

# 2017

## Maji Safi Group Report



A Detailed Analysis of Maji Safi Group's  
Programs in 2017

Shirati, Rorya District, Tanzania

## Maji Safi Group Overview

Maji Safi Group (MSG), “Clean Water Group” in Swahili, operates in the Rorya District of Tanzania, an area consisting of farmland and villages on the shores of Lake Victoria in the Mara Region. In the Rorya District, water is taken directly from unprotected sources that are contaminated with human, animal, and industrial waste. As a result, 99% of all drinking water is contaminated with dangerous levels of pathogens, which leads to high levels of water-related diseases and widespread waterborne and water-related outbreaks (Perel-Slater, 2011). According to Dr. Chirangi, Chief Medical Officer at the Shirati KMT District Hospital, 50% of illnesses in the Rorya District come from water-related and waterborne diseases, such as schistosomiasis, cholera, and dysentery. To combat this situation, MSG began as a project under the Shirati KMT District Hospital in May 2012 to implement prevention-focused programs that reduce the occurrence of waterborne diseases.

In July 2014, to ensure sustainability within the Tanzanian organization, Maji Safi Group became a Tanzanian Nonprofit Limited Liability Company. MSG builds and trains teams of local, mostly female, Community Health Educators (CHEs), who lead disease prevention outreach and interventions. MSG was founded with the goal of developing and implementing sustainable and effective programs through participatory methods, relying on our CHEs’ expertise, community recommendations, and needs assessments. Currently, MSG effectively runs 14 community programs. Our CHEs engage residents through home visits, hospital-based programs, school groups, singing and dance groups, sports, and other community events (e.g. the local radio station, places of business, and local markets). These programs touch a wide spectrum of stakeholders, such as parents, teachers, health care providers, government leaders, and youths. Each MSG program was created to reduce the occurrence of preventable diseases that would otherwise continue to paralyze development. MSG does this by empowering women, youths, and vulnerable groups to be change-makers in terms of their community’s public health. To reach this goal, MSG addresses the root causes of recurring preventable diseases through water, sanitation, and hygiene (WASH) and healthy lifestyle education.

MSG’s organizational approach embodies Confucius’ philosophy: “Tell me and I will forget. Show me and I may remember. Involve me and I will understand”. MSG believes that by engaging communities with fun and interactive lessons on disease prevention, participants will have the knowledge and motivation to improve their water, sanitation, and hygiene (WASH) behaviors. Since May 2012, Maji Safi Group has helped local authorities fight four cholera outbreaks and has directly taught approximately 635,000 Mara Region residents WASH lessons and the importance of improving personal and community WASH behaviors.

Maji Safi Group Facts	
<b>Country</b>	Tanzania
<b>Region</b>	Mara
<b>Approximate Population of Mara Region</b>	1,700,000 Residents
<b>Districts MSG Works in and their Approximate Populations</b>	Rorya District = 265,000 Residents Musoma Rural = 208,000 Residents Musoma Town = 135,000 Residents
<b>Year Established</b>	2012
<b>Organization Type</b>	Nonprofit LLC, incorporated in Tanzania July 1, 2014.
<b>“Maji Safi” is Swahili for</b>	“Clean Water”
<b>MSG Mission Statement</b>	To promote health and disease prevention in underserved and impoverished areas through holistic community empowerment and by working predominantly with local women and youth.
<b>Number of Programs</b>	14 Programs
<b>Approximate number of Residents Reached through MSG Programs (2012-2017)</b>	635,000 Residents
<b>Number of Community Health Educators</b>	19

## Background Information on WASH-Related Diseases

Maji Safi Group (MSG) educates the community on the prevention of water-related diseases. Specifically, MSG teaches 16 different lessons on how to change WASH-related behaviors, so residents can protect themselves, their families and their communities against contracting water-related diseases. While CHEs educate their communities on several types of water-related diseases, four diseases are monitored specifically throughout each program (schistosomiasis, amoebiasis, urinary tract infections [UTIs] and intestinal worms).

Waterborne and water-related diseases can be transmitted through four different transmission routes (Choffnes & Mack, 2009). These four transmission routes are classified as waterborne, water-washed, water-based, and water-related insect vectors (Choffnes & Mack, 2009). Waterborne disease transmission occurs through ingestion of water that contains disease pathogens (Choffnes & Mack, 2009). The water-washed transmission route is through improper hygiene that results in oral contact with feces on hands or body (Choffnes & Mack, 2009). Skin contact with unsanitary water that contains aquatic hosts carrying pathogens is a water-based transmission path. Lastly, “water-related insect vectors” are through being bitten by an insect that breeds and lives near water (Choffnes & Mack, 2009, p. 16).

### *Schistosomiasis*

Schistosomiasis is a water-based parasitic disease that is transmitted through skin contact with freshwater snails that hold the eggs of the *Schistosoma* worm (Madinga, Linsuke, Mpabanzi, Meurs, Kanobana, Speybroeck, Lutumba, and Polman, 2015). This Neglected Topical Disease (NTD) is common in tropical and sub-tropical regions that have a high predominance of unsanitary conditions and unsafe water sources (Madinga et al., 2015). These unsanitary conditions are typically caused by the open defecation and urination of infected individuals into water sources in the region (Madinga et al., 2015). There are five types of schistosomiasis (CDC, 2012), but two that are most common: *S. mansoni* and *S. haematobium* (Madinga et al., 2015). *S. mansoni* eggs are excreted and diagnosed by examining fecal samples, while *S. haematobium* eggs are excreted and diagnosed through urine samples (CDC, 2012). Schistosomiasis can cause acute symptoms in an infected individual, including rashes, blood in urine or stool, headaches, and diarrhea (CDC, 2012). Without treatment, schistosomiasis can also result in anemia (Friedman J.F., Kanzaria, H.K., & McGarvey, S.T., 2005), cognitive delays (Jukes, Nokes, Alcock, Lambo, Kihamia, Ngorosho, Mbise, Lorri, Yona, Mwanri, Baddeley, Hall, Bundy & Partnership for Child Development, 2002), and stunting (Stephenson, Latham, & Ottesen, 2000).

### *Amoebiasis*

Amoebiasis is classified as a water-washed disease caused by the parasite *Entamoeba histolytica* (Stanley, 2003). Amoebiasis is common in underdeveloped countries located in the tropics that have poor sanitation and hygiene practices (“Amoebiasis”, 2015). The disease spreads through ingesting fecal matter in food or water or from person-to-person (“Amoebiasis”, 2015). For many individuals with amoebiasis, their bodies can resolve the illness without the individual experiencing any symptoms of the disease (Stanley, 2003). However, 10%-20% of infected individuals (“General Information”, 2015) develop symptoms, which may include watery or bloody diarrhea or tenderness and pain in their abdomen (Stanley, 2003). For more severe cases, amoebiasis may cause an amoebic liver abscess, which could rupture through the diaphragm causing respiratory distress, as well as produce urinary tract problems, genital diseases, or even amoebic brain abscesses (Stanley, 2003).

### *Urinary Tract Infections (UTIs)*

Although a urinary tract infection (UTI) is not a water-related disease, it is one of the most common types of infections within the body (Mayo Clinic Staff, 2015) and appears in alarmingly high rates in underdeveloped countries where poor water and sanitation access is predominant (Mwaka, Mayanja-Kizza, Kigonya, and Kaddu-Mulindwa, 2011). UTIs are caused by a “microbial colonization” within the urinary system and can be both complicated and uncomplicated in nature (Mwaka et al., 2011, pp. 182). Complicated UTIs are caused when a “host illness” exists that enables the spread of the UTI to the individual, while an uncomplicated UTI is contracted without any underlying issues within the urinary tract (Mwaka et al., 2011, pp. 182). While some people remain asymptomatic, other people experience pain or a burning sensation when urinating, fever, and lower back pain or abdominal pressure (NIH, 2015). If UTIs are left

untreated, they can cause permanent kidney damage or scarring as well as sepsis in a patient (Mayo Clinic Staff, 2015). Furthermore, UTIs can pose a dire threat for pregnant women. UTIs during pregnancy have been associated with an increased risk of “intrauterine growth restriction, pre-eclampsia, caesarean delivery and preterm deliveries” and can even result in child or maternal mortality (Hamdan, Ziad, Ali, & Adam, 2011, p. 2).

### *Intestinal Worms*

Intestinal worms or parasites, like amoebas, are common water-washed parasitic infections found in “hot and humid environments” among poor communities with low access to sanitation facilities, clean water, and adequate housing (Oliveira, Ferreira, Atouguia, Fortes, Guerra, & Centeno-Lima, 2015). Once again, many infected people are asymptomatic; however, of those that are not, the clinical symptoms are wide-ranging (Rice, Skull, Pearce, Mulholland, Davie and Carapetis, 2003). Symptoms range from mild gastrointestinal discomfort and weakness (Rice et al., 2003) to iron deficiency anemia, stunting or death (Oliveira et al., 2015).

### **MSG’s 5-Year Impact**

2017 is MSG’s fifth year in operation. We have learned so much over the past five years and have reached thousands with our lifesaving WASH education. Each year, we learn from the past year and adjust programs, measurements and curriculum to make an even more positive impact on the communities we teach, see Figure 1. Overall, including the radio program, we have cumulatively reached 635,000 residents and have directly taught 225,000 people WASH lessons, see Figure 2 and Figure 3.

Additionally, MSG continued to collect extensive information about disease rates during the 2017 Health Screening Program, and as they represent the third year in our longitudinal study, these rates are extremely important to assessing the overall impact MSG’s lessons are having on WASH behaviors in the community.

Over three years of screenings, we have found a consistent pattern: People who have been exposed to MSG’s WASH education are much healthier than those who have not received such education. Prevention is proving to save MSG program participants from continuously contracting WASH-related diseases. This year, it has also become apparent that those related to and/or interacting with program participants, whether through a family member or an entire school, benefit from the health education their connection is learning. Both family members and students from schools that have partnered with MSG for a long time had lower WASH disease rates. Figures 4-8 demonstrate how disease rates have varied over the years. The common trend we are seeing is that each consecutive year, current and past program participants have a lower disease rate than non-program participants (except for amoebiasis in 2015, schistosomiasis in urine in 2015, and UTI rates in 2015, 2016, and 2017). Overall, we are seeing that our lifesaving education is reaching thousands and helping their community become more knowledgeable about WASH issues, which in turn improves their health.

**Figure 1: MSG's 5-Year Impact (2012-2017)**

Program/ Activity	Number Reached August 2012 – August 2013	Number Reached September 2013 – December 2014	Number Reached January 2015 – December 2015	Number Reached January 2016 – December 2016	Number Reached January 2017 – December 2017	Total Number Reached Per Program
Home Visit	1,699 Family Members	1,025 Family Members	2,464 Family Members	1,207 Family Members	2,755 Family Members	9,150 Family Members
After School	3,808 Students	1,243 Students	931 Students	1,588 Students	2,575 Students	10,145 Students
Disease Prevention Center (DPC)	791 Visitors to DPC	802 Visitors to DPC	1,210 Visitors to DPC	1,032 Visitors to DPC	1,445 Visitors to DPC	5,280 Visitors to DPC
Singing and Dance Group (including performances)	756 Community Members	1,048 Community Members	1,746 Community Members	3,250 Community Members	7,858 Community Members	14,658 Community Members
Maji Safi Cup	2,032 Participants	1,697 Participants	4,170 Participants	6,936 Participants	8,054 Participants	22,889 Participants
Outreach (events, market visits, stores and salons, restaurants)	1,907 Community Members	6,521 Community Members	8,827 Community Members	7,699 Community Members	7,278 Community Members	32,232 Community Members
Female Hygiene	-	1,282 Participants	7,890 Participants	2,342 Participants	2,502 Participants	14,016 Participants
Hotline*	-	1,326 Participants	4,603 Participants	1,467 Participants	1,830 Participants	9,226 Participants
Radio Show Listeners	-	31,500 Listeners	49,000 Listeners	98,000 Listeners	231,000 Listeners	409,500 Listeners
Radio Show Callers				206 Direct Callers	254 Direct Callers	460 Direct Callers
Health Screenings	-	-	3,060 Screened	5,160 Screened	3,071 Screened	11,291 Screened
Cholera Outreach	-	-	53,237 Participants	41,593 Participants	-	94,830 Participants
Male Hygiene	-	-	-	348 Participants	772 Participants	1,120 Participants
Arborloo Toilet	-	-	-	-	175 Users	175 Users
Total reached each year (excluding Radio Show, but including callers)	10,993 Community Members	14,944 Community Members	88,138 Community Members	72,828 Community Members	38,569 Community Members	225,472 Community Members
Total reached each year (including Radio Show)	<b>10,993 Community Members</b>	<b>46,444 Community Members</b>	<b>137,138 Community Members</b>	<b>170,828 Community Members</b>	<b>269,569 Community Members</b>	<b>634,972 Community Members</b>

**Notes:** \*Hotline numbers indicate number of SMS messages sent/received and number of incoming and outgoing calls made.

\*\*Radio Show started in October 2014 and is estimated to reach approximately 3,500 per show. This number may indicate repeat listeners as well.

Figure 2: Cumulative Number of Total Number of Program Participants Reached

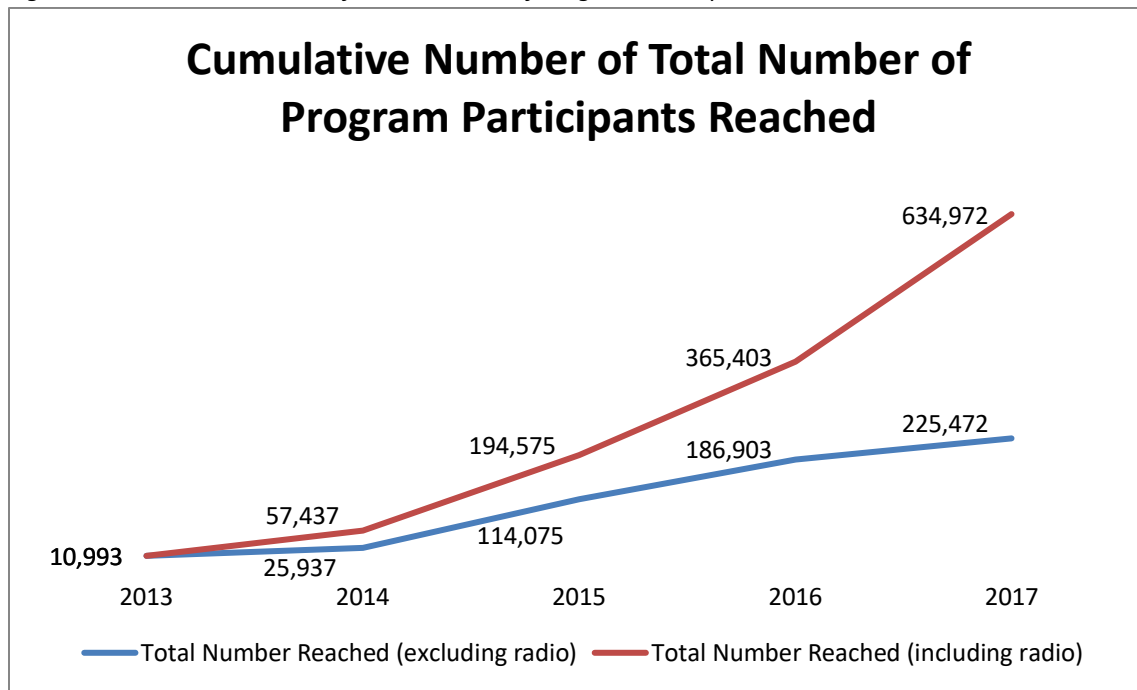


Figure 3: Cumulative Number of Program Participants by Program

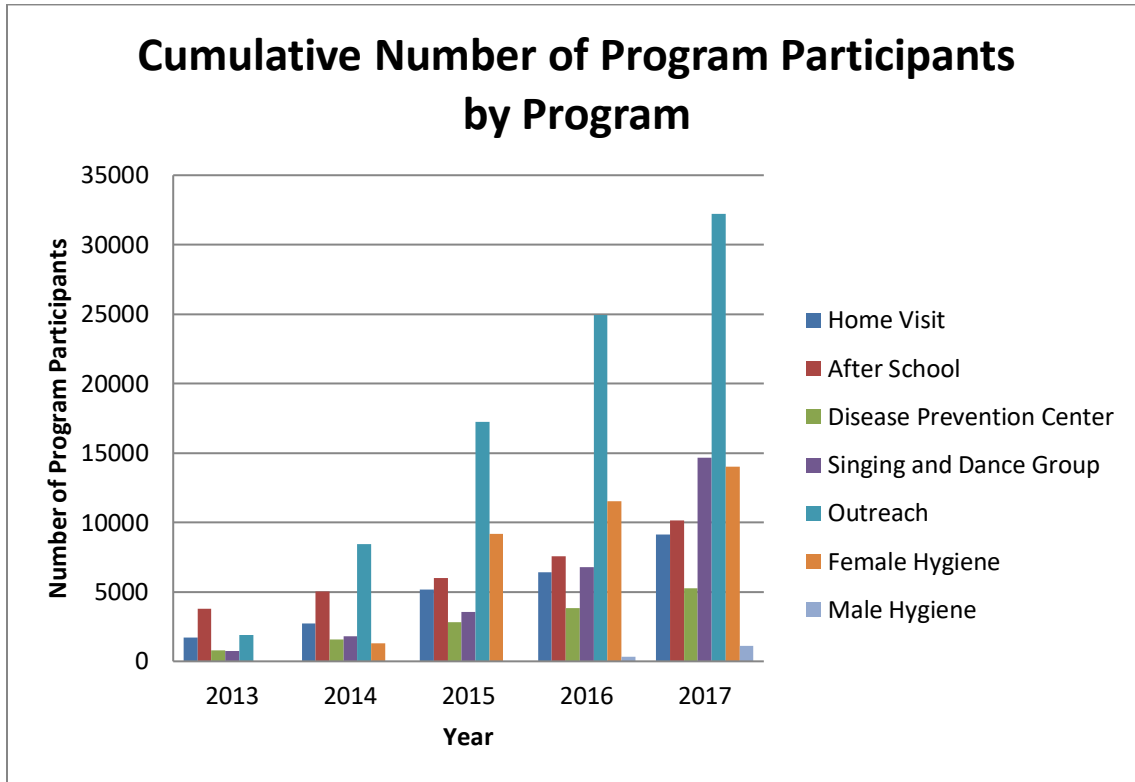
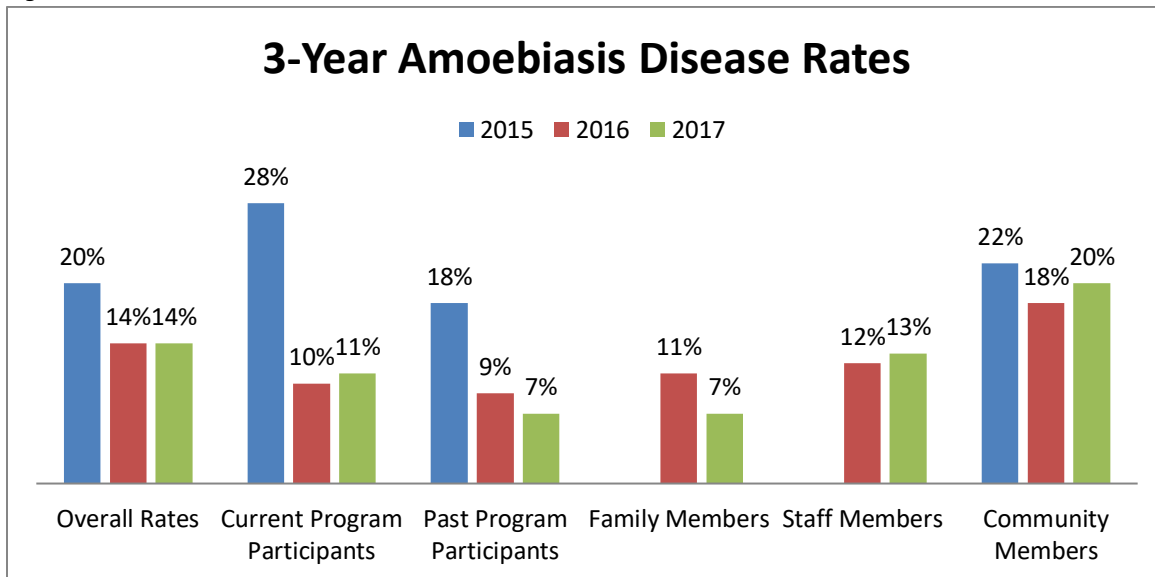


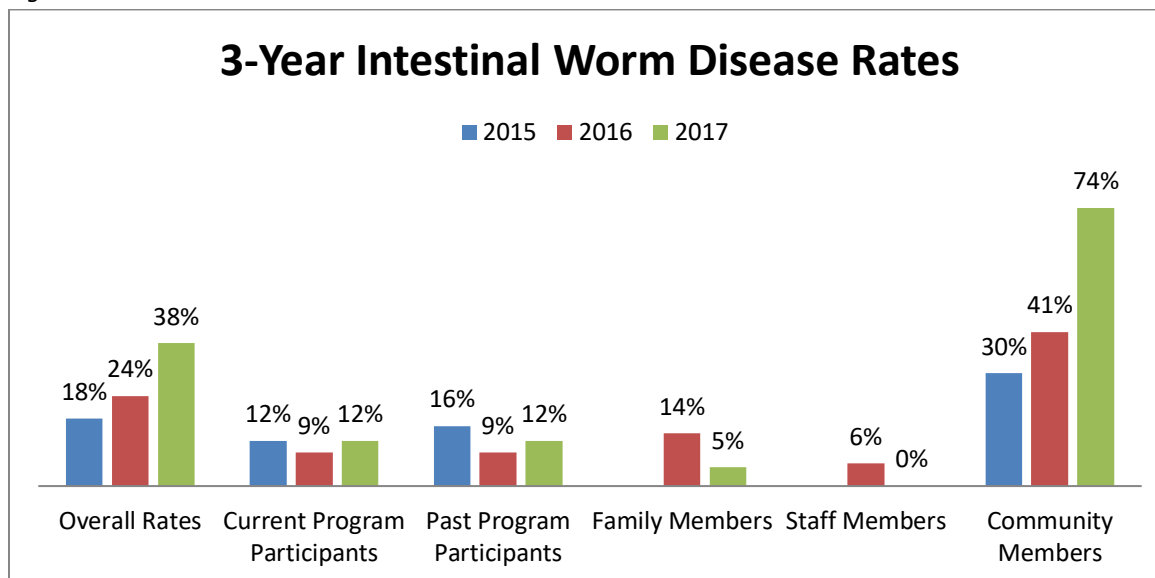
Figure 4: 3-Year Amoebiasis Disease Rates



*\*Note: Family members and staff members were not tested in 2015. (Community Members = Non-program participants).*

