቢ ንጽሕና አጠባበቅና የግል ጤና/ንጽሕና አጠባበቅ የጤና አጠባበቅ ትምሕርት ስለተተሳታፊ እንድትሆኑ ነኝ፤ ከትምሕርቱ ጋር በተያያዙ ከትምሕርቱ ስልትና ይላላ የክትትልና የጤና ጥምጥም ጥያቄዎች ሲቀርብላቸው፤ ከዚህ በሽክ 60 ደቂቃ በመቀጠል መልስ በመስጠት እንድትተሳታቡ ነው።

በመጨረታዎ ቅጹን የሚሰጡት ትክክለኛ መልሶችን መረጃዎች ለባቲ ቀሎና አካባቢው ለሚገኙ ገዢዎች በቀጥታ የሚመዝገብ የሚረዳ፣ ከአፈሪና ከውሃ-ወይል ሸጪዎች ነጥሮች አንድነት ራሳቸውን ለመጠበቅና ለመከላከል እንደሚችሉ የሚጠቅም የጤና ትምሕርት ለመስጠት ያስችላቸዋል። ይህም የጤና ትምሕርት የንጽሕ ውሃ የአካባቢ ንጽሕና አጠባበቅና የግል ጤና/ንጽሕና አጠባበቅ ጋር በቀጥታ የሚገናኝ ትምሕርት ይሆናል።

እነዚህ የጤና ትምሕርቶች የሚሰጡት ለሁለት ዓመት (2008 እና 2009 ዓ.ም.) ሲሆኑ በየዓመቱ ሁለት ወይም ሶስት ጊዜ ትምሕርቶች ይሰጣሉ። አንድ ተሳታፊ ሰዎች ላይ የሚሰጠው የጤና እና ጤና ነክ መረጃ ውሳኔ ከሁለት ከሰዓት በፊት በሚገኝ የዋጋታና ስቴት ዩኒቨርሲቲ የሕክምና ይዘትና ልምድ በመገምገም (በቀጥታ የትኛው መረጃ የግን እንደሆነ ለማሟላት)፤ ስለ ተሳታፊው የሚገልጽ ግዛዊ የሆነ ምንም መረጃ አይሰጠውም። በዚህ የተሳታፊ ጥያቄ የሚሰጠው የጤና እና የጤና ነክ መረጃዎች ከዚህ የጥናት ፕሮጀክት ውጪ ሌላ ሰዎችም ነገር አይወሰኑም። አንድ ሰው በዚህ የጤና ትምህርት ፕሮጀክት ውስጥ ለመሳተፍ ባይፈልግ መስጠቱ ነው። ወይም መሳተፍ ከጀመረ በኋላ በሀብርጥ ምንም አይነት ስለመጠበቅ ወይም ቅጹን አይደርስበትም። አንድ ተሳታፊ የጤና መረጃ አሰጣጥ ውስጥ መሳተፍ አልፈልገውም ማለትም የጤና ነክ ጥያቄዎችን መመልስ አልፈልገውም ነገር ግን የጤና ትምሕርቱን ወደ መግባቱ አልፈልገውም ቢል ይችላል። የጤና አጠባበቅ ትምህርት የሚረጅው ጊዜ በጥንት አንድ ሰዓት ነው። የጤና ነክ መጠይቆችን ለመመልስ ደግሞ ከ 1-2 ሰዓት ያህል ጊዜ ይወስዳል።

በእነዚህ የጤና ትምሕርት ፕሮጀክት ጥያቄ ቢኖረውም፤ ጥላካ (wee)፣ ኮርቦኒ ደንበን የሕገ ምክር ኮሚሽን በኩል በኩል በስልክ ቁጥር+251-91-154-9723 በመጻፈል ማረጋገጥ ትችላላችሁ። የዚህ ፕሮጀክት ተሳታፊ ልማት ፈቃደኛ ስለሆነው ሰዎች መስተ ተጨማሪ ጥያቄ ቢኖራቸው የምግባርን ዩኒቨርሲቲ ፕሮጀክት ምክር ቤት ሊቀመንበር ሚኒስተር ማርክ ኩዊን (Mark Quinn) ማንኛው ይቻላል። የስልክ ቁጥራቸው 1-406-994-4707 ሲሆኑ የኢ-ሜይል አድራሻቸው mqinn@montana.edu ነው።