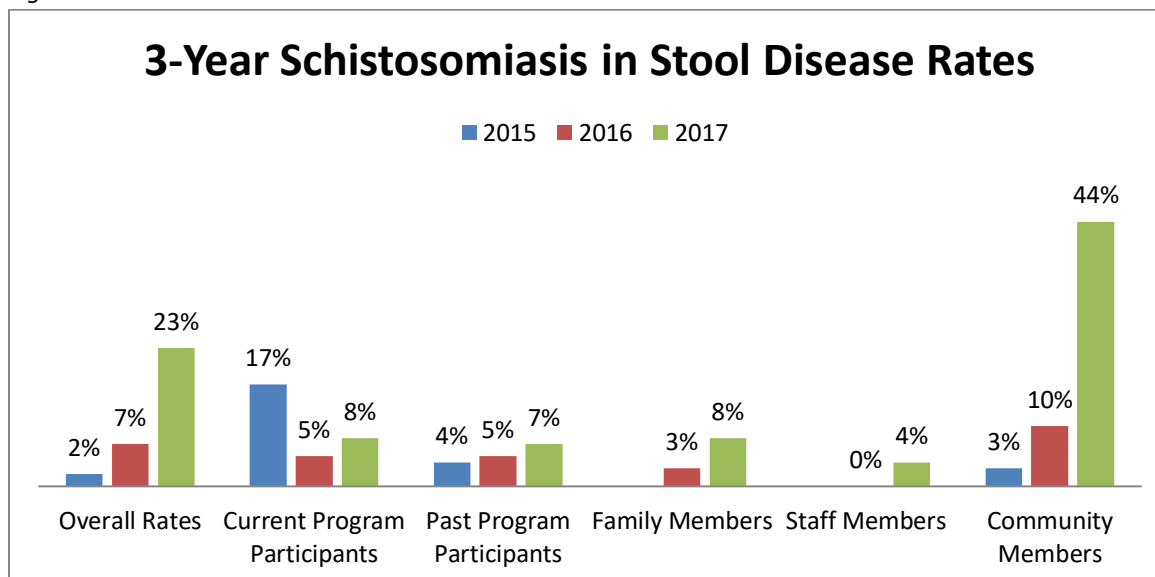


Figure 5: 3-Year Intestinal Worm Disease Rates



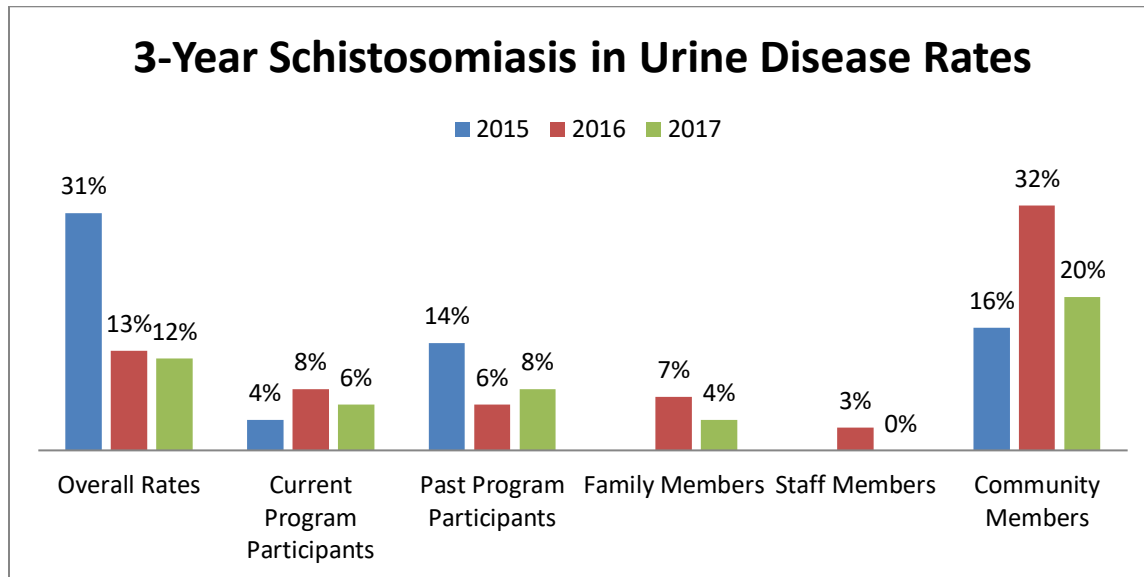
*\*Note: Family members and staff members were not tested in 2015. (Community Members = Non-program participants).*

Figure 6: 3-Year Schistosomiasis in Stool Disease Rates



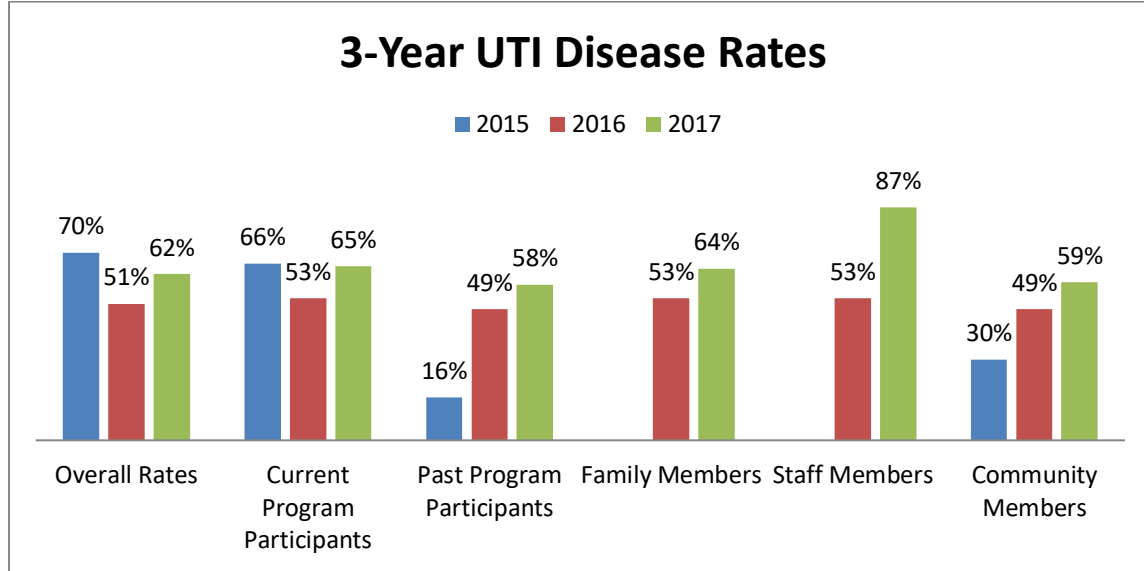
*\*Note: Family members and staff members were not tested in 2015. (Community Members = Non-program participants).*

Figure 7: 3-Year Schistosomiasis in Urine Disease Rates



*\*Note: Family members and staff members were not tested in 2015. (Community Members = Non-program participants).*

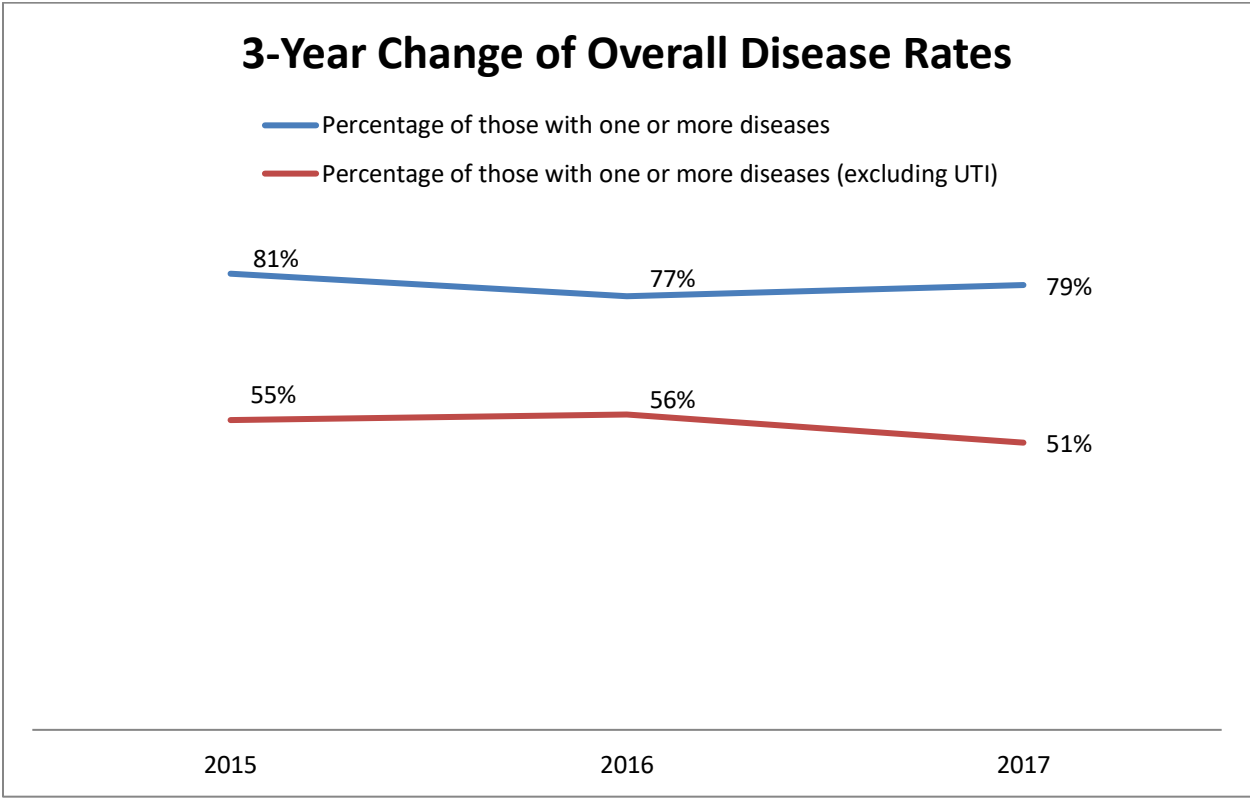
Figure 8: 3-Year UTI Disease Rates



*\*Note: Family members and staff members were not tested in 2015. (Community Members = Non-program participants).*

When looking at the three-year change in overall disease rates (i.e. calculating the percentage of those screened who have one or more diseases), we are seeing a gradual decrease in disease rates. The decrease in disease rates is indicated in Figure 9.

Figure 9: 3-Year Change of Overall Disease Rates



2017 Overview

In 2017, Maji Safi Group Tanzania accomplished many goals with the financial assistance from Maji Safi Group US, LUSH Charity Pot, First Foundation, INTERTEAM, the Tanzanian government, and other generous donors. MSG continued to first and foremost invest in its Community Health Educator (CHE) Program by providing continuous education and ensuring the WASH lessons provided to the community were up-to-date and properly understood. MSG focused on providing its staff with proper benefits and invested in their lives and the lives of their families. MSG also hired a new Program Manager and Accountant to become a more efficiently run organization.

Overall, MSG reached almost 270,000 community members, including MSG radio show listeners, event spectators, and announcement listeners. When only looking at the lessons taught directly (one-on-one teaching), CHEs reached over 38,000 Mara Region community members with lifesaving WASH education.

MSG continued to maintain and increase organizational partnerships during the year. Our major past partners included TAWASANET (Tanzania Water and Sanitation Network), TAFIRI (Tanzania Fisheries Research Institute), INTERTEAM, the City of Zurich, First Foundation, village and district councils, regional and district level governments, the Shirati KMT District Hospital, Washington University in St. Louis and the WHO. Our new partners included the University of Dar es Salaam, Lund University and the LUSH Foundation.

MSG continued to maintain its existing programs and focused on creating sustainable change among program participants. Our participatory model has gained acceptance in the community, and our monitoring and evaluation results indicate that Shirati community members are changing their WASH behaviors and becoming healthier. This is seen especially with MSG program participants and participants' families who have worked with MSG throughout the years. The rest of this report gives a detailed analysis of each program explaining the program's reach, successes, and opportunities for improvement.

## 1. Community Health Educator Program

Maji Safi Group employs full-time Community Health Educators (CHEs), also known as *Mabalozi wa Maji*, to promote proper water, sanitation and hygiene (WASH) practices. MSG trains and certifies CHEs to teach disease prevention methods, such as correctly filtering and treating water, cleaning and preparing food, thoroughly washing hands, and practicing proper menstrual hygiene management. CHEs are the face of Maji Safi Group in the Mara Region – they are responsible for facilitating and leading all of MSG's interventions, and, as they speak the local language and understand their community's history and culture, they are a highly effective group in terms of initiating WASH behavior change.

Hiring Shirati residents also provides employment opportunities and builds local capacity. In addition, as women typically are key change-makers in development, 80% of MSG's CHEs are female. Quality employment with social security and health insurance benefits improves the health of their families and ensures that their children can stay in school. When MSG employees invest in healthy practices in their homes and obtain financial stability for their families, they are further empowered to be WASH leaders and role models in their communities.

MSG continued working with 20 CHEs in 2017. However, by the end of the year, we reduced that number to 19. Every year, CHEs go through biannual evaluations where the management retests their WASH knowledge. The WASH assessments are comprised of a written and oral exam. The oral exam helps management assess how CHEs teach WASH information in the field.

In 2017, we administered WASH evaluation tests in March and September. The overall WASH knowledge score for both evaluations was 85%. This average is encouraging as we strive to have all CHEs perform at 85% or higher during examinations. We also have found that the CHEs who were hired in 2016 have integrated well within the organization and have significantly improved their WASH knowledge. However, there were two CHEs who continuously did not perform well in their WASH evaluations, so we had to ask them to leave the organization. On the other hand,

Diana Nguka, one of the original CHEs who had moved away in 2016 to get married, returned to work with MSG in August 2017.

## 2. Learning Tools

MSG spreads WASH and disease prevention awareness through various mediums. Wall murals, painted by local artists, provide a constant reminder of WASH best practices. These paintings visually demonstrate disease prevention techniques such as washing your hands properly, brushing your teeth, and using the toilet. In conjunction with other MSG outreach programs, these murals are easily accessible and long-lasting learning tools for the entire community.

Our skilled Community Arts Coordinator (CAC), Multimedia Coordinator, and INTERTEAM Development Worker accomplished many tasks this year. Our CAC and commissioned artist completed painting 12 murals in the Children's Ward at the Shirati KMT District Hospital; they painted a mural explaining water treatment methods near a water source; and at the Obwere Primary School, they painted a mural depicting various ways to manage menstrual hygiene. Along with murals, the CAC worked hard throughout the year to help each program create banners and educational handouts. Lastly, a Maji Safi Group sign was designed and painted and will be installed in Mika next year where you leave the main highway to go to Shirati.

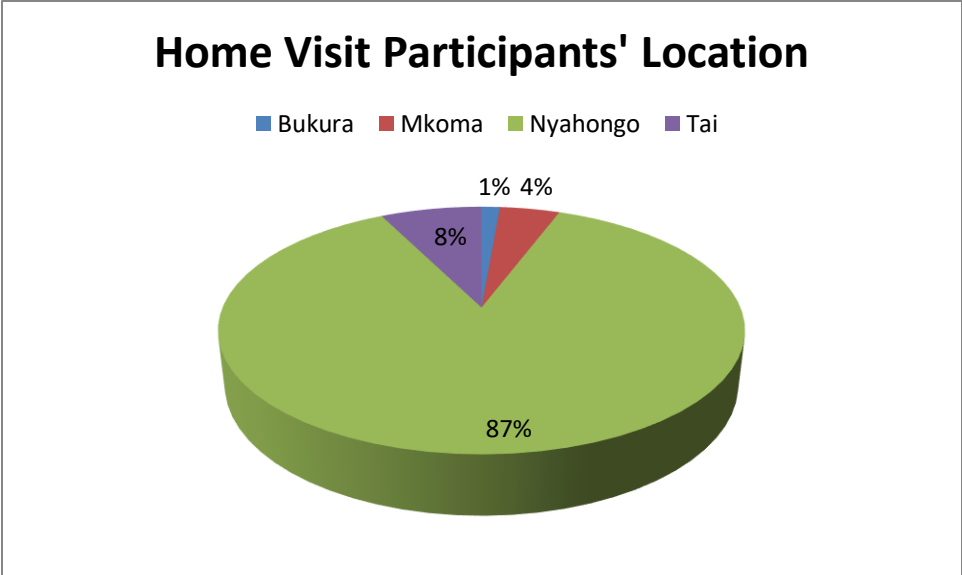
The Multimedia Coordinator (MMC) was able to digitalize work the CAC drew for handouts. He was also in charge of managing our social media sites and kept visitors updated with relevant stories, pictures and new articles. The MMC also took pictures and edited pictures throughout the year and designed the Annual Report. The INTERTEAM Development Worker completed his contract in March 2017, so we were unable to complete any new videos with him. However, we did welcome a video team from Sweden who filmed about the issues surrounding menstrual hygiene management in our community. They were also in Shirati to highlight the piloted menstrual cup study we conducted in partnership with Lund University and the University of Dar es Salaam. Both the study and the film will be completed in 2018.

## 3. Home Visit Program

The Home Visit Program was MSG's first program, started in August 2012. From the beginning, teaching female heads of households, families, and vulnerable groups about WASH and disease prevention via one-on-one lessons at their homes has been a priority. The goal of this program is to teach community members how to improve their WASH behaviors in their home environment. During the non-farming dry season, CHEs conduct home visits with local families. During their first visit, the CHEs conduct intake assessments of the families to assess their current WASH and health situation. Two hour-long WASH lessons are then provided to the families based on their specific WASH needs. The number of visits is also based on these needs. Once the CHEs finish teaching the MSG curriculum, they conduct a post assessment with the families to measure their WASH behavioral changes. Post assessments are conducted within two months of the first set of WASH lessons and/or followed up by calling participants on the MSG Hotline.

In 2017, MSG visited 422 families through the Home Visit Program. This program ran for 166 days, which was approximately eight months out of the year. The CHEs reached approximately three families per day. This year, CHEs completed post education for families in the Tai and Mkoma Wards and started educating families in the Nyahongo Ward and Bukura Ward. See Figure 10.

Figure 10: Home Visit Participants' Location



While the lessons were taught primarily to female heads of households, the education we provided benefitted entire families. MSG reached 2,755 people in 422 families. We found that the average family has 6.5 members. These families were broken into two groups: 296 that were visited and received the MSG WASH lessons for the first time and 126 families from 2016-2017 whom MSG revisited to assess if the families were changing their WASH behaviors at home.

The 296 families who participated in the MSG Home Visit Program for the first time had 1,936 members. The families consisted of 51% females and 49% males, as shown in Figure 11. The age groups within these families were broken into 0-3 years, 4-10 years, 11-18 years, and 19 years and older. The age groups are charted below in Figure 12, showing that the 19 years and older age group was the largest. Additionally, data indicated that the majority of those taught were farmers, which means a high percentage of women in this community are tasked with farming duties in addition to caring for their families. Recorded professions are indicated in Figure 13.

Figure 11: Percentage of Home Visit Participants' Gender

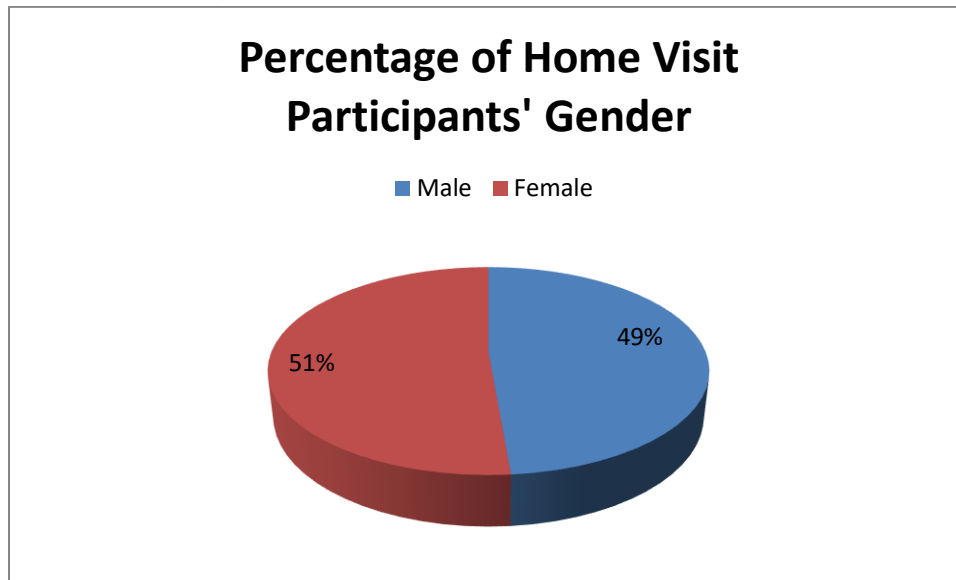


Figure 12: Percentage of Home Visit Participants' Ages

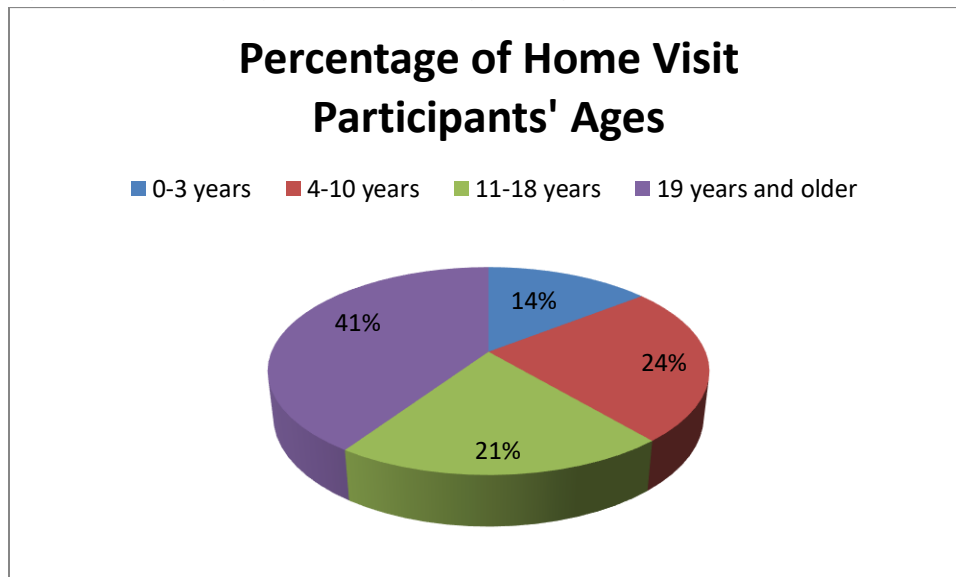
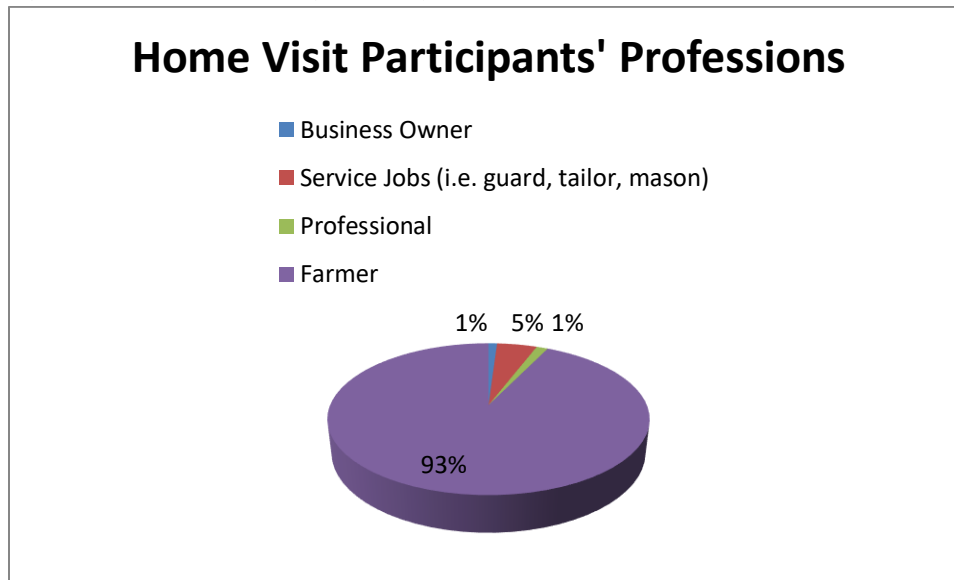


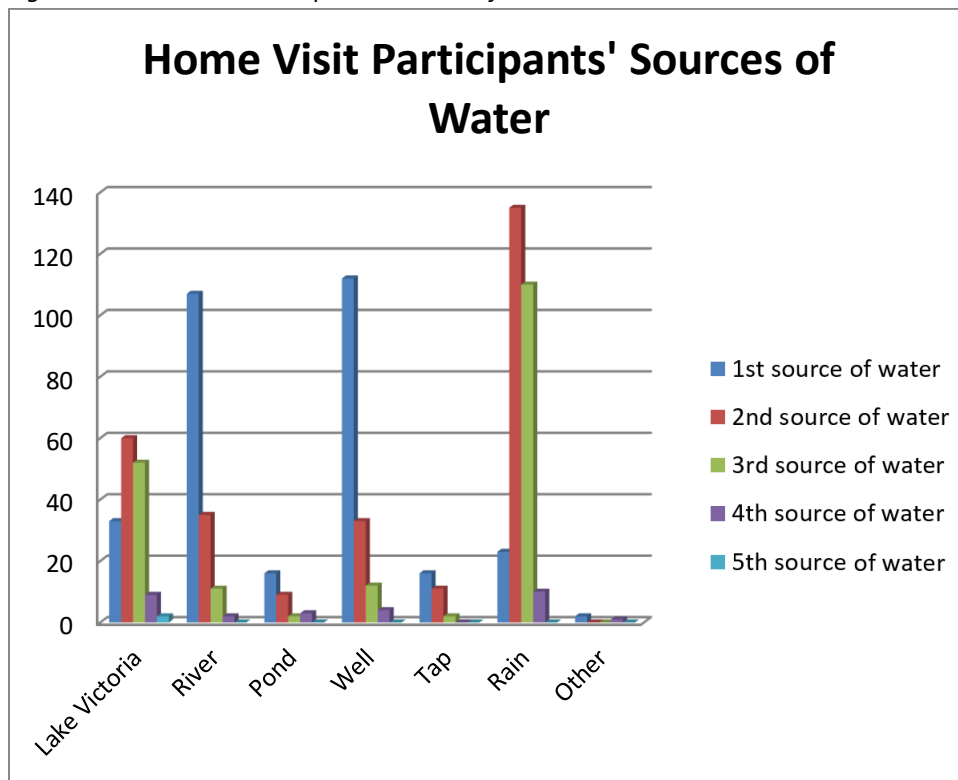
Figure 13: Home Visit Participants' Professions



One lesson our CHEs teach is water source evaluation. During the home visit initial assessment, the CHEs evaluate where the participants get their water. Since one water source is not always reliable, the participants were asked to indicate their first, second, third, fourth and fifth choice of water source. In 2016, we saw that Lake Victoria was the favored water source for program participants; however, in 2017, we found that well water, followed by river water, was most frequently used. These changes can be attributed to the fact that people living in Nyahongo live closer to a well and river than to Lake Victoria. See Figure 14.