ፈቃድ፡- እኔ (የተሳታፊ ሙሉ ስም ከላይ በከርገዢ የተጻፈውን የጤና እና የጤና አጠባበቅ ትምሕርት ለመግባት እንዲሁም ከጤና አጠባበቅ ጋር በተያያዘ ለሚፈረገው ጥናት እስፈላጊ ጤና ነክ ጥምጥሞችን ለማድረግ የሚረዱ መጠይቅ ቅጾች ላይ የሚቃርኩ ጥያቄዎችን በመመልስ ለመሳተፍ በሌላ ፈቃደኛ ሙሉን ከሁሉ በሰሜን አቅጣጫ ፈርሞኝ በሚከተለው አረጋግጣለሁ። ይህን ፈቃደኝነትን በጥንቃቄ ጊዜ ለመቀየርና መስተፈን ለማቆም መብቴ መሰርት ያለኝ እንደሆነም ከላይ በተሰጠው መሠረት ተረድቻለሁ። የዚህን ፕሮጀክት ፈቃደኝነት ማረጋገጫ እንደ ገልጻው (ኮር) ለሌላ መረጃ እንዲሆንኝ ተቀብለዋለሁ።

ፈርማ፡- _____

የፕሮጀክት ተቀባሚ፡- _____

ቀን፡- _____

የፕሮጀክቱን አጠቃላይ ሂደት ለመገምገም እንዲያስችል፤ የጤና ትምሕርት ተሳታፊዎችን ፎቀጥሮ ማግኘት እስፈላጊ ይሆናል። ነገር ግን ማንም ሰው ፎቀ መግባት አልፈለገ እንዳት ግድታ የለበትም። ፎቀው አንድን ግለሰብ ማግኘትን ለመሰብ መተሞራራ ላይ በፍጹም አይወሰድም። ባለፈቸው ሰው ሰው ከፈቀው ጋር አይገናኝም። አንድ ተሳታፊ ፎቀ መግባት ባይፈልግ፤ የጤና ትምሕርቱን መጠይቆችን በመመሳተፍ መሳተፍ ይችላል፤ መብቴ መስተ ስለሰው ይውግን፤ ፎቀ ለመግባት ከተሰማውና ፈቃደኛ ከሆኑ አባዝዎ ፈቃደኝነትዎን ከታች ባለው ክፍት ቦታ በመፈረም ይረጋግጡ።

እኔ _____ (የተሳታፊ ወይም የወላጅ/ጥቅር ሙሉ ስም) በዚህ የጤና ፕሮጀክት ጥናት ፎቀጥሮ ለመግባት ፈቃደኛ ነኝ።

ፈርማ፡- _____

የፕሮጀክት ተቀባሚ፡- _____

ቀን፡- _____

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**Yunivarsitii Steetii Moontaanaa Jalatti, Barnoota Fayyaa Ilaallatu Kennuu
Akkasumas Qabiinsaa fi Egumsa Fayyaa Namootaa Gamaaggamuuf Ragaalee
gargaaran funaanuuf kan dandeessisuun Guca Feedhii Hirmaattootaa Ittiin
Mirkanaa'u**

Kabajaa fi Of-Eeggannaa Aadaa fi Barmaatileef gochuun 'Waash Appiroochii' ykn " Bishaan, Qulqullinaa fi Egumsa Naannoo fi Egumsa Fayyaa /Qulqullina Dhunfaa jechuun kan beekkamu barnoota fayyaa Godina Shawaa, Aanaa Adaamaatti kan argamtu Baatii Qallootti Kennuu.

Fayyaa Isiin Haa Kennuu

Ani Addee Kortinii Jonsaniin jedhamaa. Biyya Ameerikaatti kan argamu Yunivarsitii Moontaanaa Steetii Doktora Fayyaa ta'uudhaaf barattuu barachaa kan jiru dha. Guca mirkanneessaa feedhii hirmaattotaa kana irratti dhimma feedhii itti gaafadhu,

1st Biyyee keessaa gara qaamaatti seenuun lubbuu qabeeyyii fayyaa midhan to'achuudhaaf kan gargaaran "Waash Appiroochii'n (" Bishaan, Qulqullinaa fi eegumsa naannoo fi Egumsa fayyaa /qulqullina dhunfaa) barnoota eegumsa fayyaa ennaa kennuu hirmaattootaa akka taatan

2ffaa barnoota kanaan walqabatee, barnoota duraa fi boodaa gaaffii gamaaggamaa hordoffii fi fayyaa yoo isiinif dhiyaatu, daqiiqaa 30 hanga 60 fudhachuudhaan deebii kennuun akka deeggarsa taasiifanii dha.

Deebiiwwan fi ragaaleen sirrii gaaffilee keessatti kennaman Jiraattootaa Baatii Qalloo fi naannawaa ishii kan jiran kallattiidhaan kan fayyaduu fi kan gargaaruu, dhukkobota biyyee fi bishaanii irraa akkamitti jiraattootni ofii isaanii eeguu fi ittisuu akka danda'an kan gargaaru barnoota fayyaa kennuuf ni dandeessisaa. Barumsii fayyaa kunis bishaan qulqulluu, eegumsaa qulqullinaa naannoo, eegumsa fayyaa/qulqullina dhunfaa waliin kallattiidhaan barnoota walqabatu ta'a.

Barnoonnii fayyaa kun kan kennaman waggaa lamaaf(bara 200 fi 2009) yoo ta'u barumsii waggaa keessaa si'a lamaa ykn si'a sadii ni kennamaa. Hirmaataan tokko guca irratti ragaa fayyaa fi fayyaa ilaallatu hundii ragaa saala, umurii, fi naannoo jireenyaan alaa maqaa dhunfaa kan hindaballee waan ta'eef (kallattiidhaan ragaan kami kan eenyuu akka ta'ee waan hinbeekkamneef), waa'ee ragaa ibsa dhunfaa, hirmaataa kamiyyuu hinjiraatu. Qo'annaa itti fufiinsaa qabu kana ragaaleen fayyaa fi fayyaa ilaallatan funaannaman kaayyoo piroojaktii qo'annaa kanaan alaa dhimma biroo kamiyyuuf hinolanii. Namni kamiyyuu Piroojaktii barumsa fayyaa kana keessatti mirga hirmaachuu dhisuu ni qaba. Yookaan erga hirmaachuu jalqabee booda yoo addaan kutee wantii irraa hordhatu ykn adabbiin isa irra qaqqabu tokko illee hinjiraatu. Hirmaataan tokko funaana ragaa fayyaa keessatti hirmaachu hinbarbaadu, jechuunis gaaffilee fayyaa ilaallatan kana deebisuu hinbarbaadu Jonsan Unkaa Feedhii-Amhaariffaa.doc/Kan jijjiiree Misikiir Kabbadaa, Daayireektara Ol'aanaa, SGM

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barumsa fayyaa qofa barachuu niin barbaadaa jechuu ni danda'a. Yeroon barumsaa kan fixuu tilmaamaan sa'aa tokko dha. Gaaffilee fayyaa ilaallatan deebisuuf immoo yeroo sa'aa 1-2 ni fudhatu.

Kanaafu, piroojaktii barumsa fayyaa kana irratti gaaffii yoo qabatan Addee Kortiinii Jonsani karaa Obbo Misikiir Kabaddaatiin lakk.bilbilaa +251-91-154-9723 bilbiluun dubbisuu ni dandecessuu. Hirmaataa piroojaktii kana ta'uuf mirga namoota feedhii qaban kanaaf gaaffii dabalataa yoo qabaatan Yunivarsitii Itti barachaa jiru Dura Taa'aa Boordii Gamaaggama Piroojaktii Obbo Maark Qiwuun(Mark Quinn) dubbisuun ni danda'amaa. Lakk. Bilbila isaanii +1-406-994-4707 yoo ta'u, Imeelliin isaanii mquinn@montana.edu dha.

Heyyama:-ani _____(maqaa guutuu hirmaataa) akkuma armaan olitti tarreeffameen barnoota Fayyaa fi Eegumsa Fayyaa barachuuf akkasumas eegumsa fayyaa waliin wal-qabatee qo'annoo taasifamuuf gamaaggama fayyaa ilaallatu taasiisuuf gargaaran gucaalee gaaffii irratti gaaffilee dhiyaatan deebisuun hirmaachuuf ofii kootiin hayyamamaa ta'u koo mallattoo maqaa kiyyaa fuullee irratti kaa'uun niin mirkanneessaa. Feedhii kiyya kana yeroo kamiyyuu jijjiruu fi hirmaannaa kiyyaa kana dhaabuufis mirga akka qabu bu'uura armaan oli jiru kanaan naaf ibsamee hubadheera. Mirkanneessaan hayyamama projektii kana garagalchii/koppiin/tokko ragaa akkan naaf ta'u ofii koof fudhadheera.