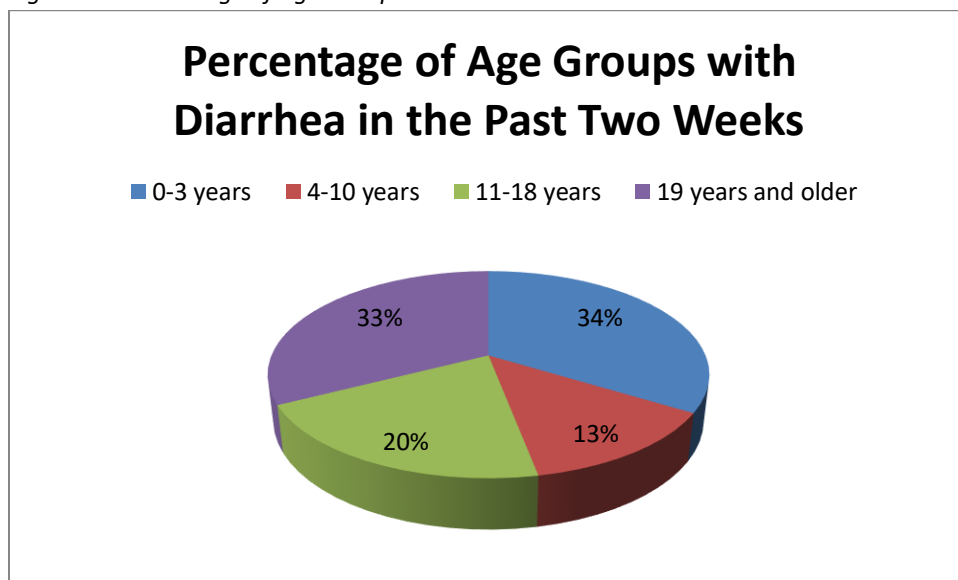


Figure 14: Home Visit Participants' Sources of Water



Intake assessments also include how many family members have had diarrhea within the past two weeks. Overall, 4% of family members had had diarrhea in the past two weeks, which is similar to last year's self-reported diarrheal rates. The highest diarrhea rates came from the youngest children, newborn to three years old. The diarrheal rates per age groups are shown below in Figure 15.

Figure 15: Percentage of Age Groups with Diarrhea in the Past Two Weeks



Before the CHEs start their WASH-related lessons, an intake assessment is taken of the family and their home environment. Figure 16 below shows how families answered WASH-related questions about their homes. This information is important to MSG, as it gives a picture of an average family living in the Nyahongo area (as shown in Figure 10, 87% of the Home Visit participants were from the Nyahongo area). This information helps MSG strengthen its programs and see where in the families' behavioral patterns MSG education is needed the most.

Figure 16: Intake Assessment Answers

Question Asked	Family Answer	Intake Assessment Percentage
1. Does the family filter their drinking water?	Yes	72%
	No	16%
	Unanswered	12%
2. At which critical times does the family wash their hands?	Before food preparation	64%
	Before eating	99%
	Before feeding babies	50%
	After defecation	80%
	After cleaning up babies' feces	41%
	Do not wash their hands	0%
3. Does the family treat their hand-washing water?	Yes	27%
	No	70%
	Unanswered	3%
4. Does the family use soap when washing their hands?	Yes	69%
	No	30%
	Unanswered	1%
5. Does the family cover their food?	Yes	96%
	No	4%
6. Does the family use soap and treated water to wash their dishes?	Yes	36%
	No	59%
	Unanswered	5%
7. Does the family have a latrine?	Yes	76%
	No	23%
	Unanswered	1%
8. Does the family use their latrine?	Yes	73%
	No	25%
	Unanswered	2%
9. Type of sanitation facility	Improved pit latrine	19%
	Pit latrine	56%
	Bushes	10%

	Digging hole	15%
10. How does the family dispose of trash?	No means of disposal	3%
	Burning	41%
	Pit (digging hole)	39%
	Trash pile (no digging)	17%
11. Does the family have good personal hygiene?*	Yes	86%
	No	12%
	Unanswered	2%

\*This assessment is subjective, assessed by the CHEs.

From the intake assessments, we learned that 72% of program participants filter their water (as indicated by Question 1 in Figure 16). Prior to MSG education, 41% of program participants did not treat their water, while the majority used boiling and chlorine methods, as indicated in Figure 17. Additionally, Question 8 in Figure 16 indicated that 25% of program participants did not use a latrine, meaning they used open defecation. Some participants were digging shallow holes and covering up their waste; however, this is still considered open defecation. CHEs asked program participants why they were not using the latrine, and their reasons are indicated in Figure 18.

Figure 17: Water Treatment Methods of Home Visit Participants

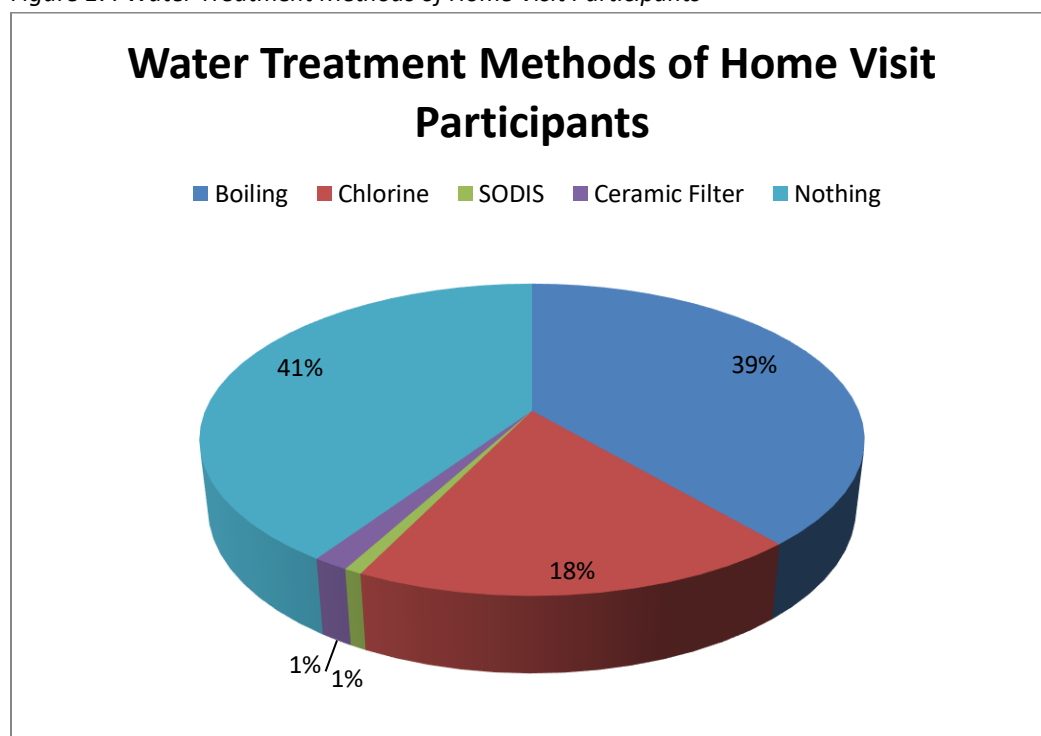
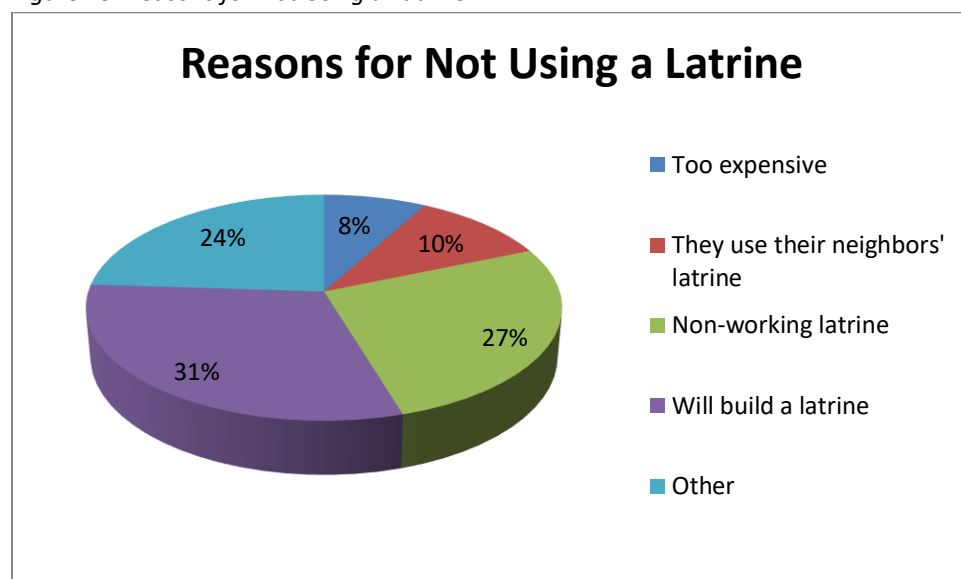


Figure 18: Reasons for Not Using a Latrine



MSG was able to assess the impact of the Home Visit Program by testing behavioral change after MSG had provided WASH education. One hundred and twenty-six families were given post assessment evaluations, and of those families, 81 were analyzed. The remaining 45 families changed their names on the post evaluation, so we were not able to accurately find their intake assessments. Our CHEs had visited the families two, three or four times. On average, the CHEs had visited the families three times. The post assessments indicated an increase in positive WASH behavioral changes within households that had participated in the Home Visit Program. See Figure 19 - Figure 27 to view the WASH behavioral changes made by the families.

Figure 19 shows that 28% of families started filtering their drinking water after MSG WASH lessons. Figure 20 shows that 63% of families started using chlorine tablets to treat their drinking water after our education. We also learned that participants had increased washing their hands during critical times; 50% of program participants had started treating their hand-washing water; and 33% had started using soap during hand washing after our education (Figures 21-23). Lastly, six families built new latrines after MSG's education, and eight families repaired their broken toilets and are now using them (Figure 25 and Figure 26). These 14 families were celebrated in front of their village councilmen for World Toilet Day (Nov. 19).

Figure 19: Change in Filtering Drinking Water

Question Asked	Type of Change	Count of Home Visit Participants (out of 81 people)	Percentage
<b>Does the family filter their drinking water?</b>	Filtered drinking water prior to MSG lessons and continued filtering drinking water after MSG lessons	47	58%
	Started filtering drinking water after MSG education	23	28%
	Did not change their WASH behavior	5	6%
	Unanswered	6	8%

Figure 20: Change in Water Treatment Methods

Question Asked	Water Treatment Method	Type of Change	Count of Home Visit Participants (out of 81 people)	Percentage
<b>How do they treat their drinking water?</b>	Boiling	Boiled water prior to MSG lessons and continued boiling after lessons	33	41%
		Started boiling water after MSG lessons	16	20%
		Did not use this method	32	39%
		Unanswered	0	0%
	Chlorine	Used chlorine prior to MSG lessons and continued using chlorine after lessons	5	6%
		Started using chlorine after MSG lessons	51	63%
		Did not use this method	25	31%
		Unanswered	0	0%
	SODIS	Used SODIS prior to MSG lessons and continued using SODIS after lessons	2	2%
		Started using SODIS after MSG lessons	0	0%
		Did not use this method	79	98%
		Unanswered	0	0%

Figure 21: Change in Hand Washing at Critical Times

Question Asked	Time	Type of Change	Count of Home Visit Participants (out of 81 people)	Percentage
At which critical times does the family wash their hands?	Before food preparation	Washed hands prior to MSG lessons and continued washing hands after lessons	57	70%
		Started washing hands after MSG lessons	22	27%
		Did not change their WASH behavior	0	0%
		Unanswered	2	3%
	Before eating	Washed hands prior to MSG lessons and continued washing hands after lessons	75	93%
		Started washing hands after MSG lessons	5	6%
		Did not change their WASH behavior	0	0%
		Unanswered	1	1%
	Before feeding babies	Washed hands prior to MSG lessons and continued washing hands after lessons	45	56%
		Started washing hands after MSG lessons	20	25%
		Did not change their WASH behavior	0	0%
		Unanswered	16	19%
	After defecation	Washed hands prior to MSG lessons and continued washing hands after lessons	56	69%
		Started washing hands after MSG lessons	23	28%
		Did not change their WASH behavior	0	0%
		Unanswered	2	3%
	After cleaning babies' feces	Washed hands prior to MSG lessons and continued washing hands after lessons	21	26%
		Started washing hands after MSG lessons	29	36%
		Did not change their WASH behavior	0	0%
		Unanswered	31	38%

Figure 22: Change in Treating Hand-Washing Water

Question Asked	Type of Change	Count of Home Visit Participants (out of 81 people)	Percentage
<b>Does the family treat their hand-washing water?</b>	Treated hand-washing water before MSG lessons and continued treating hand-washing water after lessons	20	25%
	Started treating hand-washing water after MSG lessons	41	50%
	Did not change their WASH behavior	20	25%
	Unanswered	0	0%

Figure 23: Change in Using Soap during Hand Washing

Question Asked	Type of Change	Count of Home Visit Participants (out of 81 people)	Percentage
<b>Does the family use soap when washing their hands?</b>	Used soap before MSG lessons and continued using soap after lessons	47	58%
	Started using soap after MSG lessons	27	33%
	Did not change their WASH behavior	7	9%
	Unanswered	0	0%

Figure 24: Change in Using Soap and Treated Water When Washing Dishes

Question Asked	Type of Change	Count of Home Visit Participants (out of 81 people)	Percentage
<b>Does the family use soap and treated water to wash their dishes?</b>	Used soap and treated water for dishes before MSG lessons and continued using soap and treated water for dishes after lessons	23	28%
	Started using soap and treated water for dishes after MSG lessons	24	30%
	Did not change their WASH behavior	33	41%
	Unanswered	1	1%

Figure 25: Change in Latrine Use

Question Asked	Type of Change	Count of Home Visit Participants (out of 81 people)	Percentage
<b>Does the family have a latrine?</b>	Had a latrine before MSG lessons and still has a latrine after lessons	56	69%
	Built a latrine after MSG lessons	6	8%
	Did not change their WASH behavior	18	22%
	Unanswered	1	1%

Figure 26: Change in Latrine Use

Question Asked	Type of Change	Count of Home Visit Participants (out of 81 people)	Percentage
<b>Does the family use their latrine?</b>	Used latrine before MSG lessons and continued using latrine after lessons	52	64%
	Started using latrine after MSG lessons	9	11%
	Did not change their WASH behavior	19	23%
	Unanswered	1	2%

Figure 27: Change in Personal Hygiene

Question Asked	Type of Change	Count of Home Visit Participants (out of 81 people)	Percentage
<b>Does the family have good personal hygiene?*</b>	Had good personal hygiene before MSG lessons and continued having good personal hygiene after lessons	68	84%
	Started having good personal hygiene after MSG lessons	7	9%
	Did not change their WASH behavior	5	6%
	Unanswered	1	1%

\*This assessment is subjective, assessed by the CHEs.

These WASH behavioral changes are key to changing the health of a community. While MSG has seen significant changes in Home Visit Program participants, the true indicator of change is health. Each year, MSG measures the community's health through our Health Screening Program. Figure 28 shows results from Home Visit Program participants. Data indicate that Home Visit Program participants have a lower disease prevalence rate in most WASH-related diseases (amoebiasis, intestinal worms, schistosomiasis in stool and urine). However, there is a higher



prevalence rate of UTIs. Also indicated are Home Visit Program participant disease rates from 2016. We are seeing that the program participants have very similar results for both years.

*Figure 28: Home Visit Program Participants' Health Screening Disease Rates*

Health Screening Rates	Number screened	Amoebiasis	Intestinal Worms	Schistosomiasis in Stool	Schistosomiasis in Urine	UTIs
Overall percentage of health screening participants who tested positive (2017)	3066	14%	38%	23%	12%	62%
Home Visit Program Participants (2017)	239	11%	10%	3%	8%	64%
Home Visit Program Participants (2016)	164	13%	8%	3%	7%	57%
Non-Program Participants (2017)	1017	20%	74%	44%	20%	59%

### *Home Visit Discussion*

The Home Visit Program continues to be an important and impactful MSG program. Program participants continuously say that MSG's education has helped their families change their WASH behaviors and protect their families from waterborne and water-related diseases. We saw families start filtering and treating their water, build latrines and stop open defecation, start using soap, and start washing their hands at critical times. The real impact of the Home Visit Program was reflected in the health screening rates, which indicated that those who participated in the Home Visit Program had a lower disease prevalence rate for amoebas, intestinal worms, schistosomiasis and malaria than non-program participants without MSG education. It is encouraging to see the data reflect an improvement in the families' WASH behaviors in response to the core MSG WASH lessons about water treatment, hand washing during critical times, and latrine use.

While we continue to strengthen the Home Visit Program via improved WASH lessons and data collection, there are still areas that can be improved. One area that needs improvement is updating our data collection methods. We are finding that CHEs write different names with

different spellings for some intake and post assessment forms. Therefore, it is recommended to either create a packet for the families to keep data organized or create a cloud-based database that allows the CHEs to follow families via ID numbers.

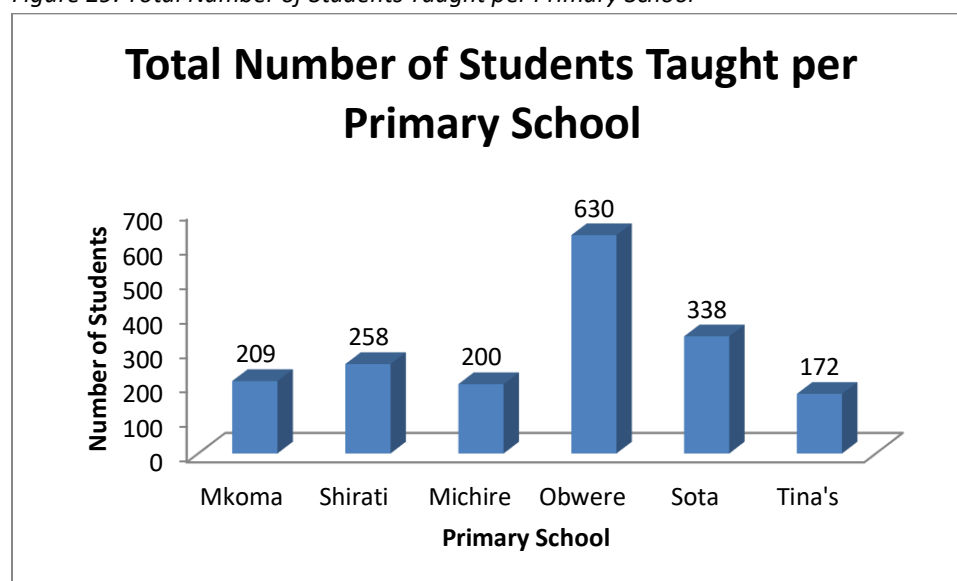
It is also recommended to complete a family's lessons within six weeks of the first intake assessment. This will ensure that the post assessment data we are receiving are uniform and give the family more time to learn the MSG lessons and make significant changes.

#### 4. After School Program

The After School Program started in 2012 and is one of MSG's original programs. The goal of this program is to teach children about proper WASH behaviors and disease prevention, while also allowing them to have a creative, fun experience. By learning how to care properly for their own health, students stay healthy, remain in school, and can therefore achieve their full potential. Using the students' creative, artistic, and critical thinking skills, CHEs teach disease prevention education about topics such as waterborne and water-related diseases, proper water treatment, sanitation, hygiene practices, and the fecal-oral disease cycle. MSG also donates hand-washing stations to enable proper WASH techniques at schools.

Since starting this program in 2012, MSG has taught in 14 primary schools, reaching almost 9,000 students. In 2015, the District Education Officer granted MSG permission to work in all 126 primary schools in the Rorya District. It is our goal to work in as many primary schools as we can, so we can continue to spread this important, life-changing WASH education. In 2017, MSG focused on providing MSG education to six schools – five government primary schools (Sota Primary School, Obwere Primary School, Shirati Primary School, Mkoma Primary School and Michire Primary School) and one private primary school (Tina's Education Center). See Figure 29 for the breakdown of the number of students taught per school.

Figure 29: Total Number of Students Taught per Primary School



In the six schools we continuously visited, CHEs taught 1,807 students from class 3 to class 7. See Figure 30. The average overall gender breakdown was 50% male and 50% female. These results are indicated in Figure 31. CHEs taught 215 lessons in these schools throughout the year. In the six schools, CHEs taught an average of 59 students per lesson, but the number of students per lesson varied depending on the school. At Obwere, CHEs taught an average of 126 students per lesson compared to Michire with an average of 50 students per lesson. See Figure 31.

*Figure 30: Total Number of Students and Classes Taught at the Six Schools*

Class Level	Total Number of Students	Total Number of Lessons
3	453	51
4	431	55
5	430	57
6	357	50
7	136	2
<b>Total</b>	<b>1,807</b>	<b>215</b>

*Figure 31: Participants' Average Class Size and Gender*

School Name	Average Class Room Size	Percentage of Males	Percentage of Females
Mkoma Primary School	52	47%	53%
Obwere Primary School	126	51%	49%
Sota Primary School	85	53%	47%
Tina's Education Center	86	50%	50%
Shirati Primary School	65	48%	52%
Michire Primary School	50	52%	48%
<b>Total Averages</b>	<b>59</b>	<b>50%</b>	<b>50%</b>

School Health Clubs have been established at four of these six schools (Sota Primary School, Obwere Primary School, Michire Primary School and Tina's Education Center). Opening new School Health Clubs was a priority in 2017 to ensure future sustainability. MSG has a goal to continue expanding to different schools to reach more students. However, we found that there needs to be a phasing-out plan, so the teachers, students and parents can start taking ownership of their newly gained WASH knowledge and continue passing the knowledge on to future students. Once interested students were identified at each school with the help of teachers, parents were notified. MSG then hosted a club-opening ceremony where WASH-related supplies (i.e. hand-washing buckets, soap, water storage containers, chlorine tablets, etc.) were presented, and the purpose of the School Health Club was explained to the teachers, parents, and selected students. The School Health Clubs are responsible for buying and replenishing WASH supplies.

The average number of students per School Health Club was 21 with 51 lessons taught and a gender breakdown of 44% male and 56% female. See Figure 32. We learned that students retain WASH knowledge more and score higher on their WASH exams if the student-teacher ratio is decreased. As shown in Figure 33, students from School Health Clubs had a higher test score average than students in the regular After School Program, where the classes are larger. At the end of the year, each school celebrated a successful year of learning with MSG. This celebration included school staff, parents and students. Each student received a notebook, a pen and an MSG shirt as a gift. There were five parties at the end of the year, reaching a total of 661 students, teachers and parents.

Figure 32: School Health Club, Average Class Size, Gender and Number of Lessons Taught

School Health Club	Class Level	Number of Students Taught	Number of Lessons Taught	Average Classroom Size	Percentage Male	Percentage Female
Tina's Education Center	3,4,5,6	24	13	18	52%	48%
Sota Primary School	4,5,6	22	15	18	48%	52%
Obwere Primary School	4,5,6	38	22	25	38%	62%
Michire Primary School	4,5,6	23	1	23	39%	61%
<b>Total/Average</b>		<b>107</b>	<b>51</b>	<b>21</b>	<b>44%</b>	<b>56%</b>

Figure 33: WASH Test Comparison

School Type	Average Test Score	Highest Test Score	Lowest Test Score
All Health Clubs	78%	100%	43%
All Regular After School Program	61%	100%	0%
Tina's Health Club	74%	100%	43%
Sota Health Club	81%	96%	60%
Obwere Health Club	81%	98%	62%
Michire Health Club	77%	98%	50%
Michire Regular After School Program	50%	100%	0%
Shirati Regular After School Program	71%	100%	20%

*\*Note: Test scores were calculated on the Tanzanian scale that has lower passing qualifications than in the US.*

In 2017, MSG continued to measure disease rates for After School Program participants through health screenings. However, this year we were only able to screen at secondary schools because the government concurrently with our health screenings was providing a mass worm and schistosomiasis treatment campaign to all primary schools. That being said, many secondary

school students (402) who were screened had participated in the After School Program in the past. From these participants, we were able to see that those who had participated still had a lower disease prevalence rate than those who had never received MSG education. See Figure 34.