Mallattoo _____

To'ataa Piroojaktii _____

Guyyaa _____

Adeemsa waligalaa kana gamaaggamuuf akka dandecessisuu suuraa hirmaattoota barnoota fayyaa kaasuun barbaachisaa ni ta'a. Garuu namni kamiyyuu suuraa ka'uuf kan hinbarbaannee yoo ta'e dirqama tokko illee hinqabu. Suurrii ka'u eenyuma nama tokko adda baasuuf gonkumaa hinoluu. Abbaan suuraa maqaan isaa suuraa waliin hinbarreeffamu. Namni suuraa ka'u hinbarbaannee barnoota fayyaa fi gaaffilee guutuu irratti hirmaachu ni danda'a, mirga guutuu ta'e qaba. Ta'uullee suuraa ka'uuf yoo waligalee fi hayyamamaa yoo taaatan hayyamama ta'uu keessan iddoo duwwaa armaan gadii jiru kana mallatteessuun mirkanneessaaa.

Ani _____(maqaa guutuu hirmaataa ykn maatii/guddiisaa) projektii qo'annaa fayyaa kanaatiin suuraa ka'uudhaaf hayyamamaa dha.

Mallattoo _____

To'ataa Piroojaktii _____

Jonsan Unkaa Feedhii-Amhaariffaa.docx/Kan jijjiree Misikiir Kabadaa, Daayireektara Ol'aanaa, SQM

APPROVED
MSU IRB
09/30/2015
Date approved

Guyyaa _____

Jonsan Unkaa Feedhii-Amhaariffaa.dox/Kan jijjiree Misikiir Kabbadaa, Daayireektara Ol'aanaa, SGM

APPROVED
MSU IRB
09/30/2015
Date approved

Case # 972 EFA9582
#3
Date 14/07/08

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Lakk PO- 85- 99826
Guyaa 14-07-2008

Wajjira Eegumsa Fayyaa Aanaa Adamaa

Adaamaa

Dhimmi :- Wa'ee Deegarsa gaafachuu ta'aa

Akkuma mata duree irrat ibsuu yaalamneetii Dhaabanii amantaa masarat kiristoos dame maqii "mata duree" "About soil transmitted helminth disease" jedhuu irat barumsa oggesa maqaan isaanii misii kaartinii jons kan jedhamaniin barumsa fayyaa ganda Baatii qaloo jedhamuu irrat keenuu akka barbaadanii BEFO Xalayaa lakkAHIoTFFWQ/082 Guyaa 13/07/2008 deegarsa barbaachisaa akka gonuu nuu bareefamee nuu gahee jiraa

Kanaafuu haaluma gaafatameen deegarsa barbaachisaa gochudhaan barumsa fayyaa kana ummataaf akka keenuu danda'anii deegarsii barbaachisaa ta'ee akka godhamuu kabajaan isinii ibsinaa



Nagaa Wajjin

Martin Tekle Radwanee
(BSO/Min.DA)
2007.07.14

Ministry of Health and Family Welfare
Addis Ababa

No. P62.EF-99886
Date: 14-07-2008
(March 23, 2016)

Ethiopian Ministry of Health
Oromia Region East Shoa Zone Health Bureau
Addis Ababa

To Adama sub-region Health Bureau
Adama

Re: Request for permission to conduct Health Education

We received an application from Meserete Kristos Rural Development Association (MKC-RDA) requesting permission on behalf of Ms. Courtney Jones who would like to conduct a series of health education to residents in Batti Kello "About Soil Transmitted Helminth.

As per requested, the Bureau hereby grants permission to conduct the health education and ask sub-regional and local offices to provide the necessary support and cooperation for the health educator.

Best Regards,

(signature)

Mesfin Ibsa Bedana
Health Education Coordinator

(Circular Seal: Oromia Region East Shoa Zone Health Bureau)

APPENDIX G

SURVEY QUESTIONS WITH STATISTICAL
ANALYSIS & TABLES

72. Do you have a latrine available?**[Question #8 on Official Full KAP Survey]**

- a. Yes, a private latrine**
- b. Yes, a public latrine**
- c. No latrine available**
- d. I have a latrine, I don't use it**

Of the sixty-nine participants who answered both the pre and post survey, thirty-four had better availability to a latrine post-intervention, ten reported worse availability, and twenty-five had no change in their latrine situation. A Wilcoxon signed rank test determined that there was a statistically significant increase in participants reporting improved latrine availability between pre and post intervention, $z = -3.694$, $p > 0.001$.

Ranks

		N	Mean Rank	Sum of Ranks
Latrine Availability Post-survey - Latrine Availability Pre-survey	Negative Ranks	10 ^a	19.40	194.00
	Positive Ranks	34 ^b	23.41	796.00
	Ties	25 ^c		
	Total	69		
a. Latrine Availability Post-survey < Latrine Availability Pre-survey				
b. Latrine Availability Post-survey > Latrine Availability Pre-survey				
c. Latrine Availability Post-survey = Latrine Availability Pre-survey				

Test Statistics^a

	Latrine Availability Post-survey - Latrine Availability Pre-survey
Z	-3.694 ^b
Asymp. Sig. (2- tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

73. What kind of toilet facility do you use?**[Question #33 on Official Full KAP Survey]**

- a. None– use bush or field
- b. None– use ditch
- c. None– use lake
- d. Bucket
- e. Pit latrine – that is open to air
- f. Pit latrine – that is covered
- g. Public latrine

N/A – no statistical analysis tables, McNemar's, or Wilcoxon's performed.

74. Do you treat your water to make it safer to drink?**[Question #29 on Official Full KAP Survey]**

- a. Yes
- b. No

There were seventy-four respondents who answered this question both pre- and post-survey (pre-intervention, post-intervention). A McNemar's test with continuity correction was run to determine if there was a difference in the proportion of participants treating their drinking water pre- versus post-intervention [103]. The proportion of participants treating their drinking water increased from a pre-intervention value of 0.15 to 0.73 post-intervention, a statistically significant difference, $X^2 = 33.283$, $p < .001$.

Chi Square

Do you treat your water? Pre-survey	Do you treat your water? Post-survey	
	No	Yes
No	15	48
Yes	5	6

Test Statistics^a

	Do you treat your water? Pre-survey & Do you treat your water? Post-survey
N	74
Chi-Square ^b	33.283
Asymp. Sig.	.000
a. McNemar Test	
b. Continuity Corrected	

75. How often do you treat your drinking water?**[Question #30 on Official Full KAP Survey]**

- a. Never**
- b. Occasionally**
- c. Sometimes**
- d. Usually**
- e. Every time**

Of the sixty-nine participants who answered both the pre and post survey, fifty-one indicated they treated their water more often, while eight answered they treated it less often, and ten reported no change. A Wilcoxon signed rank test determined that there was a statistically significant increase in participants reporting they treated their water more often between pre and post intervention, $z = -5.018$, $p > 0.001$.

Ranks

		N	Mean Rank	Sum of Ranks
How often treat drinking water - How often treat drinking water	Negative Ranks	8 ^a	28.94	231.50
	Positive Ranks	51 ^b	30.17	1538.50
	Ties	10 ^c		
	Total	69		
a. How often treat drinking water < How often treat drinking water				
b. How often treat drinking water > How often treat drinking water				
c. How often treat drinking water = How often treat drinking water				

Test Statistics^a

	How often treat drinking water - How often treat drinking water
Z	-5.018 ^b
Asymp. Sig. (2- tailed)	.000
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

76. What do you currently do to the make the water safe to drink? (check all that apply)

[Question #31 on Official Full KAP Survey]

- a. Nothing**
- b. Boil**
- c. Strain through a cloth**
- d. Let it stand and settle**
- e. Add bleach & chlorine**
- f. Use a water filter or filtration system**
- g. Water treatment tablet**
- h. Expose water to sun for at least 6 hours**

N/A – no statistical analysis tables, McNemar's, or Wilcoxon's performed.

77. Do you wash your hands?

[Question #37 on Official Full KAP Survey]

- a. Yes**
- b. No**

There were seventy respondents who answered this question both pre- and post-survey (pre-intervention, post-intervention). An exact McNemar's test was run to determine if there was a difference in the proportion of participants who practiced washing their hands pre- versus post-intervention. The proportion of participants washing their hands

increased from a pre-intervention value of 0.77 to 0.98 post-intervention, a statistically significant difference, $p < .001$.