*Figure 34: After School Program Participants' Health Screening Disease Rates*

Health Screening Rates	Number screened	Amoebiasis	Intestinal Worms	Schistosomiasis in Stool	Schistosomiasis in Urine	UTIs
<b>Overall percentage of health screening participants who tested positive (2017)</b>	3066	14%	38%	23%	12%	62%
<b>After School Program Participants (2017)</b>	402	7%	8%	4%	6%	61%
<b>After School Program Participants (2016)</b>	1638	8%	7%	4%	7%	48%
<b>Non-Program Participants (2017)</b>	1017	20%	74%	44%	20%	59%

### *After School Discussion*

The After School Program continues to be an important program for children, adolescents, teachers and their families. In 2017, opening new School Health Clubs helped the students retain WASH knowledge better and be better prepared to continue teaching future students WASH education once MSG leaves a school. It is recommended to continue opening School Health Clubs in the future to help the students and teachers take ownership of their WASH knowledge and School Health Club. It is also recommended to reduce classroom size to maximum 20 students per teacher/CHE. The smaller the class size, the more WASH education is retained by the students.

Additionally, the health screening data indicate that MSG program participants have a lower disease prevalence rate even when the education was from previous years. In the future, it would be beneficial to screen both current and past program participants from the After School Program.

## 5. Singing and Dance Program

The Singing and Dance Program started in 2012, which makes it one of MSG's oldest programs. Its goal is to use creative activities, such as songs, skits, and dances to learn and teach WASH lessons. Each lesson includes a song, dance, skit, art project or poem. Using creative and fun activities helps children remember these important WASH lessons. Ages of program participants range from 5-15.

At the end of 2016, the Singing and Dance program had 45 active members. In 2017, the goal of the Singing and Dance Program was to expand and create age-appropriate groups. Overall, the program taught 80 participants who attended regularly in 2017. In March, the organization split the Singing and Dance Group into two groups: older students (ages 11-15) and young students (ages 5-10). Every Monday, the younger students had an opportunity to meet, learn about WASH, and sing and dance with children in their age group. By the end of the year, the young students' group had 49 members. The older students met every Thursday, and they focused on skits and peer-to-peer teaching. By the end of the year, the older students' group had 31 members. All students from both age groups are invited to participate in Singing and Dance on Wednesdays. Most students participate in this group; however, some feel more comfortable coming to only their age-group classes. The class size ranged from 39 students to 64 students; 54% of students were male and 46% were female.

This program met throughout the year. On average, each group met four times a month. The combined age group met 12 months out of the year; the older students met eight months out of the year; and the young students met nine months out of the year. See Figure 35.

*Figure 35: Singing and Dance Program Lesson and Participant Information*

Month	Group Type	Number of Lessons	Number of Students Taught at least Once	Average Class Size	Number of Performances
January	All Students	4	39	28	0
February	All Students	11	48	30	3
March	All Students	4	54	38	0
March	Older Students	3	28	21	1
March	Younger Students	4	35	25	0
April	All Students	3	54	38	0
April	Older Students	4	30	15	0
April	Younger Students	3	49	43	0
May	All Students	4	54	51	2
May	Older Students	4	30	23	0
May	Younger Students	3	33	13	0
June	All Students	1	54	47	1
June	Older Students	2	30	24	0

<b>June</b>	Younger Students	2	33	16	0
<b>July</b>	All Students	6	60	35	1
<b>July</b>	Older Students	1	24	24	0
<b>July</b>	Younger Students	5	35	15	0
<b>August</b>	All Students	5	60	27	0
<b>August</b>	Younger Students	1	21	21	0
<b>September</b>	All Students	1	37	37	0
<b>September</b>	Older Students	6	31	16	0
<b>September</b>	Younger Students	4	35	18	0
<b>October</b>	All Students	4	64	62	1
<b>October</b>	Older Students	7	24	20	0
<b>October</b>	Younger Students	7	34	26	0
<b>November</b>	All Students	5	53	43	1
<b>November</b>	Older Students	4	26	21	0
<b>November</b>	Younger Students	4	23	20	0
<b>December</b>	All Students	1	58	58	1

The Singing and Dance Program participants are tested on their WASH knowledge twice a year. This test is similar to the After School Program participant evaluation. Since the Singing and Dance children continuously participate in the Singing and Dance Program, their test scores showed a high understanding of WASH knowledge. The highest score was 100%, and 29% of those tested received an 80% or higher, which is MSG's internal goal.

In 2017, the Singing and Dance participants performed 11 times in front of a total of 11,305 community members. A detailed account of each performance is listed below.

- **Rorya's Got Talent (Rorya Wanavipaji):** MSG hosted its third annual talent competition, which attracted 4,322 community members over three events. This year, the reach was expanded throughout the Rorya District. The first event was the audition, followed by a performance by the semi-finalists and then the finalists. Each semi-finalist and finalist had to demonstrate an original talent and a talent that taught WASH-related issues. The Singing and Dance Group performed songs and dances about WASH issues during the first two events.
- **World Water Day:** In March, the older student group performed in front of 610 community members in honor of World Water Day. These community members were taught as part of the Outreach Program.
- **Children Have Talent (Watoto Wanavipaji):** In May and June, the Singing and Dance Group hosted its first ever "Watoto Wanavipaji", the children's version of the talent competition. The Singing and Dance Group performed in front of 3,244 community members during three performances. We were thrilled to award 1st place to a group of children from our Singing and Dance Program.

- **Maji Safi Cup Final:** In July, the Singing and Dance Group partnered with the Maji Safi Cup Program and performed original songs and dances during the boys' soccer final, which attracted 1,406 people.
- **Global Handwashing Day:** On October 15, the Singing and Dance Group participated in MSG's Global Handwashing Day celebration by performing original songs, dances and poems about disease prevention and stopping open defecation. This event attracted 848 community members.
- **World Toilet Day:** In November, MSG celebrated World Toilet Day by recognizing those in the community who had built or improved their toilets after receiving MSG's education. The Singing and Dance Group performed original songs and dances in front of 727 community members.
- **End-of-the-year Celebration:** To close the year, the Singing and Dance Group held a party to celebrate the participants' accomplishments for the year. It was a great opportunity to perform songs and dances in front of the participants' parents. This event attracted 148 people, primarily participants and their parents.

### Health Screening Results

According to the results from the annual health screening campaign, the Singing and Dance Program had a lower prevalence rate of all waterborne and water-related diseases tested for than community members without MSG education. See Figure 36. This shows us that the Singing and Dance Program is extremely effective in helping program participants and their families prevent WASH diseases.

*Figure 36: Disease Rates among Singing and Dance Program Participants*

Health Screening Rates	Number screened	Amoebiasis	Intestinal Worms	Schisto-somiasis in Stool	Schisto-somiasis in Urine	UTIs
<b>Overall percentage of health screening participants who tested positive (2017)</b>	3066	14%	38%	23%	12%	62%
<b>Singing and Dance Participants (2017)</b>	84	0%	8%	1%	2%	57%
<b>Singing and Dance Participants (2016)</b>	88	9%	5%	5%	6%	43%



<b>Non-Program Participants: (2017)</b>	1017	20%	74%	44%	20%	59%
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### *Singing and Dance Discussion*

The Singing and Dance Group was very successful in 2017. We were able to expand our program and create more age-appropriate lessons for younger students and older students. We also saw that the program participants were able to perform in more shows this year and add a children's version of 'Rorya's Got Talent'. Additionally, we saw that program participants are healthier than their peers who are not in an MSG program. In the future, we anticipate incorporating more peer-to-peer education between the two groups.

## **6. Disease Prevention Centers**

Our first Disease Prevention Center (DPC) started in 2012 at the Shirati KMT District Hospital, which makes it one of MSG's original programs. The goal of this program is to provide disease prevention education in a hospital or health clinic setting. MSG has a long-standing partnership with the Shirati KMT District Hospital and has continued working with the hospital's visitor center. This year, we added three more prevention centers (Masonga Dispensary, Rao Hospital, and Ngasaro Clinic). This program provides health education in the form of demonstrations of proper hygienic behaviors, oral lessons, written materials, and interactive worksheets that the visitors keep as a reminder of the lesson. Education is given to patients, people visiting patients, and hospital staff. Visitors to the DPCs learn about disease transmission, avoiding diseases in the future, and why preventing disease is more economical than treating disease. After disease prevention lessons, the participants are asked questions to monitor their demographics, knowledge of WASH, and familiarity with MSG. This program reaches people from far away because the Shirati KMT District Hospital is where patients from the entire Rorya District and beyond receive treatment.

### *DPC Demographics*

In 2017, the DPCs were open for 135 days, and 1,445 people visited. On average, the CHEs saw 11 people per day. This number would vary depending on the prevention center, ranging from one person to 29 people. Approximately 69% were women, 31% were men, as shown in Figure 37. The average age of DPC visitors was 42, ranging from 11 years old to 83 years old. The majority of DPC participants were hospital visitors (90%), as shown in Figure 38. Of those who visited the DPCs, 215 people were repeat hospital visitors.

Figure 37: Gender of DPC Participants

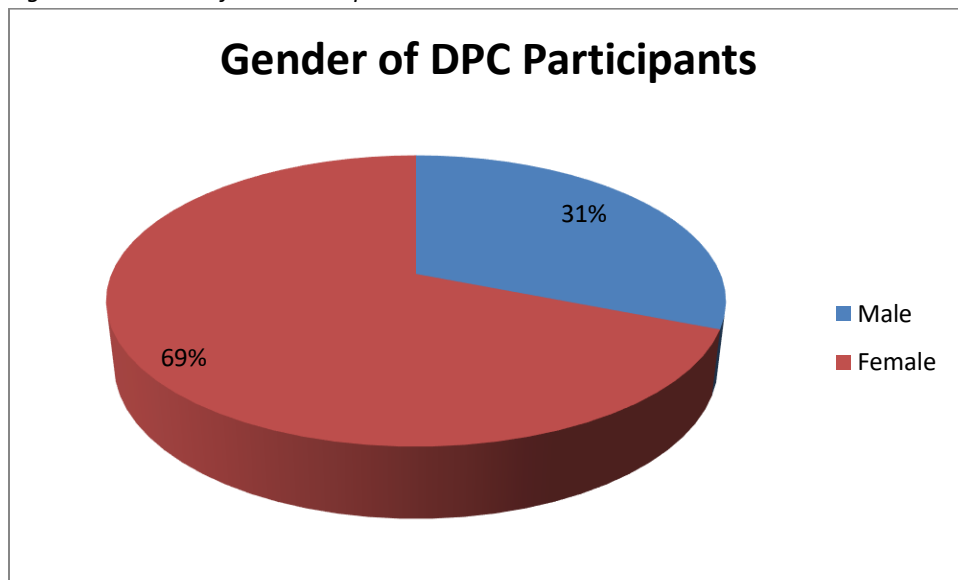
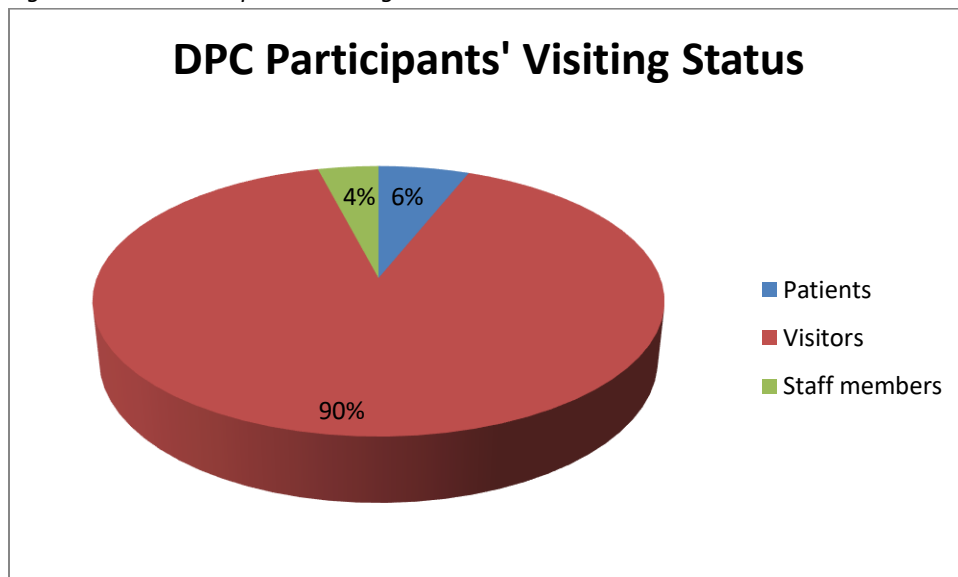


Figure 38: DPC Participants' Visiting Status



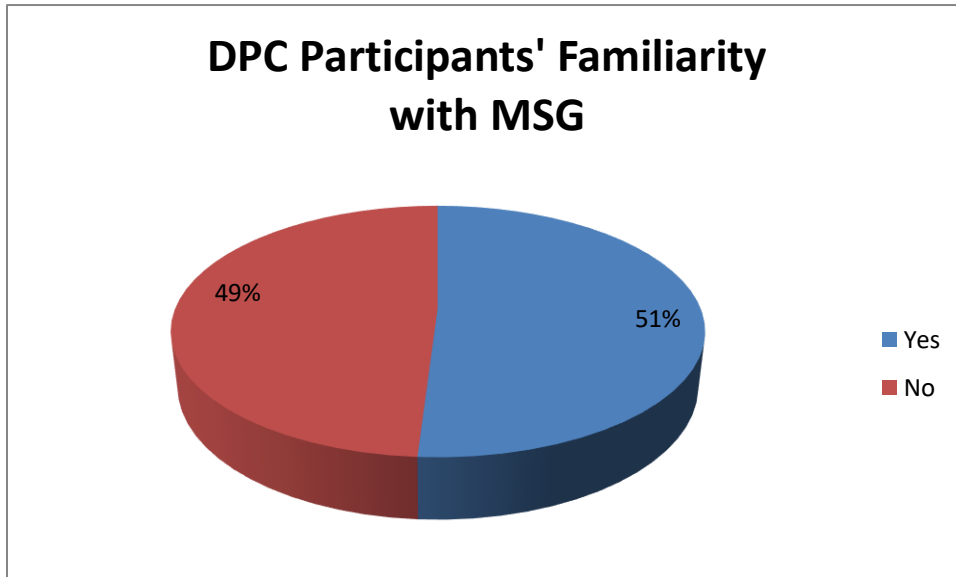
Participants are asked five questions when they visit a DPC: 1. Have they heard of MSG before? 2. Have they participated in an MSG program? 3. Do they treat their water before use? 4. Do they know where to get WASH products? 5. Do they have someone in the household under the age of three who has had diarrhea in the past two weeks? The garnered information enables MSG to track DPC participants and what is needed to improve public health and behavior patterns in the Shirati community.

### *DPC Questions:*

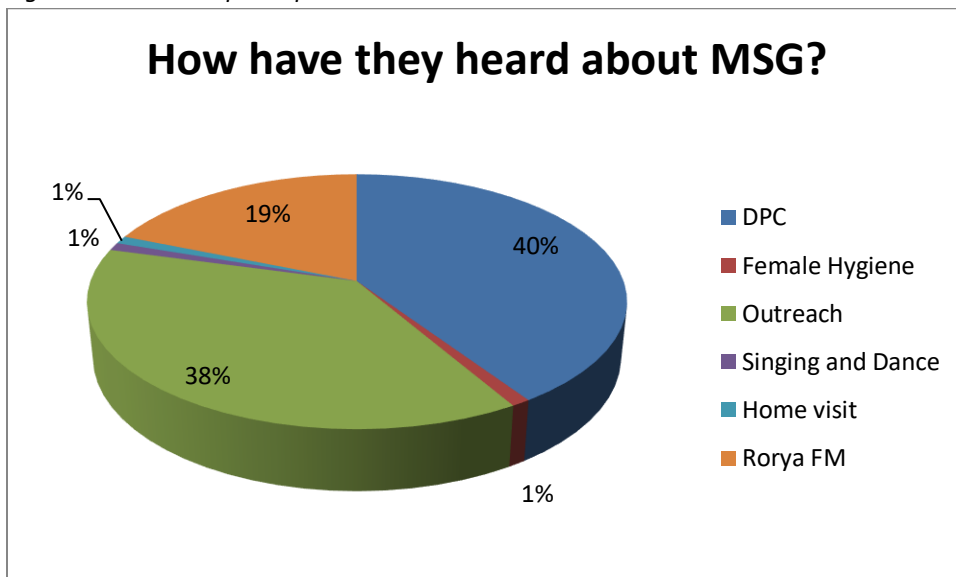
#### **1. Have they heard of MSG before?**

Of those we educated at the DPCs in 2017, 51% had heard of MSG before, while 49% had never heard of MSG. See Figure 39. The majority of the participants had heard of MSG through previous DPC visits and market outreach. Other ways visitors had heard of MSG are indicated in Figure 40.

*Figure 39: DPC Participants' Familiarity with MSG*



*Figure 40: How DPC participants have heard about MSG*



## 2. Have they participated in an MSG Program before?

We found that only 29% of DPC visitors had participated in an MSG program. See Figure 41. We found that the majority had participated in DPC and/or market outreach. Other programs that visitors had participated in can be found in Figure 42.

Figure 41: DPC Visitor Participation in other MSG Programs

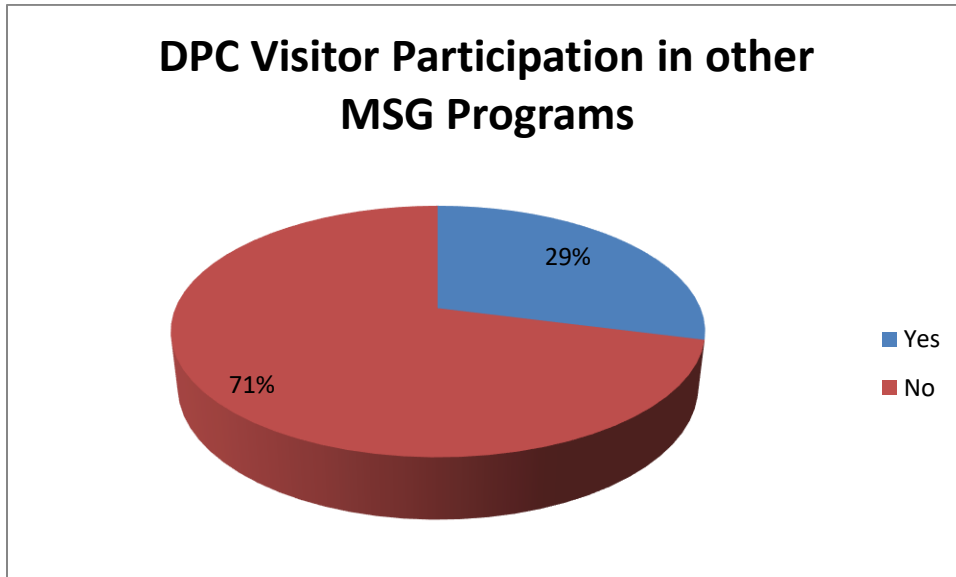
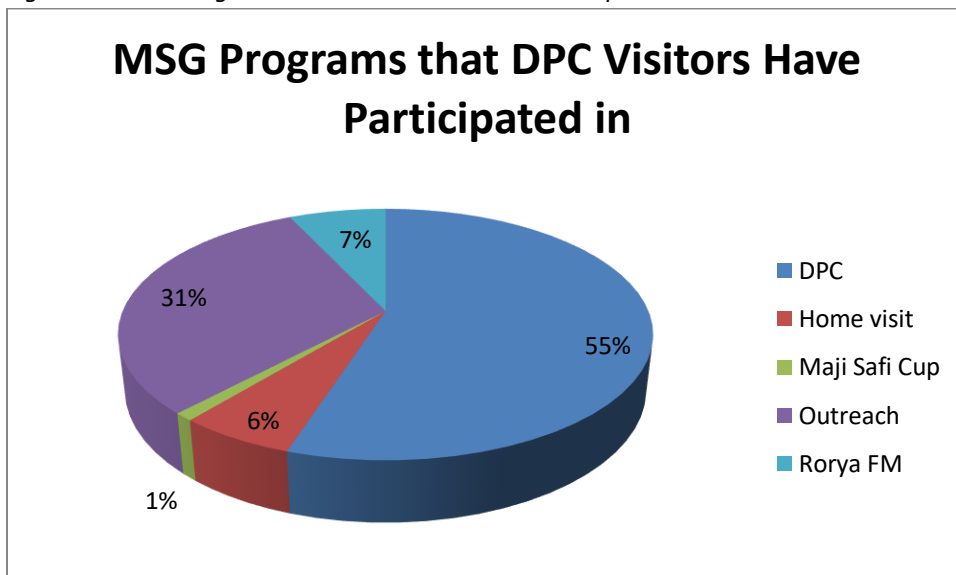


Figure 42: MSG Programs that DPC Visitors Have Participated in



### 3. Do they treat their water before they use it?

We found that 61% reported that they treat their water before they use it. See Figure 43. That leaves 39% who did not treat their water before use, but now understand the importance of water treatment. Of those who treat their water, 79% use the boiling method, 18% use chlorine tablets, and 2% use a different method like SODIS or ceramic filters. See Figure 44. We also found that 18% of those who do not treat their water have already received MSG education, and 82% of those who do not treat their water have not received MSG education. This percentage shows that the majority of residents who do not treat their water had never received MSG education.

Figure 43: Do DPC Participants Treat their Water before They use It?