Chi Square

Do you wash your hands? Pre-survey	Do you wash your hands? Post-survey	
	No	Yes
No	0	16
Yes	1	53

Test Statistics^a

	Do you wash your hands? Pre-survey & Do you wash the hands? Post-survey
N	70
Exact Sig. (2-tailed)	.000 ^b
a. McNemar Test	
b. Binomial distribution used.	

78. What do you use to wash your hands?

[Question #38 on Official Full KAP Survey]

- a. Soap**
- b. Ash**
- c. Water only**
- d. Nothing**

Of the fifty-nine participants who answered both the pre and post survey, twenty indicated they used a better material for hand washing after intervention, while four reported less effective material, and thirty-five had no change in washing material. A Wilcoxon signed rank test determined that there was a statistically significant increase in

participants reporting they used a better material for washing post intervention, $z = -2.891$, $p = 0.004$.

Ranks

		N	Mean Rank	Sum of Ranks
Material to wash hands Post-survey - Material to wash hands Pre-survey	Negative Ranks	4 ^a	13.50	54.00
	Positive Ranks	20 ^b	12.30	246.00
	Ties	35 ^c		
	Total	59		
a. Material to wash hands Post-survey < Material to wash hands Pre-survey				
b. Material to wash hands Post-survey > Material to wash hands Pre-survey				
c. Material to wash hands Post-survey = Material to wash hands Pre-survey				

Test Statistics^a

	Material to wash hands Post-survey - Material to wash hands Pre-survey
Z	-2.891 ^b
Asymp. Sig. (2-tailed)	.004
a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.	

79. When do you wash your hands? (check all that apply)**[Question #40 on Official Full KAP Survey]**

- a. Never
- b. Before eating
- c. After eating
- d. Before cooking
- e. After cooking
- f. After defecation
- g. After cleaning children & disposing of fecal material
- h. After bathing/washing

N/A – no statistical analysis tables, McNemar's, or Wilcoxon's performed.

80. Do you wear shoes?**[Question #54 on Official Full KAP Survey]**

- a. Yes
- b. No

There were seventy-two respondents who answered this question both pre- and post-survey (pre-intervention, post-intervention). An exact McNemar's test was run to determine if there was a difference in the proportion of participants who wore shoes pre- versus post-intervention. All of the participants answered 'yes' pre-intervention (100%) and only two said 'no' post intervention. Thus, the proportion of participants who answered they wear shoes was not statistically different, $p=.500$.

Chi Square

Do you wear shoes? Pre-survey	Do you wear shoes? Post-survey	
	No	Yes
No	0	0
Yes	2	70

Test Statistics^a

	Do you wear shoes? Pre-survey & Do you wear shoes? Post-survey
N	72
Exact Sig. (2-tailed)	.500 ^b
a. McNemar Test	
b. Binomial distribution used.	

81. How often do you wear shoes?**[Question #55 on Official Full KAP Survey]**

- a. Never**
- b. Rarely**
- c. Sometimes**
- d. Most days**
- e. Every day**

Of the seventy-three participants who answered both the pre and post survey, only four indicated they wore them more often post intervention and seven less often, while sixty-two had no change. A Wilcoxon signed rank test determined that there was no statistical significant change in participants' frequency of shoe wear, $z = -1.042$, $p = 0.298$.

Ranks		N	Mean Rank	Sum of Ranks
Frequency of wearing shoes Post-survey - Frequency of wearing shoes Pre-survey	Negative Ranks	7 ^a	6.36	44.50
	Positive Ranks	4 ^b	5.38	21.50
	Ties	62 ^c		
	Total	73		
a. Frequency of wearing shoes Post-survey < Frequency of wearing shoes Pre-survey				
b. Frequency of wearing shoes Post-survey > Frequency of wearing shoes Pre-survey				
c. Frequency of wearing shoes Post-survey = Frequency of wearing shoes Pre-survey				

Test Statistics^a

	Frequency of wearing shoes Post-survey - Frequency of wearing shoes Pre-survey
Z	-1.042 ^b
Asymp. Sig. (2-tailed)	.298
a. Wilcoxon Signed Ranks Test	
b. Based on positive ranks.	