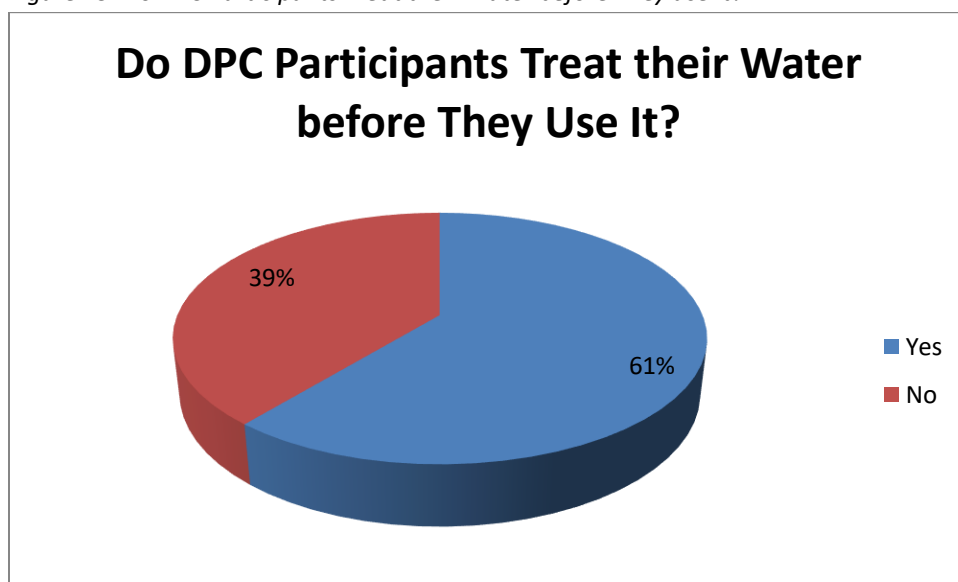
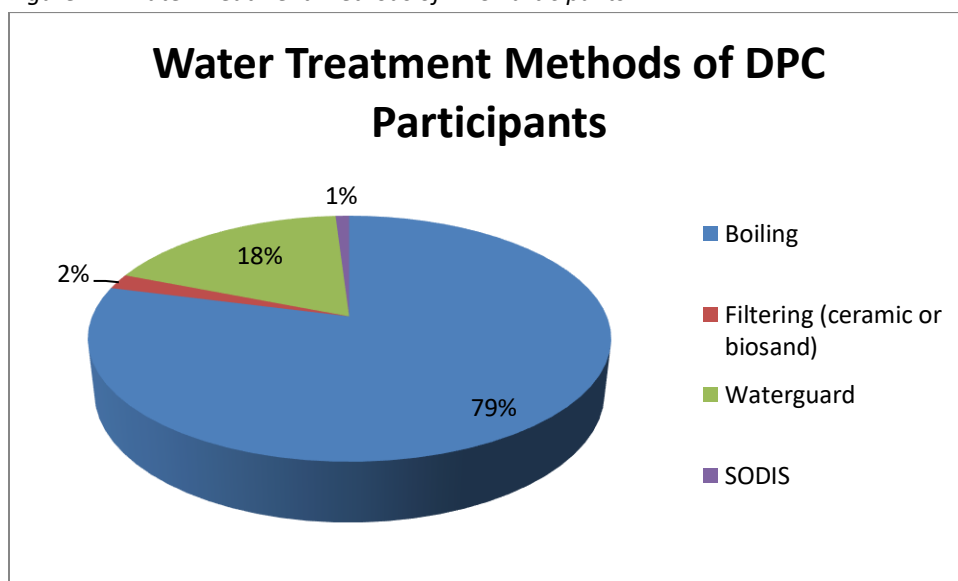


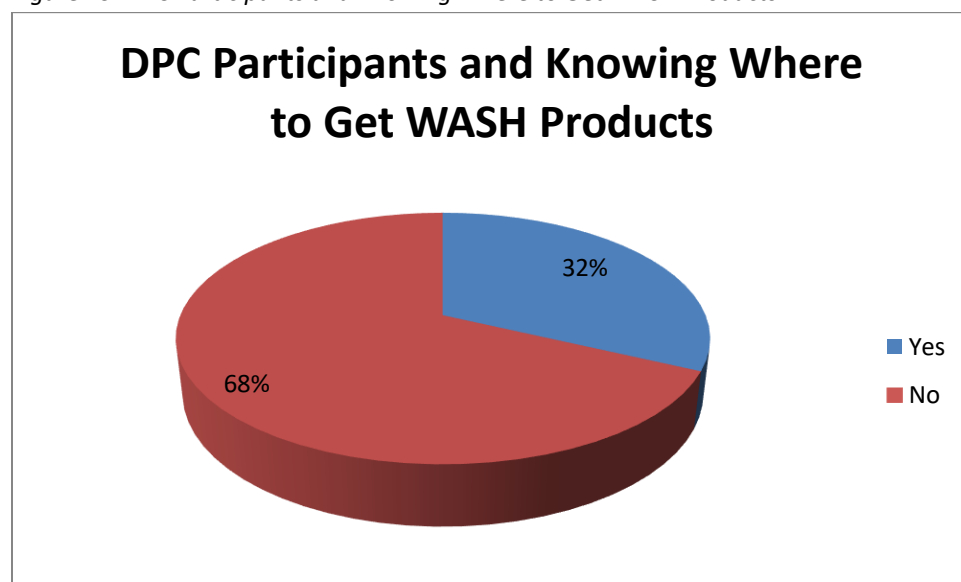
Figure 44: Water Treatment Methods of DPC Participants



#### 4. Do they know where to get WASH-related products?

We asked the DPC visitors if they knew where to get WASH-related products. We found that only 32% knew where they could buy WASH-related products; 68% did not know where to find WASH-related products. See Figure 45. However, 20% of those who did not know where to get WASH-related products were previous MSG program participants, while 80% of those who had not received MSG education did not know where to get WASH-related products. That means that MSG program participants are much more familiar with this information than those who have not yet attended an MSG program.

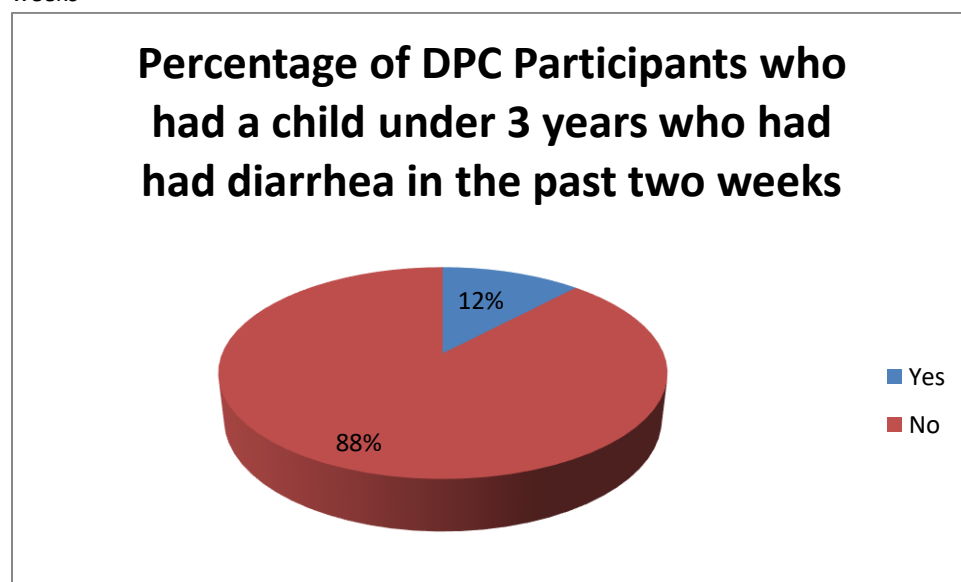
Figure 45: DPC Participants and Knowing Where to Get WASH Products



#### 5. Do they have someone living with them under the age of three who had diarrhea in the past two weeks?

We found that 12% of DPC visitors had a child under three who had had diarrhea in the past two weeks, which is a decrease of 6% from last year. See Figure 46. Of those who had a child under three with diarrhea, 27% were previous MSG program participants, and 73% had never participated in an MSG program. This indicates that MSG program participants have healthier families than those who have yet to receive MSG education.

Figure 46: Percentage of DPC participants who had a child under 3 years with diarrhea in the past two weeks



### ***DPC Discussion***

In 2017, the DPC Program was a success. We continuously see that those who have participated in MSG programs have a better understanding of where to buy WASH-related products, treat their water, and have less self-reported diarrheal diseases. We see that the community is changing their WASH behaviors after MSG lessons. Additionally, it was already found that while there are still individuals who do not treat their water, do not know where to buy WASH-related products, and have children under the age of three who have diarrhea, MSG program participants are much better informed and have healthier families than those who have never received MSG education. As this program expands, it will be interesting to compare prevention centers. Each hospital and/or clinic reaches a different demographic group, and future data will help us see if our education is being used in all participating clinics, or if educational changes need to be tailored to the specific clinics.

## **7. Maji Safi Cup Program**

The Maji Safi Cup Program started in June 2013 and consists of month-long sport tournaments (i.e. soccer for boys/netball or volleyball for girls) where local school teams compete for the Maji Safi Cup title. Before each game, teams must attend a one-hour lesson about WASH and disease prevention. Combining athletics and education promotes overall wellness and makes lessons more memorable and thus more effective. The winners of a Maji Safi Cup are awarded WASH supplies for their school. Although only one team is crowned as champions, all tournament participants benefit from team building, pre-game lessons, and a small gift relevant to their lessons (e.g. school supplies and sanitary pads). This year, the girls' Maji Safi Cup tournament was held at one secondary school where the different class levels competed against each other.

In 2017, MSG hosted two Maji Safi Cups: one girls’ netball tournament and one boys’ soccer tournament. These tournaments reached a total of 7,960 community members with 13 matches. On average, 612 people came to each match. However, each match and tournament varied significantly. See Figure 47.

*Boys’ Soccer Maji Safi Cup*

The first Maji Safi Cup tournament this year was hosted in July 2017 and was a boys’ soccer tournament. Lessons focused on personal hygiene and respect for women. There were eight games played, which reached 4,013 people – 66 players/participants and 3,947 community members. The final match alone attracted 1,406 spectators. On average, the games attracted 501 community members per match. See Figure 47.

*Women’s Netball Maji Safi Cup*

The second Maji Safi Cup tournament this year was hosted in October 2017 and was a female netball tournament. The lessons focused on Female Hygiene and Menstrual Hygiene Management. There were five games played, that reached a total of 3,947 people – 28 players/participants and 3,919 spectators. During the final match, 723 community members attended to celebrate the teams. On average, 789 community members attended each match. See Figure 47.

Figure 47: Number of Maji Safi Cup Spectators

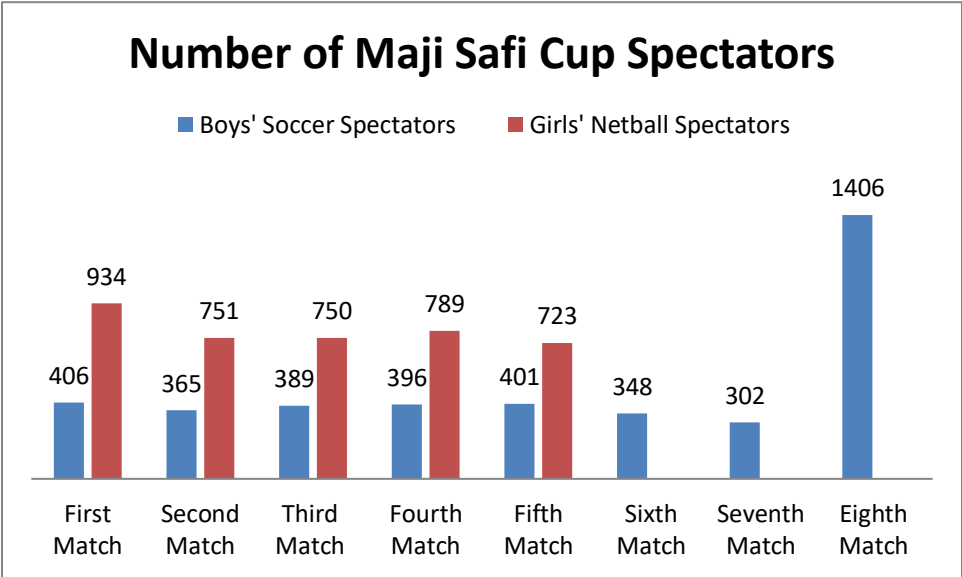
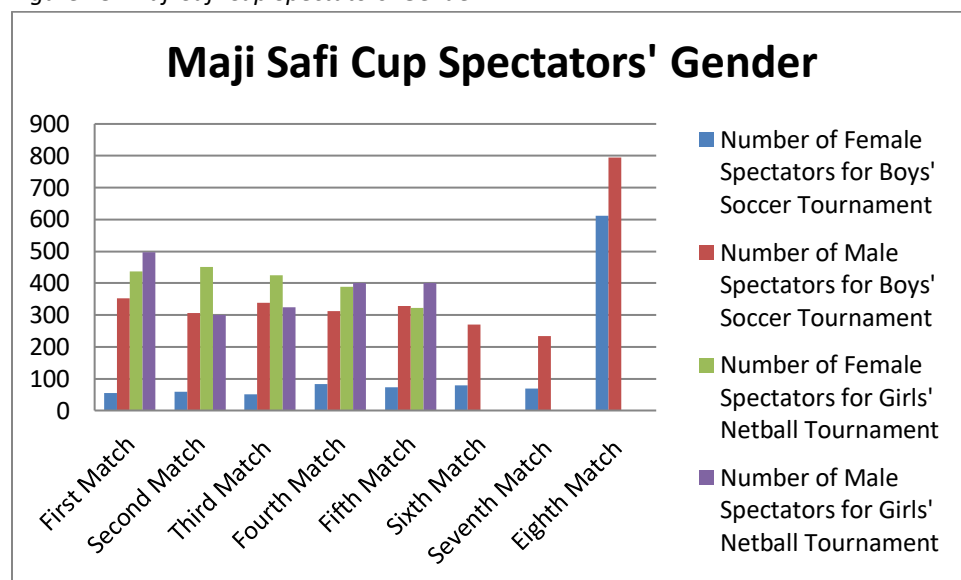




Figure 48: Maji Safi Cup Spectators' Gender



### Health Screening Results

This year was the first time we have included Maji Safi Cup Program participants in the Health Screening Program. According to the results from the annual health screening campaign, we were able to screen 199 Maji Safi Cup Program participants. The Maji Safi Cup Program had a lower prevalence rate of all waterborne and water-related diseases tested for than community members without MSG education. See Figure 49. This shows us that the Maji Safi Cup Program is extremely effective in helping program participants and their families prevent WASH diseases.

Figure 49: Maji Safi Cup Health Screening Results

Health Screening Rates	Number screened	Amoebiasis	Intestinal Worms	Schisto-somiasis in Stool	Schisto-somiasis in Urine	UTIs
<b>Overall percentage of health screening participants who tested positive</b>	3071	14%	38%	23%	12%	62%
<b>Maji Safi Cup Program Participants</b>	199	8%	7%	9%	9%	58%
<b>Non-Program Participants</b>	1017	20%	74%	44%	20%	59%

### *Maji Safi Cup Discussion*

This year, both Maji Safi Cup tournaments were successful. We continued to increase the number of participants and spectators during both tournaments. We believe partnering with one secondary school at a time was successful as it encourages classmates to attend the events and learn WASH lessons. We also found that providing education about WASH through hosting Maji Safi Cups does help participants reduce water-related diseases. In the future, we should consider continuing Maji Safi Cups at secondary schools and potentially add primary schools. We should also continue to invite Maji Safi Cup Program participants to Health Screenings to continue measuring this program's success.

## **8. Hotline**

The Hotline Program started in October 2013. This program is a way for the community to contact MSG through our hotline numbers in order to learn about water, sanitation, hygiene, disease prevention, and health. Additionally, it is a way for MSG to teach participants in hard-to-reach places. The hotline number is given to participants in other programs (e.g. Outreach, Disease Prevention Center, Rorya FM, etc.) if they do not have time to talk in person. This program also aims to reach men in the community, as they often do not have time to talk during a home visit or during the Outreach Program.

In 2017, we focused on repeating lessons to interested participants rather than reaching a large number of people. Therefore, we reached 342 people through 1,020 phone calls. Callers came from several locations in Tanzania. Most callers called from the nearby wards or wards that our Outreach Program had previously visited: Mkoma, Tai, Kigunga, Nyahongo, Bukura, and Nyanagaro.

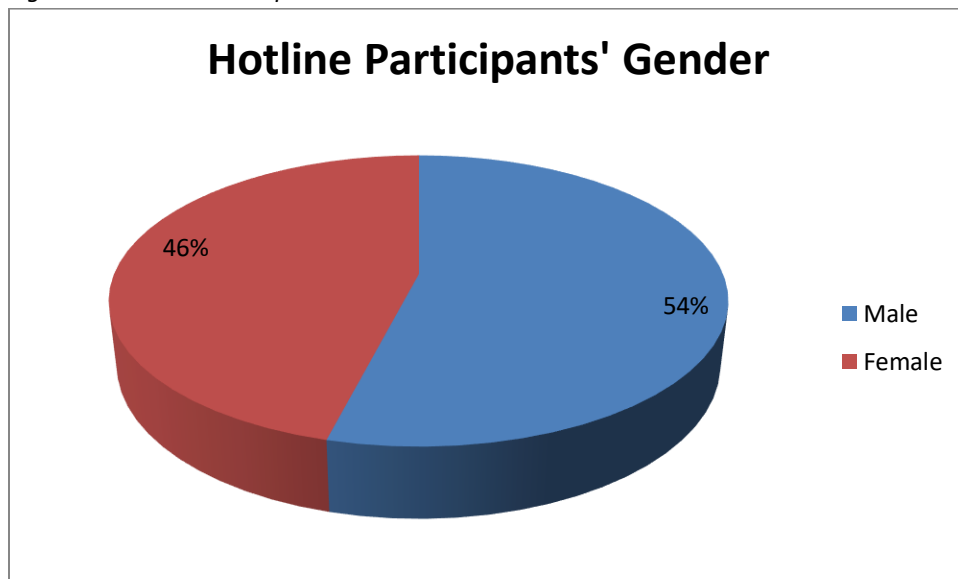
This year, the hotline also created an SMS text message schedule. We sent WASH-related SMS messages to 810 people. In total, MSG gave out 1,830 WASH-related lessons in the form of a phone call or text message. In Figure 50, the communication with hotline participants is displayed. The hotline was open 165 days in 2017 with an average of 11 people contacted via phone call and/or SMS a day with a range of 1-51 calls per day. As shown in Figure 51, the majority of callers were male (54%).

*Figure 50: Frequency of Hotline Participants*

Number of times reached	Number of times spoken to on phone	Number of times sent SMS
# 1st time	342	0
# 2nd time	290	48
# 3rd time	100	228
# 4th time	113	204
# 5th time	72	161
# 6th time	59	106
# 7th time	35	48

# 8th time	5	13
# 9th time	4	2
Total number of lessons	1020	810

Figure 51: Hotline Participants' Gender



The reasons for the calls are indicated in Figure 52. The most popular reason people called was to gain information about MSG programs, followed by a WASH-related question. Most WASH-related questions concerned water treatment, fecal-oral diseases, and open defecation. The majority of Hotline Program participants were interested in learning more about the Hotline Program, followed by interest in the Home Visit and then Outreach Programs. See Figure 53. Callers interested in the Home Visit Program were listed in a file to potentially be visited by a CHE later. Only 2% of the callers asked questions only the hospital could answer. If MSG could not answer a question, the CHE called our partners at the Shirati KMT District Hospital and received the answer. The CHE then called the participant back and answered the question.

Figure 52: Reason for Hotline Program Participant Call

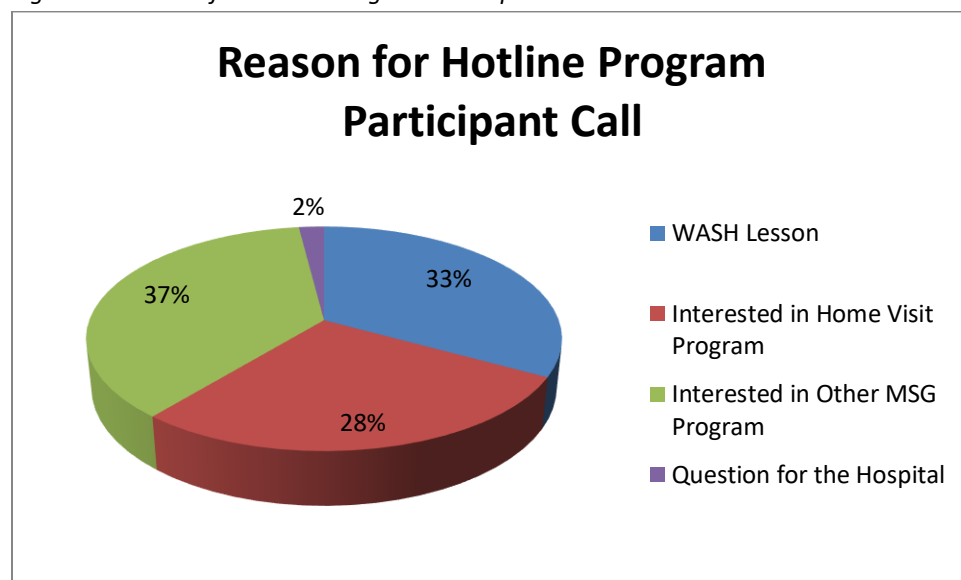
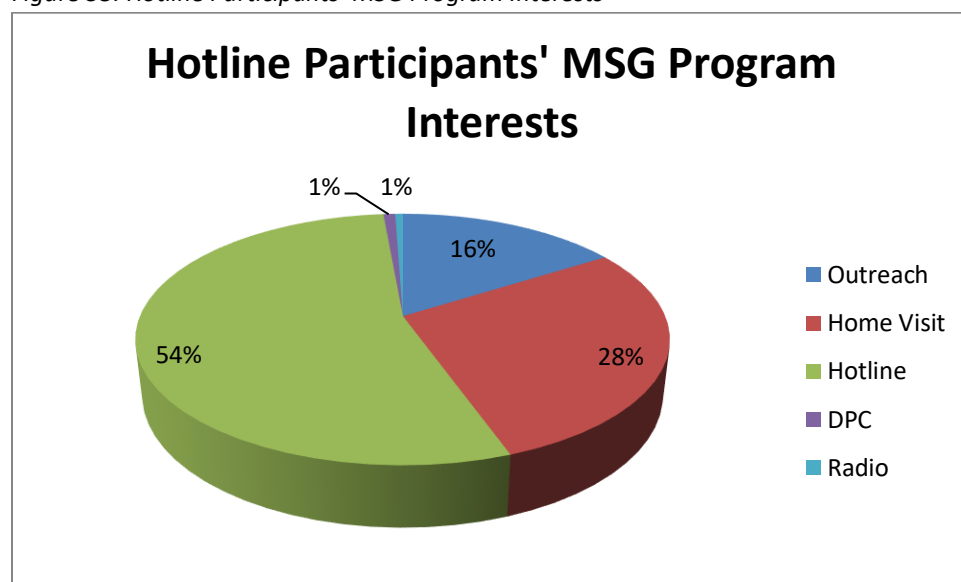


Figure 53: Hotline Participants' MSG Program Interests



### Hotline Discussion

The MSG Hotline is a great option for those who live far away or have short WASH-related questions. This year, CHEs focused on the program participants by giving more follow-up lessons. In previous years, it was found that Hotline Program participants wanted more follow-up lessons to better understand the WASH lessons. Next year, it is recommended to add more phone lines to reach a greater number of people. There should also be a new system implemented for program participants whereby the CHEs call a total of three times and send three SMS/text messages. This will allow the Hotline Program to reach more program participants. We also found that program participants are typically interested in the Home Visit Program. However, it is difficult to go to individual homes in different locations due to distance. Therefore, it is also

recommended to stop offering Home Visit education to Hotline Program participants in order to promote higher participant satisfaction.

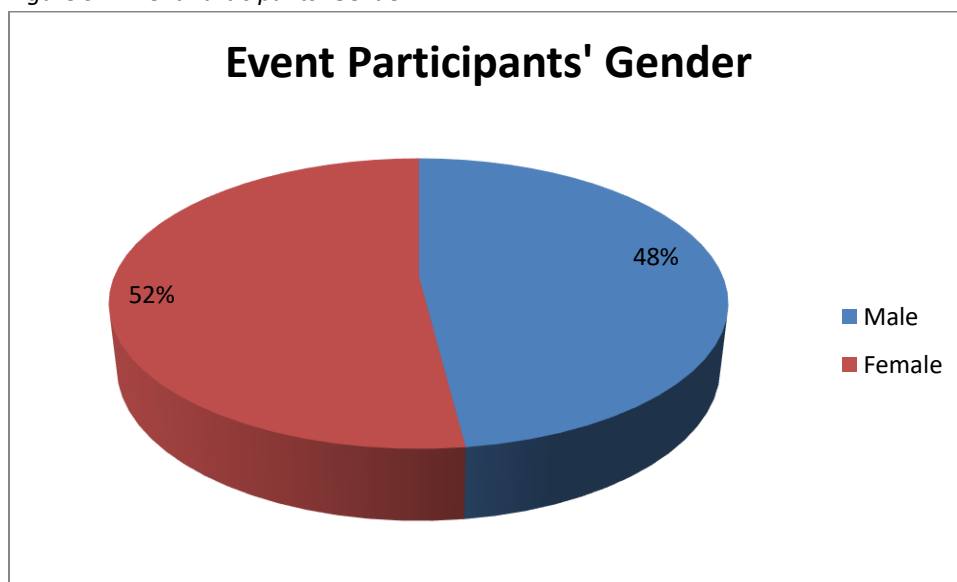
## 9. Outreach

There are many ways to teach WASH education to the community. Our Outreach Program started in 2012, and its goal is to teach the local community about WASH practices through a variety of local outreach methods, including event days and market outreach as well as visiting groups, shops, salons, and restaurants in the Mara Region. This program has developed over time to reach more community members and to respond to community crises, such as cholera outbreaks. Outreach now reaches the most people and has the largest scope of all MSG programs.

### *Event Days*

Every year, MSG hosts community-wide events that are sometimes organized in cooperation with the government or other organizations. These events are a way to reach out to the community to teach about WASH-related issues that affect the community members' everyday lives. In 2017, MSG hosted seven events not associated with other programs like Singing and Dance and Female Hygiene (these events are explained in their own program sections). These events directly reached 2,993 community members with an average of 427 community members per event. The gender breakdown was 48% male and 52% female. See Figure 54.

*Figure 54: Event Participants' Gender*



## 2017 Events

- **January 2017: Award Celebration for Restaurant Owners:** MSG began the year by evaluating restaurant owners on their WASH knowledge and the cleanliness of their restaurants. These owners were taught MSG WASH lessons in 2016. There were 34 owners tested, and 25 were invited to be recognized for their improvements of WASH behaviors. The top-scoring restaurants were recognized with a certificate and given WASH-related gifts (i.e. soap, chlorine tablets, and hand-washing buckets). The certificates may be displayed at the restaurants to let future customers know that the establishments are clean, and the owners understand WASH education
- **March 2017: World Water Day:** This year, MSG celebrated World Water Day by setting up a water treatment fair during the Monday market in the village of Obwere. Prior to the fair, MSG staff and the Clean-Up Group organized a mass clean-up of the community in the morning. The fair included stations where visitors could learn about several different water treatment methods and try them out to see which one would work best for them. The winners of the Shirati's Got Talent competition performed to draw a crowd, fun WASH demonstrations took place, and the children were invited to enjoy coloring sheets. The Singing and Dance Group also performed in front of community members during this event.
- **July 2017: Award Celebration for Salon and Shop Owners:** MSG recognized salon and shop owners that performed well on their WASH test and demonstrated behavioral changes. Certificates were given out to all owners who received a 70% or higher on their tests. The certificates may be displayed at the salons and shops to let future customers know that the establishments are clean, and the owners understand WASH education. Prizes were given out to owners who had the highest test scores.
- **October 2017: Global Handwashing Day (GHD) – Part One:** Every year on October 15, MSG hosts a celebration of hand washing and its key role in preventing disease. This year was our fourth annual GHD event. We celebrated in the village of Sota and invited local government officials to join the celebration.
- **October 2017: Global Handwashing Day (GHD) – Part Two:** The end of the day was celebrated at the Maji Safi Cup final where hand washing was the lesson taught by CHEs, and Singing and Dance Group participants performed dances and songs in front of their peers.
- **November 2017: World Toilet Day:** MSG reached community members on November 19 by hosting a celebration in the village of Kabwana. During this event, we honored 14 families that either built a new toilet after MSG education or greatly improved their toilet. Local government officers were invited to the event and came from 10 different villages to recognize the efforts made by their constituents. Additionally, CHEs performed skits about the importance of ending open defecation and introduced the Arborloo Toilet to the community.
- **December 2017: School Outreach Lesson:** As part of our emergency outreach preparedness plan, MSG visited Down Hill primary school to teach students and teachers

about cholera, how to be prepared for an outbreak, and how to prevent their families from getting this water-related disease.

### *Market Days*

Throughout the year, CHEs visit markets located in the Rorya District. Market days are either half or full days of work, depending on the size of the market and the location. Education topics include water treatment (i.e. boiling water, using chlorine tablets, etc.), the fecal-oral disease cycle, and preventing WASH-related diseases, including cholera. The CHEs also use this time to sell chlorine tablets and oral rehydration solution. These products are sold at a low price to make them more accessible to the community. On average, about 43 people receive education during a market day. In total, we visited 34 market locations over 91 days, reaching approximately 3,938 people. This increased significantly from last year due to CHEs prioritizing market outreach to promote the cholera preparedness plan. Of the 34 locations visited, eight were visited five or more times. On average, a location was visited by CHEs three times.

### *Salons and Shops*

In 2017, MSG visited local salons and shops to teach local business people how to protect their customers, how to keep their environment clean, and how to provide better customer service. For 16 days, CHEs taught and re-taught store and salon owners about WASH. Overall, CHEs taught 56 WASH lessons to stores owners and 48 lessons to salon owners – for a total of 104 lessons. Eighty-six establishments were taught once, six were taught twice, and two were taught three times. After each lesson, the CHEs ranked each store and salon with 4 being the highest level of understanding and 1 being the lowest. The store and salon owners and workers had a high level of comprehension and retention of the MSG lessons with only 1% of those taught receiving an understanding score of 1; 28% received an understanding score of 2; 53% received an understanding score of 3; and 18% received an understanding score of 4. See Figure 55. MSG reteaches stores and salons that receive a score of 2 or lower. Later in the year, the CHEs visited 29 store and salon owners who performed well on their first assessment. They were tested on their WASH knowledge and given certificates if they received a score of 80% or higher. Of the 29 establishments, 20 received a score of 80% or higher and were given certificates and WASH product prizes to display for community members to see.

*Figure 55: Assessment Scores for Stores and Salons*

Assessment Score	Number of Participants	Percentage
1 (no understanding)	1	1%
2 (little understanding)	26	28%
3 (good understanding)	50	53%
4 (best understanding)	17	18%

## Restaurants

Each year, MSG visits local restaurants. In 2017, CHES taught 29 restaurant owners from local restaurants in Obwere, Sota, Tai, Kabwana, Raranya, and Ryagati. See Figure 56. Our CHEs evaluate local restaurants to gain a better understanding of their cleanliness and safety for their customers. If the restaurant managers want to participate, they then receive MSG lessons on how to improve the environmental and food safety of their restaurant. These restaurants will be retaught and evaluated in 2018.

We were able to gather information about the restaurants. Since the majority of restaurant owners used water from Lake Victoria (an unprotected and heavily contaminated water source) when cooking and cleaning as well as for hand washing, it was very important for the CHEs to teach them about water treatment. See Figure 57. Figure 58 shows that these restaurant owners indeed needed WASH education. In their pre-evaluation, 38% of restaurants were assessed as having poor hygienic practices, 23% did not have a bathroom, and 17% did not treat their drinking water. During previous MSG cholera prevention work with the Mara Region Health Office and the WHO, restaurants were identified as a catalyst for the spread of cholera in the region. Providing restaurant owners with WASH education empowers them to change their behaviors and provide a place that is safer and healthier for them and their customers.

Figure 56: Locations of the Restaurants

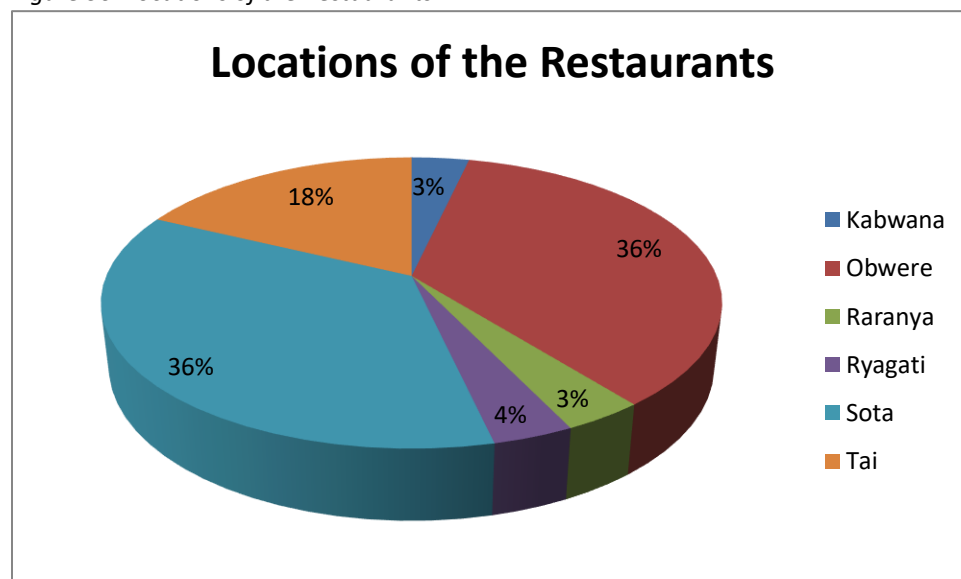




Figure 57: Restaurant Water Source

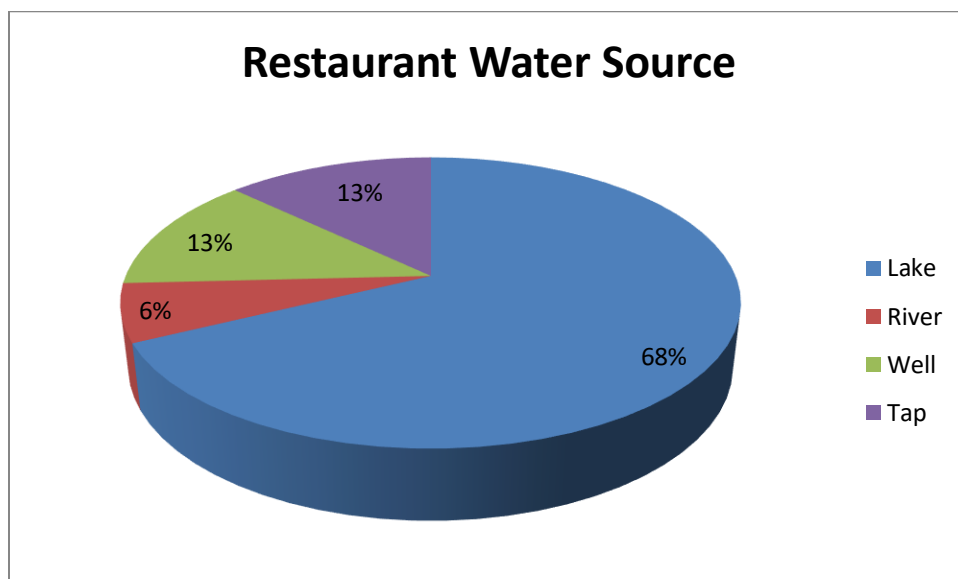


Figure 58: Overall Analysis of 2017 New Restaurants

Question	Answer	Percentage
1. Do they treat their drinking water?	Yes	83%
	No	17%
2. How do they treat their drinking water?	Boiling	38%
	Chlorine	46%
	No treatment	16%
3. How do they treat their dishwashing water?	Boiling	20%
	Chlorine	20%
	No treatment	60%
4. When do they wash their hands?	Before food preparation	90%
	Before eating	90%
	After defecation	83%
	Before serving drinks	55%
	Do not wash hands	0%
5. Does their restaurant have a place for hand washing?	Yes	90%
	No	10%
6. Do they treat their hand-washing water	Yes	69%
	No	31%
7. Do they have soap at their hand-washing station	Yes	93%
	No	7%
8. Are there many flies in the restaurant?*	Yes	2%

	No	98%
<b>9. Do they keep their food overnight?</b>	Yes	34%
	No	66%
<b>10. Do they wash dishes with soap and water?</b>	Yes	52%
	No	48%
<b>11. Does their restaurant have a latrine?</b>	Yes	77%
	No	23%
<b>12. Is the restaurant dirty*</b>	Yes	38%
	No	62%

\*This assessment is subjective, decided by the CHEs.

After MSG completed all the restaurant visits, restaurant owners were tested on their WASH knowledge, and certificates were provided to those establishments that received a passing score. These certificates are then displayed, so customers can see the sanitary and hygienic conditions of the establishment. Prior to testing, restaurant owners were taught WASH lessons one to three times. In 2017, MSG evaluated 34 restaurants (taught in 2016 and early 2017). These restaurants came from five different villages in the Rorya District: Sota, Kabwana, Obwere, Masonga, and Ngasaro. Each restaurant was evaluated with a WASH test and a physical cleanliness examination. The average test score was 66% with the highest test score being 99%; 25 restaurants out of the 34 passed the cleanliness examination. Of those tested, MSG awarded everyone who scored 80% or higher on their test and demonstrated a high level of hygiene and sanitation practices (19 restaurants) with a certificate and a WASH-related gift. Gifts were distributed based on test scores and included hand-washing buckets, waste bins, soap and WaterGuard (chlorine tablets).

### *Group Visits and Satellite Classroom*

CHEs set up meetings with local groups and meet with them regularly. The community forms groups based on location and interest (women's groups, loan groups, environment groups, etc.). In 2017, MSG taught six groups with a total of 13 visits. Each group had an average of 16 people present. The CHEs taught two-hour lessons about WASH-related topics and demonstrated how to improve family health by preventing disease. In total, MSG directly reached 214 people during group visits. CHEs taught six groups once, four groups twice, and three groups three times.

During June 2017, MSG welcomed 12 public health and social work master-level students along with Professor Carolyn Lesorogol and an additional faculty member from the Brown School of Social Work at Washington University in St. Louis to lead a course on "Participatory Methods for Community Well-Being". In collaboration with our CHEs, they worked directly with five Beach Management Units (BMUs) at Sota, Masonga, Minigo, Kanga, and Busurwa, reaching an estimated 300 community members.

On the first two days of the students' visit, the program leaders prepared and presented to the students and the MSG staff (in English and Swahili) about the history of Shirati, the water issues

the area faces, the history of Maji Safi Group, the Shirati KMT District Hospital HIV/AIDS Care and Treatment Center, Dr. Chirangi's maternal health research, and the history of Tanzania Fisheries Research Institute (TAFIRI) and their research. The students also shadowed the MSG Community Health Educators during MSG programs, such as Outreach and Singing and Dance. On day three, Professor Lesorogol started a three-day course on participatory development tools. Lessons included the history of participatory development, the reasons why and situations in which an organization would use participatory development, and lessons on how to facilitate participatory development tools and what information facilitators could gain from these tools. Lessons were very interactive and included facilitation practice for the Brown School students and the MSG Community Health Educators. All lessons were translated into Swahili from English, and Professor Lesorogol is fluent in Swahili, so lessons were well understood by CHEs. For example, if a translation was not 100% correct, Professor Lesorogol would explain the real meaning of the Swahili expression. All tools were taught with the objective of using these methods within the fishing communities in the Shirati area.

Week two included the final lesson from Professor Lesorogol, breaking up into five teams, and preparing for the community workshops. Students and CHEs were mixed, and each group had either a member of the MSG management or a teacher from the Brown School as the group leader. Tuesday through Thursday, the teams went out to the BMUs to use the participatory tools. Each team went to a BMU to work with the community members to learn about the history of the communities, how the communities perceived their current living situation, and where the communities would like to go/be. These questions were meant to be open-ended, as each community has a different history, is currently in a different place, and might want to head in a different direction. We let the community decide the boundaries of these questions. These tools fit perfectly with MSG's aim to work with communities and help them lower their waterborne and water-related disease rates. MSG and the students were well received by all BMUs and participating communities. Over the three-day community workshop, nine participatory tools were used to learn about the five fishing communities. After each day of workshops, each team prepared reports on their key findings. On the final day of workshops, the fishing communities were thanked and given a summary of the key findings. The students and CHEs then wrote final reports on their key findings and next-step suggestions for the community members.

On the final day of the course, the CHEs and students presented their findings to their fellow classmates and co-workers. Once the school group left, MSG and TAFIRI continued to partner with the BMU leaders and the fishermen. MSG and TAFIRI revisited all communities to present the findings and use additional participatory tools. The goal of the follow-up meetings with the communities was to have the fishing communities make decisions on how they wanted to improve their current living situation. All communities could potentially use MSG education and support, and it is our hope that their future decisions will include MSG programs.

## Outreach Discussion

This year, MSG focused on preventing the Rorya District from being affected by future disease outbreaks, such as cholera or shigella. Several days were committed to visiting markets and teaching store and restaurant owners. Through post-evaluation methods, we saw a high understanding among participants taught two or more times. By arming the community with disease prevention education, we saw communities become more prepared for a future outbreak due to a higher understanding of water-related diseases. In the future, the M&E system could be revised to better measure the impact MSG education has on first-time learners. Additionally, more data for analysis would be available if more program participants were invited to the annual Health Screening Program.

## 10. Radio Show (Rorya FM)

MSG has a partnership with 90.3 Rorya FM, the local radio station in Shirati. This partnership allows MSG to host one-hour shows that educate the community about the importance of WASH. The radio station estimates that each show reaches approximately 3,500 listeners. This year, MSG started hosting two shows a week: one aired live and the other as a repeated recorded show. In 2017, MSG aired 33 of each, indirectly reaching approximately 231,000 (including repeat listeners). MSG ran shows over nine months of the year, averaging 3.5 live shows a month and 3.5 recorded shows a month. See Figure 59 for the breakdown of WASH lessons taught during each show. Our goal was to air shows each month, excluding Health Screening months, but in November 2017, the radio station temporarily closed until the start of 2018 due to technical issues. Therefore, we were not able to host shows in November and December 2017.

Each show provides the community with the opportunity to call in or send an SMS/text message to ask questions and/or make comments for our CHEs to answer. Throughout the year, MSG had 169 callers and 85 people who sent SMS/text messages that were answered directly by the CHEs. The average number of callers per show was six, and the average number of messages sent per show was three.

Figure 59: Rorya FM Shows in 2017

Month	Number of Shows	Lesson Taught
January	3	Hand washing/Personal Hygiene/ Male Hygiene
February	4	Fecal Oral Disease Cycle/Female Hygiene/Water Preservation and Environmental Cleanliness/ Menstrual Hygiene Management
March	6	Cholera/Food Preparation and Storage/Schistosomiasis/Children's risk of water-related diseases/World Water Day/Female Hygiene
April	3	How to Discuss Menstruation with your Children/Diarrhea/Typhoid

<b>May</b>	4	Male and Female Physical Changes/ Personal Hygiene/Food Preparation and Storage/Puberty
<b>July</b>	3	Water Treatment and Water Storage/ Menstrual Hygiene Management/ Ending Open Defecation
<b>August</b>	3	Health Screenings/Personal Hygiene during Puberty/Changes in a Woman's Body
<b>September</b>	3	Personal Hygiene/Fecal Oral Disease Cycle/Menstrual Hygiene Management
<b>October</b>	4	Cholera/Hand Washing/Family Planning/Puberty

### ***Radio Show Discussion***

As the Radio Program continues to grow, the community continues to receive lessons and be exposed to important education. This year, MSG focused on expanding the reach of this program by replaying shows each week giving listeners more opportunity to hear the MSG lessons. MSG also committed to teaching the community more lessons on female hygiene and menstrual hygiene management, which helps the community break stigma and taboos related to the subject. Next year, it is recommended to continue expanding the reach of this program by starting to air MSG shows at other radio stations. It is also recommended that the MSG radio shows at Rorya FM be aired in the morning instead of the afternoon, as many households listen to the radio while performing morning chores and tend to call the radio station with questions/send SMS messages more frequently in the morning than during other times of the day.

## **11. Emergency Outreach (Cholera Response)**

In 2015 and 2016, the Rorya District and other areas of the Mara Region were devastated by several cholera outbreaks. MSG was called upon to partner with the Rorya District Government, Musoma Town and Village District Governments, the Mara Region Government, the World Health Organization and the Shirati KMT District Hospital to assist in spreading health education about cholera. Dedicated to disease prevention and the promotion of health, MSG decided to be proactive in spreading disease prevention education and developing a cholera preparedness plan.

Through generous funding from LUSH, MSG was able to revisit areas affected by cholera in the past, buy supplies and educational materials to prepare for any future disaster, and create an emergency preparedness plan in cooperation with the district government to combat future cholera outbreaks in an efficient manner. The emergency preparedness plan offered trainings with ward-level cholera preparedness volunteers, including community members in places that had previously been devastated by a cholera outbreak. CHes taught cholera prevention in various ways (i.e. market outreach, educating store and restaurant owners/employees, fishing

communities, international day celebrations and radio shows). CHEs spent 90 days teaching at locations where MSG had previously helped fight cholera outbreaks to reteach the importance of cholera prevention.

The MSG Outreach Program visited five Beach Management Units (BMU) with 300 community members. BMUs are government organized fishing centers. Similar to restaurants, BMUs were identified as being hotspots for cholera outbreaks due to their transient populations and poor sanitary facilities. In 2017, the Rorya District did not have a single confirmed case of cholera. Bearing in mind the devastating cholera outbreaks of 2015 and 2016, we believe this significant change is due in part to the WASH education we were able to provide in hotbed areas like markets, restaurants, and BMUs.

### ***Emergency Outreach Discussion***

Through the Emergency Outreach Program, we have been able to reach thousands with lifesaving education in partnership with the government. This year, we are thankful that our proactive disease prevention education helped the region stay safe from a cholera outbreak. However, for our community to continue to stay safe, we must continue to proactively disseminate cholera prevention plans throughout the region. Therefore, it is recommended that this program continue to help the community by training more preparedness volunteers in 2018.

## **12. Female Hygiene Program**

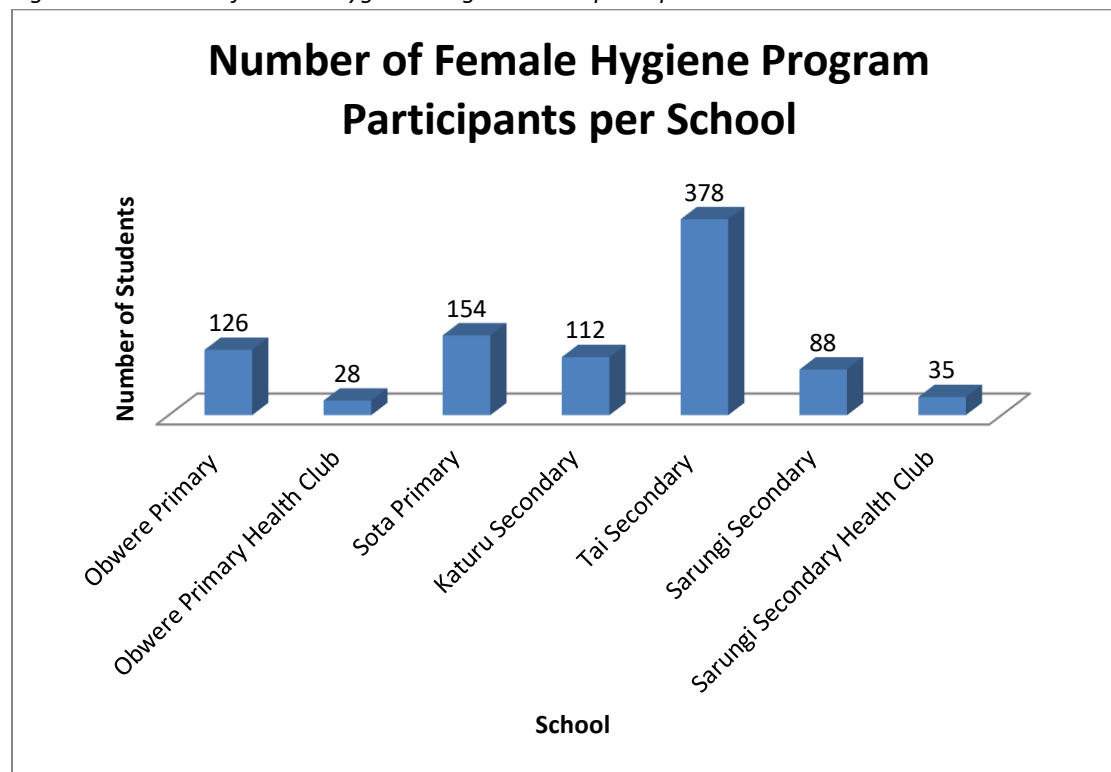
MSG started its Female Hygiene Program in November 2013 as a safe place for young women, 11-18 years old, to learn about Menstrual Hygiene Management (MHM), gain access to female WASH materials like sanitary pads, and be encouraged to stay in school. The overall objective of this program is to reduce school absences/dropouts related to menstruation by educating girls and young women about MHM and supporting them in their studies. This program increased significantly in 2016 with the help of a grant from INTERTEAM, the City of Zurich, and the City of Basel and has continued to grow in 2017 with their support.

The MSG Female Hygiene lessons were created through participatory methods in collaboration with Marni Sommer's *Grow and Know* curriculum, which was developed specifically for teaching MHM in Tanzania. Lessons equip participants with female health and hygiene knowledge to decrease their absences from school during menstruation and empower them to become community leaders. Throughout 2017, the Female Hygiene Program worked in three wards in five schools. CHEs taught at Obwere and Sota Primary Schools and Katuru, Tai and Sarungi Secondary Schools. Of those schools, Obwere Primary and Sarungi Secondary became Female Health Clubs in order to reduce classroom size and establish sustainability in the program.

Overall, the Female Hygiene Program taught 1,036 young women at least one lesson during 2017 (973 program participants in the regular program and 63 program participants in the Health Clubs). The average number of students taught per school was 132. See Figure 60. Depending on the school, class levels ranged from Class 5 to Form 4. On average, there were 57 girls present

per lesson (minimum 28 girls, maximum 131) with four to six CHEs present to teach lessons. The CHEs taught a total of 128 female hygiene-related lessons to program participants in 2017.

Figure 60: Number of Female Hygiene Program Participants per School



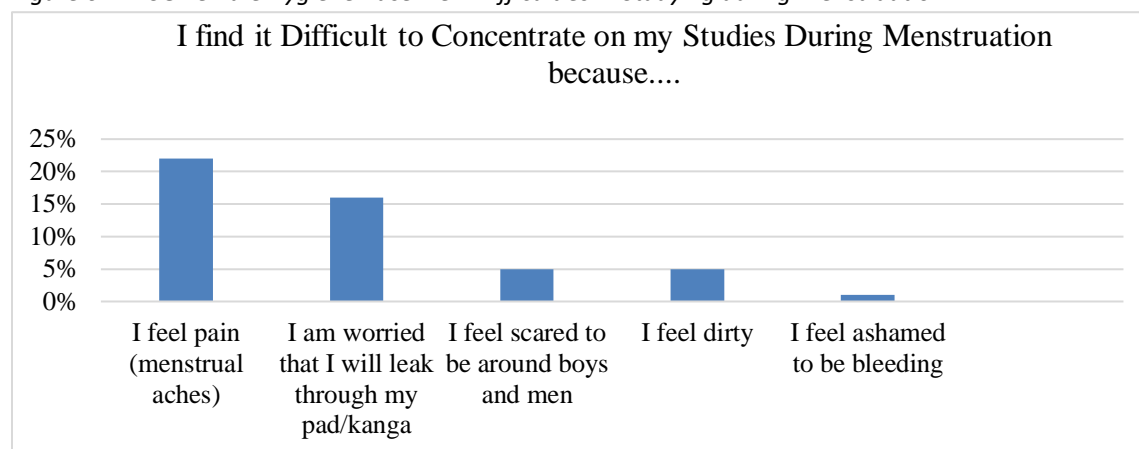
To understand the young women we work with better, a baseline survey of 273 primary and secondary school students was conducted to identify current attitudes and perceptions of Menstrual Hygiene Management (MHM). The aim of this survey was to identify students' attitudes towards menstruation and its relationship to school attendance.

Of the 273 primary and secondary school students surveyed, 63% reported that they had already begun menstruating. In total, 29% of girls had missed at least one day of school in the last six months, with 5% of girls having missed more than 10 days. Furthermore, 29% of those who had missed school in the last six months were absent due to menstruation issues, such as lacking proper menstrual hygiene pads or cloths, fear of leaking blood while in school and in front of their peers, or not fully understanding that menstruation is a normal and natural process. Two percent of girls reported having missed more than 10 days of school due to menstruation.

When asked about the effects of menstruation on school performance, more than one third of the girls stated that they find it difficult to concentrate on their studies during their monthly cycle. They reported that feeling pain (22%), being worried that blood will leak through their pads or cloths (16%), feeling scared to be around boys and men (5%), feeling dirty (5%), and

feeling ashamed (1%) were all reasons that girls found it difficult to concentrate on their studies while menstruating. See Figure 61. Experiencing any of these issues can cause a girl to fall behind on her studies.

Figure 61: MSG Female Hygiene Baseline – Difficulties in Studying during Menstruation



### Saturday Sessions

All Female Hygiene Program participants, as well as girls from other communities, were invited to meet on Saturdays at MSG's office. The CHEs create a safe place for young women to participate in fun activities, share stories and female-specific experiences, and seek advice. The girls also engage in peer-to-peer education to further instill health lessons and give them practical leadership experience. On average, 47 young women participated on Saturdays at the office with the most taught being 115 participants. Even during school vacations, students are encouraged to participate in the Female Hygiene Program at the office. On average, CHEs and girls met at the office on Saturdays three times a month, a total of 31 times for the year.

**Menstrual Cup Pilot Study:** This year, MSG was invited to participate in a research study in partnership with the University of Dar es Salaam and Lund University. The 2017 Menstrual Cup Pilot Study included 84 adolescent girls from the Shirati area and measured the sustainability and acceptance of menstrual cups in rural areas. The study showed that poor WASH facilities and lack of access to safe, healthy and affordable menstrual products were greatly linked to an increase in school absences during menstruation. Girls introduced to menstrual cups reported feeling more confident, safer and more interested in going to school while menstruating because they felt protected and clean, knowing protection from menstrual cups can last up to 10 hours. This pilot study will be instrumental to introducing new menstrual products in the region and to advocating for obtaining government permission for menstrual cups to be sold at the national level.

### Female Hygiene Program Events

Throughout the year, the Female Hygiene Program hosts fun, educational community awareness events. This year, the Female Hygiene Program hosted eight outreach events: graduation party, International Women's Day, two Dining for Female Hygiene events, Miss/Mr. Maji Safi contest,



two Menstrual Cup research events, and the Sarungi Health Club opening event. Program participants invite community members to attend these events to learn about female hygiene and health issues through songs, dances, and skits.

- **Graduation Party:** The CHEs celebrated the young women who graduated from primary school to secondary school. There were 54 program participants present at this event, and they received school supplies to help them continue to be successful.
- **International Women's Day:** On March 8, the Female Hygiene Program participants celebrated womanhood with their female guardians. Lessons about reusable pads were taught, skits about the importance of being prepared for menstruation were performed, and reusable pads were distributed. This event attracted 115 young girls and women.
- **Dining for Female Hygiene:** In May and December, the Female Hygiene Program hosted Dining for Female Hygiene events. The CHEs and participants organized these special dinners for participants and their female guardians (mothers, grandmothers, aunts). During the events, female health and hygiene issues were discussed, new members were welcomed, and through songs, dances, and skits, the young women showcased what they had learned. This event hosted 141 and 90 participants, respectively.
- **Miss/Mr. Maji Safi:** This year, the Female Hygiene Program partnered with the Male Hygiene Program to conduct the annual Miss/Mr. Maji Safi event. The girls and boys from our Female and Male Hygiene Programs participated in this knowledge and confidence competition in front of 800 community members. It was a very successful event, which allowed 50 girls and boys to perform and compete in front of their peers and parents.
- **Menstrual Cup Research:** MSG partnered with University of Dar es Salaam and Lund University to conduct research on the acceptance and sustainability of menstrual cups in rural Tanzania. MSG hosted two informational events raising awareness about menstrual cups. The first event was attended by 70 participants and the second by 181 participants.
- **Opening Sarungi Health Club:** Once a school is selected to be a Health Club in our Female Hygiene Program, an opening celebration is conducted. Each program participant invites a guardian to the event, and two teachers and the head master are also invited to participate. During this event, the Health Club is introduced, and WASH materials are given to the school to be maintained by the club.

### ***Female Hygiene Health Screening Results***

Health screening results for the Female Hygiene Program participants indicate that when comparing all WASH-related diseases, program participants have a lower disease prevalence rate than community members without MSG education (with the exception of UTIs). See Figure 62.

*Figure 62: Disease Rates among MSG Program Participants*

Health Screening Rates	Number screened	Amoebiasis	Intestinal Worms	Schistosomiasis in Stool	Schistosomiasis in Urine	UTIs
<b>Overall percentage of health screening participants who tested positive</b>	3071	14%	38%	23%	12%	62%
<b>Female Hygiene Program Participants who tested positive</b>	459	6%	8%	7%	5%	70%
<b>Non-Program Participants who tested positive</b>	1017	20%	74%	44%	20%	59%

### *Female Hygiene Discussion*

The Female Hygiene Program continues to grow and be one of our most popular programs. This year, we have expanded significantly. This program still faces the challenge of reducing classroom sizes. However, with the addition of the Health Club Program, the goal of reducing classroom sizes is within reach. Additionally, in the future, MSG will commit to only teaching a maximum of 20 students per CHE. This will ensure that the students taught per session will gain more knowledge due to having a more student-friendly environment that includes smaller class sizes and better student to teacher ratios to foster effective learning.

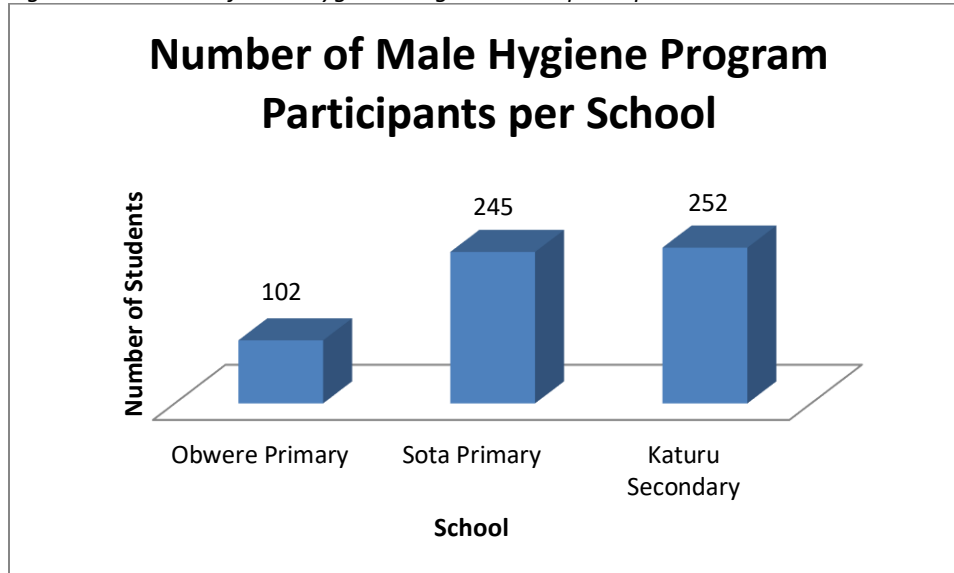
MSG is also eager to continue introducing new Female Hygiene WASH products to the program participants and the community. With the help of the menstrual cup pilot study, we are interested in giving our program participants more options when finding the right menstrual hygiene product for them.

## **13. Male Hygiene Program**

The Male Hygiene Program started in 2016 because the CHEs expressed interest in starting a counterpart program to the already active Female Hygiene Program. After the piloted year proved to be a success, MSG officially added this program to the budget in 2017. This program provides young men and boys with education about male and female anatomy, puberty, changes in their bodies, personal hygiene, respect for women, and the importance of breaking the silence about menstruation. By involving both genders in the conversation, Male Hygiene Program participants are now becoming more aware and knowledgeable about menstrual hygiene management and female and male hygiene issues. As the young boys become men, they are able to support female peers and family members.

In 2017, the Male Hygiene Program provided education at three schools (Sota Primary School, Obwere Primary School and Katuru Secondary School). Overall, the Male Hygiene Program taught 669 students 59 lessons with an average class size of 53 students. See Figure 63.

Figure 63: Number of Male Hygiene Program Participants per School



This year, the Male Hygiene Program participated in three events: Miss/Mr. Maji Safi, Dining for Male Hygiene, and a Quiz competition. The Miss/Mr. Maji Safi event attracted 800 community members (some of whom were included in the overall number of program participants reached through the Male Hygiene Program). The first Dining for Male Hygiene event taught 54 program participants and their guardians more about the lessons they are learning in this program. The quiz competition brought together 49 boys from Sota Primary and Obwere Primary to compete on their knowledge of male hygiene. This year, Obwere Primary won the trophy for knowing the most about topics taught in the Male Hygiene Program.

### ***Male Hygiene Health Screening Results***

According to Figure 64, Male Hygiene Program participants are healthier than people who do not participate in MSG's education. Most WASH-related disease prevalence rates were significantly lower for participants than for community members without MSG education (with the exception of UTIs).

Figure 64: Disease Rates among MSG Program Participants

Health Screening Rates	Number screened	Amoebiasis	Intestinal Worms	Schisto-somiasis in Stool	Schisto-somiasis in Urine	UTIs
Overall percentage of health screening participants who tested positive	3071	14%	38%	23%	12%	62%
Male Hygiene Program Participants who tested positive	164	9%	4%	1%	8%	60%
Non-Program Participants who tested positive	1017	20%	74%	44%	20%	59%

### Male Hygiene Discussion

As the Male Hygiene Program continues to expand, it is important that the program continues to provide quality education to young boys. This program continues to be of great interest to the community and has already proven to be successful. In the future, it is recommended to support this program by creating Male Hygiene Health Clubs and finding ways to reduce the class size to 20 students per CHE. This will ensure a greater understanding of Male Hygiene knowledge.

## 14. Health Screening Program

Maji Safi Group (MSG) provides comprehensive water, sanitation, and hygiene (WASH) education and programming to rural, underserved individuals and families in Shirati, Tanzania. MSG's model for promoting community-driven water, sanitation and hygiene (WASH) education and disease prevention focuses on behavioral change; however, measuring such changes in the community is a challenge. In 2017, Maji Safi Group (MSG) conducted its third annual health screening campaign to test and treat MSG's current and potential program participants for schistosomiasis, amoebiasis, intestinal worms, urinary tract infections (UTIs), and malaria. The purpose of the project was to alleviate the burden of the diseases, while also gathering data to establish a longitudinal study on disease prevalence rates in the Rorya District. Since 2015, MSG has been able to provide this health screening service to 11,291 Rorya District community members.

This year, MSG tested a group of 3,071 people comprised of community members with no MSG education and community members who were current or past program participants. For the third year in a row, disease rates revealed that MSG program participants who have been exposed to MSG's education have lower disease rates for schistosomiasis, amoebiasis, and intestinal worms than non-program participants with no exposure to MSG programs.

Additionally, overall disease rates continue to decrease in the community, indicating that the community is getting healthier.

### **2015 Health Screenings Summary**

The first health screening campaign, conducted in 2015, was a means of detecting and treating WASH-related diseases in the different stages of MSG's WASH-education intervention. During the pilot year, we found that many students and participants were sick – 81 percent of those screened tested positive for one or more water-related diseases. We believe that a high prevalence of positive UTI tests partially influences these high disease rates. MSG tested and educated 3,060 community members (including approximately 900 program participants) and treated 5,604 cases of water-related diseases. The screenings provided participants with an understanding of their WASH health situation, treatment if needed, and education to prevent future WASH-related diseases. Additionally, following the World Health Organization and Tanzanian Ministry of Health's guidelines, all health screening participants received treatment for intestinal worms regardless of whether they tested positive or not. This mass treatment was conducted because the Rorya District is endemic for intestinal worms. Figure 65 indicates the disease rates for each water-related disease we tested for.

*Figure 65: 2015 Health Screening Disease rates*

<b>2015 Health Screening Rates</b>	<b>Amoebiasis</b>	<b>Intestinal Worms</b>	<b>Schisto-somiasis in Stool</b>	<b>Schisto-somiasis in Urine</b>	<b>UTIs</b>
<b>Overall percentage of health screening participants who tested positive</b>	20%	18%	2%	31%	70%
<b>New MSG Program participants who tested positive</b>	28%	12%	17%	4%	66%
<b>MSG Program participants who tested positive</b>	18%	16%	4%	14%	16%
<b>Non-MSG Program participants who tested positive</b>	22%	30%	3%	16%	30%

### **2016 Health Screening Summary**

In 2016, Maji Safi Group (MSG) conducted its second annual health screening campaign, testing 5,060 people. The participant sample included MSG program participants, their guardians, local community members, students and fishermen as a means of evaluating the effectiveness of our programs and the overall health situation in the Rorya District. Again, MSG screened for malaria, schistosomiasis, amoebiasis, intestinal worms and urinary tract infections (UTIs). Overall, disease rates showed that MSG program participants who have been exposed to MSG education typically have a lower WASH-related disease prevalence rate (i.e. schistosomiasis, amoebiasis, and intestinal worms) than non-program participants with no exposure to MSG programs. Data also

suggested that MSG should reevaluate its education about UTIs and add malaria lessons to its education. Figure 66 indicates the disease rates for each water-related disease we tested for.

Figure 66: 2016 Health Screening Disease Rates

2016 Health Screening Rates	Amoebiasis	Intestinal Worms	Schisto-somiasis in Stool	Schisto-somiasis in Urine	UTIs	Malaria
Overall percentage of health screening participants who tested positive	14%	24%	7%	13%	51%	22%
Percentage of current participants who tested positive	10%	9%	5%	8%	53%	23%
Percentage of past participants who tested positive	9%	9%	5%	6%	49%	16%
Percentage of family members of program participants who tested positive	11%	14%	3%	7%	53%	21%
Percentage of staff members who tested positive	12%	6%	0%	3%	53%	11%
Percentage of community members who tested positive	18%	41%	10%	21%	49%	23%

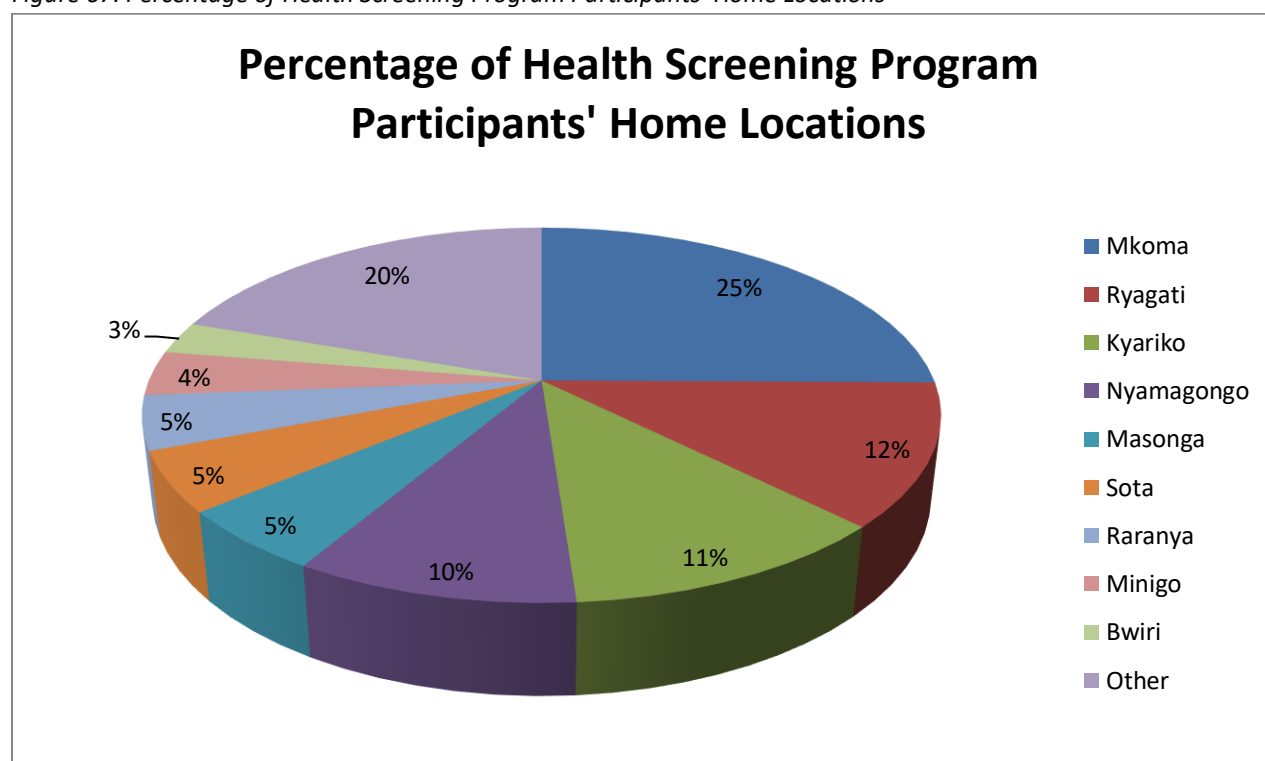
## 2017 Health Screening Results

### 2017 Demographics

In 2017, the MSG Health Screening Program was once again very well received among program participants and community members in general. Overall, MSG screened and treated 3,071 program and non-program participants. However, five forms were missing from the final count, so analysis was only conducted for 3,066 participants. The screenings took place over 11 days between July 29, 2017 and November 11, 2017. On average, MSG screened and treated 279 people per day with a range of 187 to 379 participants per day.

Of those tested, 49% were female, and 51% were male. The youngest person tested was two months old, and the oldest person tested was 90 years old. The average age was 21. The screenings took place in several different locations: the MSG office, Tai Secondary School, Katuru Secondary School, Sarungi Secondary School, Raranya Secondary School, the Masonga/Nyamagongo community, and the Ryagati community. The majority of those screened came from the village of Mkoma (25%), followed by Other (20%) which consists of 61 locations combined, then Ryagati (12%), Kyariko (11%), Nyamagongo (10%), Masonga (5%), Sota (5%), Raranya (5%), Minigo (4%), Bwiri (3%), and Bwiri (3%), as indicated in Figure 67.

Figure 67: Percentage of Health Screening Program Participants' Home Locations



### Overall 2017 Results

MSG used the same health screening questionnaire that was used in 2016 to ensure rates could be compared longitudinally. It was found that 79% of the 2017 health screening participants tested positive for one or more water-related diseases (amoebiasis, intestinal worms, schistosomiasis in stool, schistosomiasis in urine, UTIs, and malaria). Compared to the 2015 health screening results from the same area, this is a 2% decrease. However, when compared to the 2016 health screening results, this is a 2% increase of disease rates. This year, MSG found that there were higher than usual UTI rates. Therefore, the question was posed whether eliminating UTI rates affects the overall disease rates significantly or not. When excluding UTI disease rates from the overall analysis (including only amoebiasis, intestinal worms, schistosomiasis in stool, schistosomiasis in urine, and malaria) it was found that 51% of health screening participants tested positive for one or more diseases. When comparing these rates to

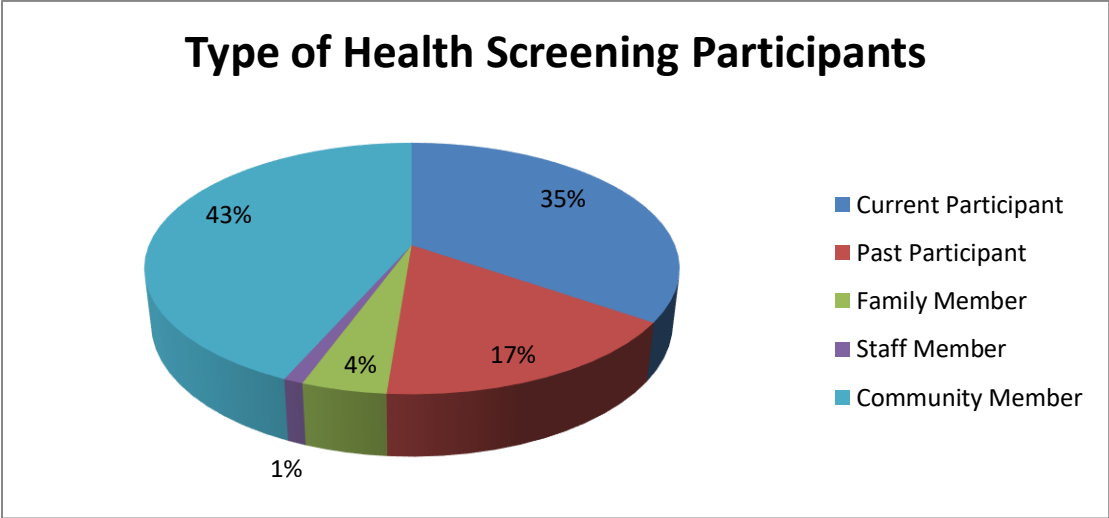
2016 rates (excluding UTIs for both years), it was found that there was an overall 5% decrease in one or more WASH-diseases tested.

When looking at program participants’ disease rates compared to those of non-program participants, the results continually indicated that those exposed to MSG’s education typically have a lower disease prevalence rate. Participant status was categorized in five ways: current program participant (involved in an MSG program within the year), past program participant (involved in an MSG program a year or longer ago), family member (a current or past program participant’s family member), staff (an MSG staff member), and non-program participant (those who have had no exposure to MSG education – described as ‘community member’ in Figure 68). The breakdown of the Health Screening participants’ status is indicated in Figure 68 and Figure 69.

Figure 68: Health Screening Participant Status

Participant Status	Current Participant	Past Participant	Family Member	Staff Member	Non-program participant	Overall Total
Number of Health Screening Participants	1,063	508	133	31	1,331	3,066

Figure 69: Type of Health Screening Participants



As indicated in Figure 70, there is a significant difference between disease rates among MSG program participants (current and past) and non-program participants. The gap between non-program participants and program participants is larger than any other year. These percentages indicate that community members with no exposure to MSG programs or education have a higher percentage of amoebiasis (9%-13% higher), intestinal worms (62% higher), schistosomiasis in stool (36% -37% higher) and schistosomiasis in urine (12%-14% higher) than current and past MSG program participants. Non-program participants had a higher percentage



of positive malaria rates as well (2%). However, non-program participants had a lower percentage rate of UTIs than MSG program participants (6% lower).

These results lead us to believe that those who participate in Maji Safi Group's programs (currently or in the past) have a better understanding of WASH knowledge and can better prevent WASH-related diseases, such as amoebiasis, intestinal worms, and schistosomiasis, than non-program participants who have not had access to MSG education via our different programs. Additionally, while MSG does not put a major emphasis on teaching malaria prevention, disease rates still indicate that MSG program participants have a good understanding of prevention. However, the data also suggest that MSG should improve its UTI education as UTI prevalence rates were the same or higher for MSG program participants than for non-program participants.

The disease rate trends of those who have been exposed to MSG programs compared to those of non-program participants also hold for family members of MSG program participants and staff members. There are higher amoebiasis, intestinal worm, and schistosomiasis rates among non-program participants than among family members and staff. However, there is a lower UTI disease rate among non-program participants than among family members and staff. Malaria rates indicate that family members have a 2% lower disease rate, and staff members have a 25% lower rate than non-program participants. Most likely, family members and staff have lower WASH-disease rates because they are indirectly exposed to MSG education.

Figure 70: 2017 Health Screening Disease Rates

2017 Health Screening Rates	Amoebiasis	Intestinal Worms	Schistosomiasis in Stool	Schistosomiasis in Urine	UTIs	Malaria*
Overall percentage of health screening participants who tested positive	14%	38%	23%	12%	62%	6%
Percentage of current participants who tested positive	11%	12%	8%	6%	65%	4%
Percentage of past participants who tested positive	7%	12%	7%	8%	58%	4%
Percentage of family members of program participants who tested positive	7%	5%	8%	4%	64%	2%
Percentage of staff members who tested positive	13%	0%	4%	0%	87%	7%

<b>Percentage of non-program participants who tested positive</b>	20%	74%	44%	20%	59%	6%
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*\*Note: Only 400 malaria tests were administered in total; therefore, only selected non-program participants and Singing and Dance participants and their family members were tested for malaria.*

As Figure 70 indicates, exposure to MSG education has a significant impact on disease rates. We also wanted to see if the frequency of received MSG lessons had an impact on disease rates. Therefore, we asked health screening participants how many times they had participated in an MSG WASH lesson. The categories they could choose from were: never (they had never had a direct WASH lesson from a CHE), 1-3 times (they had had 1-3 WASH lessons from a CHE), four times (they had had four WASH lessons from a CHE) and 5+ (they had had five or more WASH lessons from a CHE). We chose these frequencies because we always aim to give at least four lessons in several of our programs (Home Visit, Female Hygiene, Male Hygiene, Singing and Dance, Maji Safi Cup, and After School). Figure 71 and Figure 72 show the number breakdown and percentages of the health screening participants who had received MSG's education. Figure 73 indicates that never having had an MSG lesson from a CHE contributes to the highest disease rates. This figure also shows that it is best to have four, five or more lessons from a CHE. Rates indicate that having at least four lessons lowers WASH disease rates among program participants.

*Figure 71: 2017 Number of MSG Lessons Received by Health Screening Participants*

<b>Number of Lessons Received</b>	<b>No Lessons</b>	<b>1-3 Lessons</b>	<b>4 Lessons</b>	<b>5+ Lessons</b>	<b>Total</b>
<b>Number of Health Screening Participants</b>	1,462	489	137	978	<b>3,066</b>

Figure 72: 2017 Percentage of MSG Lessons Received by Health Screening Participants

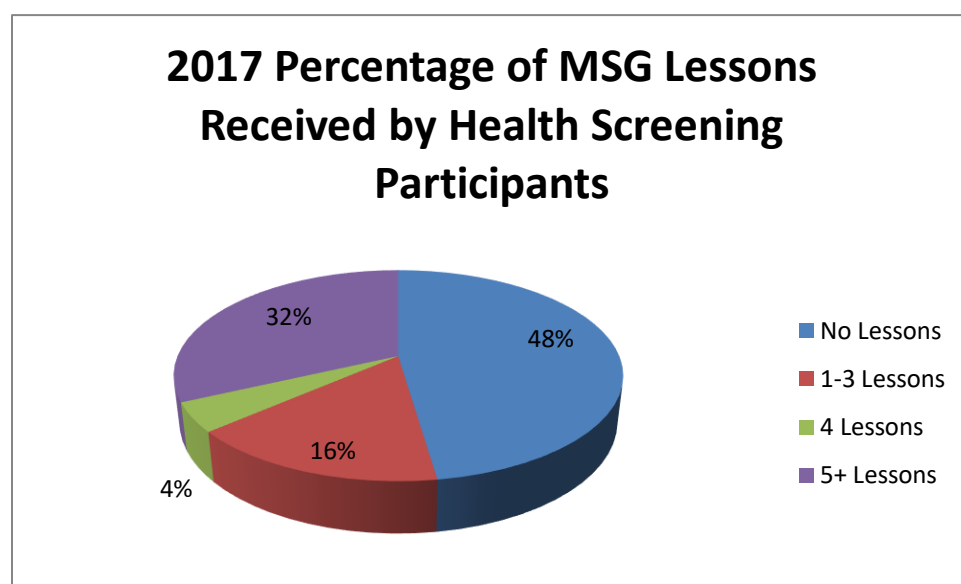


Figure 73: 2017 Health Screening Disease Rates as they Relate to Level of MSG Participation

2017 Health Screening Rates	Amoebiasis	Intestinal Worms	Schistosomiasis in Stool	Schistosomiasis in Urine	UTIs	Malaria
Overall percentage of health screening participants who tested positive	14%	38%	23%	12%	62%	6%
Percentage of health screening participants who had received no MSG lessons and tested positive	19%	68%	40%	19%	60%	8%
Percentage of health screening participants who had received 1-3 MSG lessons and tested positive	14%	18%	14%	11%	62%	4%

Percentage of health screening participants who had received 4 MSG lessons and tested positive	6%	5%	4%	6%	64%	7%
Percentage of health screening participants who had received 5+ MSG lessons and tested positive	8%	9%	6%	5%	64%	5%

### *Maji Safi Group Program Disease Rates*

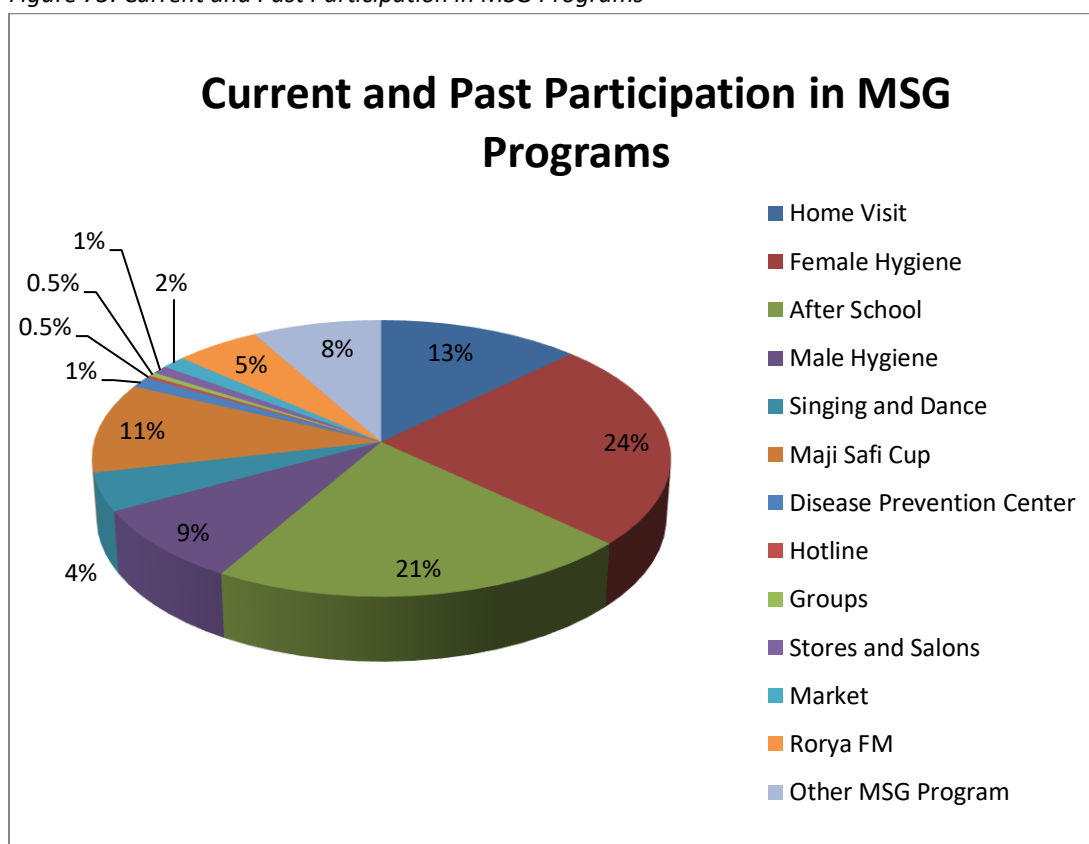
The 2017 Health Screening questionnaire was designed to ask participants if they were current or past program participants. MSG tested 1,571 current and past program participants, which made up 52% of all those tested in 2017. The registration form was also designed to indicate which MSG programs they had participated or were currently participating in. MSG programs included After School, Female Hygiene, Male Hygiene, Singing and Dance, Home Visit, Maji Safi Cup, Disease Prevention Center, Hotline, Outreach with groups, Outreach with stores and salons, Market outreach, Radio show, and Other, such as Emergency Outreach or Health Screenings. It is important to note that 315 health screening participants partook in more than one MSG program. This number indicates that they were currently in more than one MSG program or had participated in a program in the past and were currently participating in another program. As indicated in Figure 74 and Figure 75, the majority of program participants (past and current) came from Female Hygiene (24.3%), then After School (21.3%), followed by Outreach Programs (including Groups, Stores and Salons, Market, Rorya FM and Other MSG Programs) (16.5%), Home Visit (12.7%), Maji Safi Cup (10.6%), Male Hygiene (8.7%), Singing and Dance (4.5%), Disease Prevention Center (1.3%) and Hotline (0.3%).

*Figure 74: Number of Current and Past MSG Program Participants*

Program	Number of Current and Past Participation	Percentage
Home Visit	239	13%
Female Hygiene	459	24%
After School	402	21%
Male Hygiene	164	9%

<b>Singing and Dance</b>	84	4%
<b>Maji Safi Cup</b>	199	11%
<b>Disease Prevention Center</b>	24	1%
<b>Hotline</b>	6	0.5%
<b>Groups</b>	9	0.5%
<b>Stores and Salons</b>	18	1%
<b>Market</b>	28	2%
<b>Rorya FM</b>	101	5%
<b>Other MSG Program</b>	153	8%
<b>Total</b>	<b>1886</b>	<b>100%</b>

Figure 75: Current and Past Participation in MSG Programs



According to Figure 76, all MSG programs participants had lower WASH disease prevalence rates than non-program participants who had not had any exposure to MSG programs: amoebiasis (7%-20% lower – aside from Groups which had 2% higher), intestinal worms (60%-74% lower), schistosomiasis in stool (27%-41% lower) and schistosomiasis in urine (11%-20% lower). Disease rates among the program participants also varied. Amoebiasis rates ranged from 0% positive in the Hotline Program to 22% positive in Groups. Intestinal worm rates ranged from 0% positive in the Hotline Program, Groups, and Stores and Salons to 14% positive in Rorya FM. Schistosomiasis in stool rates ranged from 1% positive in Male Hygiene and Singing and Dance to 17% in Hotline.

Schistosomiasis in urine rates ranged from 0% in the Disease Prevention Center, Groups, and Stores and Salons to 9% in Maji Safi Cup.

When looking at UTI rates, however, it was found that only five of the 13 programs (Other, Stores and Salons, Hotline, Maji Safi Cup, and Singing and Dance) had a lower UTI disease rate than non-program participants. The other programs screened (Home Visit, Female Hygiene, After School, Male Hygiene, Groups, and Rorya FM) were 1%-19% higher than non-program participants. Lastly, we were only able to test Singing and Dance Program participants for malaria, so we do not know the overall disease rates for these program participants.

*Figure 76: Disease Rates among MSG Program Participants*

Health Screening Rates	Number screened	Amoebiasis	Intestinal Worms	Schisto-somiasis in Stool	Schisto-somiasis in Urine	UTIs	Malaria
<b>Overall percentage of health screening participants who tested positive</b>	3066	14%	38%	23%	12%	62%	6%
<b>Home Visit participants who tested positive</b>	239	11%	10%	3%	8%	64%	NA
<b>Female Hygiene participants who tested positive</b>	459	6%	8%	7%	5%	70%	NA
<b>After School participants who tested positive</b>	402	7%	8%	4%	6%	61%	NA
<b>Male Hygiene participants who tested positive</b>	164	9%	4%	1%	8%	60%	NA
<b>Singing and Dance participants who tested positive</b>	84	0%	8%	1%	2%	57%	5%
<b>Maji Safi Cup participants who tested positive</b>	199	8%	7%	9%	9%	58%	NA

<b>Disease Prevention Center participants who tested positive</b>	24	13%	4%	13%	0%	63%	NA
<b>Hotline participants who tested positive</b>	6	0%	0%	17%	0%	33%	NA
<b>Groups participants who tested positive</b>	9	22%	0%	11%	0%	78%	NA
<b>Stores and Salons participants who tested positive</b>	18	11%	0%	6%	0%	50%	NA
<b>Market participants who tested positive</b>	28	14%	4%	4%	7%	61%	NA
<b>Rorya FM participants who tested positive</b>	101	14%	14%	6%	5%	64%	NA
<b>Other MSG Programs (health screenings, emergency outreach) participants who tested positive</b>	153	7%	7%	7%	5%	56%	NA
<b>Non-Program Participants who tested positive</b>	1331	20%	74%	44%	20%	59%	6%

### *Secondary School Results*

MSG collaborated with four secondary schools during the 2017 Health Screening Program, but no primary schools. This is due to the government providing a mass worm and schistosomiasis treatment campaign to all primary schools while we were running our Health Screening Campaign, so we were unable to screen and treat students at primary schools. The four secondary schools have either past program participants from After School or current program

participants from the Male or Female Hygiene Programs. If a school did not currently partner with MSG, the students were screened to compare rates and in hopes to start programs in 2018. This year, we provided health screenings to Tai, Katuru, Sarungi and Raranya Secondary Schools. Figure 77-Figure 79 indicate the number and percentage of students screened this year and the class breakdown.

Figure 77: School Level of Health Screening Participation

School Name	Number of Health Screening Participants	Percentage of School Participation in Overall Health Screening Campaign
Katuru Secondary	522	17%
Tai Secondary	592	19%
Raranya Secondary	378	13%
Sarungi Secondary	378	12%
Non-School participants	1196	39%
<b>Total</b>	<b>3066</b>	<b>100%</b>

Figure 78: Health Screening Participants

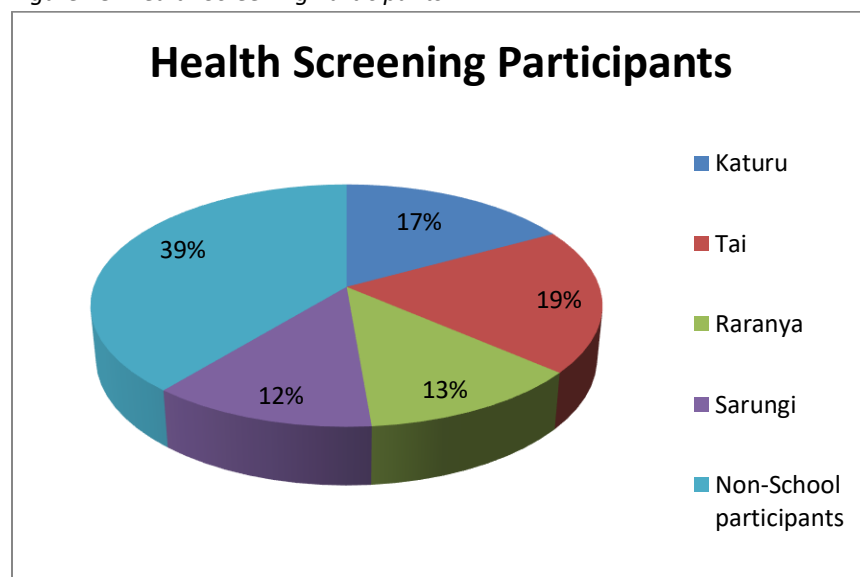




Figure 79: School and Class Breakdown

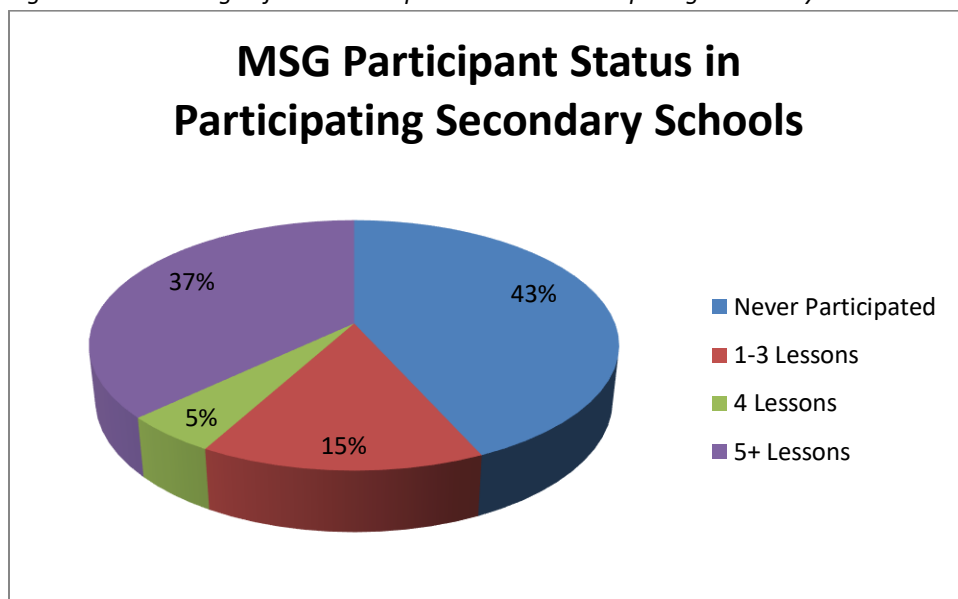
School Name	# of Form 1 Students	# of Form 2 Students	# of Form 3 Students	# of Form 4 Students	# of Parents	# of Teachers	Overall number screened
Katuru Secondary	199	184	69	64	0	6	522
Tai Secondary	211	161	110	105	0	5	592
Raranya Secondary	112	155	63	43	0	5	378
Sarungi Secondary	128	97	75	50	20	8	378
<b>Total</b>	<b>650</b>	<b>597</b>	<b>317</b>	<b>262</b>	<b>20</b>	<b>24</b>	<b>1,870</b>

During data analysis, we also investigated MSG participation levels, broken up into four levels: non-program participants, have completed 1-3 lessons with MSG, have completed 4 lessons with MSG, and have completed 5 or more lessons with MSG. The school headmaster/mistress assigns class grades for MSG to teach during the After School, Male Hygiene and Female Hygiene Programs; therefore, some class levels have not yet received MSG education. Of those who were screened at a school, 57% (1,067 participants) participated in an MSG Program either as a past or current participant, and 43% (803 participants) had yet to receive MSG WASH education. Figure 80 and Figure 81 show a breakdown of the different schools, classes and overall MSG participation level.

Figure 80: MSG Participant Status per School

School Name	# Never participated	# Participated in 1-3 lessons	# Participated in 4 lessons	# Participated in 5+ lessons
Katuru Secondary	72	98	32	320
Tai Secondary	211	101	38	242
Raranya Secondary	261	33	7	77
Sarungi Secondary	265	44	16	53
<b>Total</b>	<b>809</b>	<b>276</b>	<b>93</b>	<b>692</b>

Figure 81: Percentage of MSG Participant Status in Participating Secondary Schools



### Secondary School Demographics

The 2017 Health Screening Campaign was a great opportunity for us to better understand the age and gender demographics of the secondary school students MSG works with. It was found that the average overall age in secondary schools was 17 years, and the gender breakdown was 57% male and 43% female. These rates represent the gender differences you typically find in rural secondary schools in Tanzania. The results are indicated in Figure 82.

Figure 82: Participants' Average Age and Gender

School Name	Average Age	Percentage of Males	Percentage of Females
Katuru Secondary School	16	50%	50%
Tai Secondary School	17	60%	40%
Raranya Secondary School	16	57%	43%
Sarungi Secondary School	17	61%	39%

### Secondary School Disease Rate Analysis

During this Health Screening Campaign, the program participants were screened and tested for amoebiasis, intestinal worms, schistosomiasis in stool, schistosomiasis in urine, and UTIs. Figure 83 shows an analysis of the program participants' water-related disease rates.

Figure 83: Disease Rates per School

School Name	Percentage tested positive for Amoebiasis	Percentage tested positive for Intestinal Worms	Percentage tested positive for Schistosomiasis in Stool	Percentage tested positive for Schistosomiasis in Urine	Percentage tested positive for Urinary Tract Infection
All Health Screening Participants	14%	38%	23%	12%	62%
Katuru Secondary School	10%	15%	13%	9%	58%
Tai Secondary School	11%	40%	30%	12%	65%
Raranya Secondary	17%	46%	23%	15%	62%
Sarungi Secondary	15%	59%	31%	18%	67%

*\*Note: Please note that all percentages were based off only those who produced a stool and/or urine sample.*

Figure 83 illustrates that students from Katuru are the healthiest. This school also has the most MSG program participants because MSG has been working there for the longest of any school. We also found that Raranya Secondary students have the highest amoebiasis rates. Sarungi Secondary students have the highest intestinal worms and schistosomiasis in both urine and stool and UTI rates. Sarungi Secondary only started partnering with MSG within the last year, so only a few students have been exposed to MSG education. Raranya Secondary School has yet to partner with MSG, but we anticipate starting a partnership in 2018. It will be interesting to measure the disease rates for these two new schools next year after the students have received more MSG education. Overall, these statistics indicate that health screening participants generally are healthier if they are being or have been exposed to Maji Safi Group's WASH education. These statistics also indicate that students are healthier the longer their schools partner with MSG.

### Health Screening Discussion

MSG collected extensive information about disease rates during the 2017 Health Screening Campaign, and as they represent the third year in our longitudinal study, these rates are extremely important to assessing the overall impact MSG's lessons are having on WASH behaviors in the community.

Health screening results measure WASH-disease prevalence rates of people who have received MSG WASH education and participated in programs and compare them to disease prevalence rates of new MSG program participants and potential program participants who have never participated in MSG programs. The results continuously prove that there is a lower disease prevalence rate among program participants who have completed MSG's WASH lessons. In 2017, in collaboration with the local and district governments, MSG screened 3,071 community members, focusing on secondary school students. Results indicated that MSG significantly improves the lives of program participants who are exposed to MSG education. It is our hope that we can extend our collaboration with the local and district governments in 2018 to continue to evaluate MSG programs and improve the lives of the people in Shirati. Together, we can provide community-driven education, which is a sustainable intervention model for decreasing WASH-related diseases in rural areas of Tanzania.

However, UTI rates this year were alarming. After discussing this issue with several doctors in the area, we concluded that the lab technicians may be finding false positives in UTI tests because most of the people we screened were dehydrated, causing more skin cells to be present in the urine test. These skin cells created "cloudy" samples, which were misread as UTIs even though the skin cells did not indicate an infection. Therefore, after much consideration, MSG will not be testing for UTIs in future health screenings, as distributing strong antibiotics for false positives is not safe for health screening participants.

It would have been beneficial to us to screen primary school students to compare 2016 rates with 2017 rates. However, since we were unable to screen at primary schools this year due a conflict with governmental mass treatments for intestinal worms and schistosomiasis, we could not assess if our education continuously improves the health in primary school students.

The 2017 Health Screening Campaign was very successful, but there is always room for improvement. MSG recommends the following:

- Plan with the government early in the year what health screening dates would work best for both MSG and the government.
- Add more health screening participants from different locations.
- Work with the government to receive enough malaria tests to screen all our health screening participants.
- Discontinue screening for UTIs to ensure that the program participants stay safe from potential false positives and unnecessary treatments with antibiotics.

## Conclusion

With the financial support from our generous supporters, Maji Safi Group was able to directly teach over 38,000 people lifesaving WASH information in 2017. When we include the radio show, we taught nearly 270,000 people WASH lessons. Overall, we are pleased to see that Maji Safi Group is growing in participation while disease rates of program participants are decreasing. We

are especially pleased with the health screening data that strongly indicate that MSG program participants typically have a lower disease rate than non-program participants without access to MSG's WASH education. We feel well prepared to enter 2018 with a strong management team and 19 CHEs, and we are confident that we can accomplish many of our upcoming goals. In 2018, it is our aim to continue expanding our WASH programs to other areas of the Rorya District and to demonstrate that Maji Safi Group's programs continue to be effective by continuing to work with the government and the community. Additionally, we anticipate making an even larger decrease in waterborne and water-related diseases evident among MSG participants.