

# 2015

## Maji Safi Group Report



A Detailed Analysis of Maji Safi Group's

Programs in 2015

Shirati, Rorya, Tanzania

## Maji Safi Group Overview

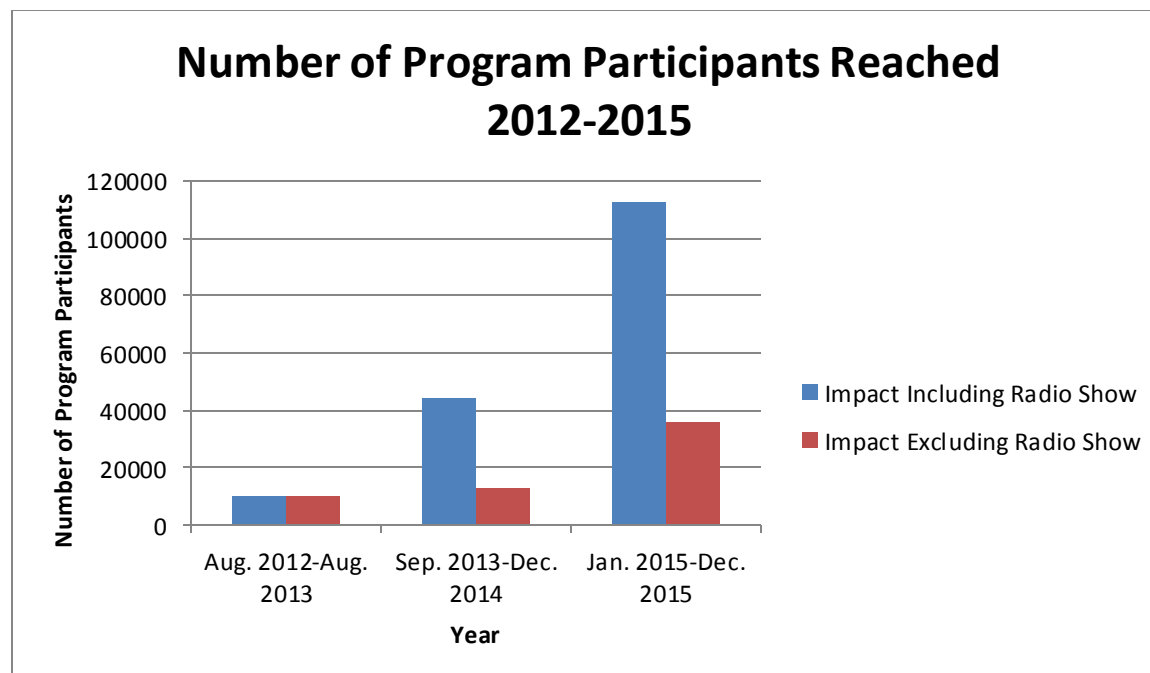
Maji Safi Group, “Clean Water” in Swahili, operates in the Rorya District of Tanzania, an area consisting of farmland and villages on the shores of Lake Victoria in the Mara Region. In the Rorya District, water is taken directly from unprotected sources that are contaminated with human, animal, and industrial 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 District come from water-related and waterborne diseases, such as bilharzia, cholera, and dysentery. To combat this situation, MSG began as a project under the KMT District Hospital in May 2012 to implement prevention-focused programs that reduce the occurrence of waterborne diseases that would otherwise continue to paralyze development.

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 eleven community programs. Our CHEs engage residents through home visits, hospital-based programs, school groups, singing and dancing groups, sports, and other community events (e.g. the local radio station, places of business, and the local markets). These programs touch a wide spectrum of stakeholders such as parents, teachers, health care providers, government leaders, and youth. 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” 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”.

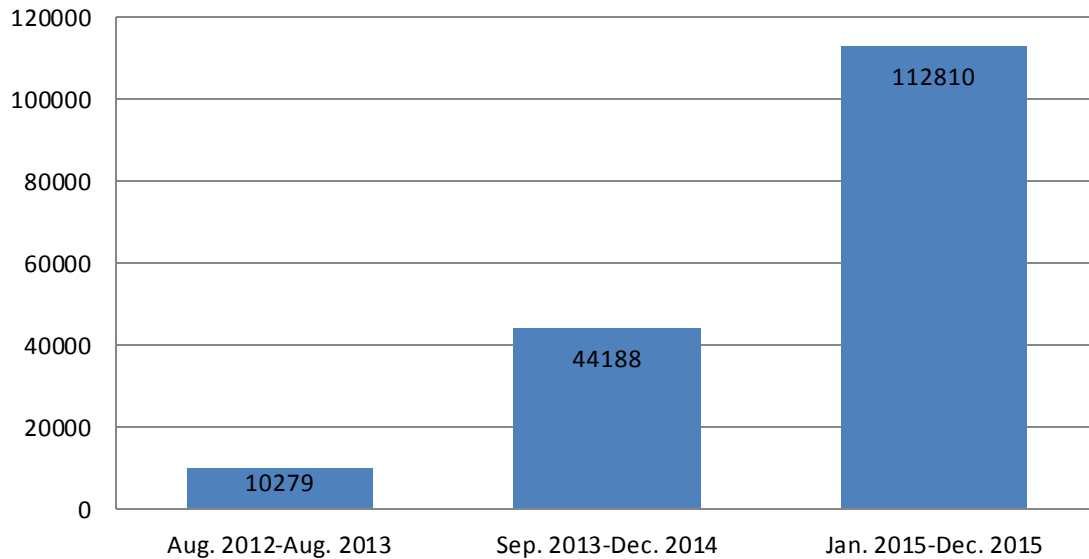
MSG believes that by engaging communities with fun and interactive lessons on disease prevention, participants will have the knowledge and motivation to improve their Water, Sanitation, and Hygiene (WASH) behaviors. Since May 2012, Maji Safi Group has helped local authorities fight two cholera outbreaks and has taught over 75,000 Rorya District 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 = 264,000 Residents Musoma Rural = 178,000 Residents Musoma Town = 134,000 Residents
<b>Year Established</b>	2012
<b>Organization Type</b>	Nonprofit LLC
<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>	11 Programs
<b>Approximate number of Residents Reached through MSG Programs (2012-2015)</b>	194,575 Residents

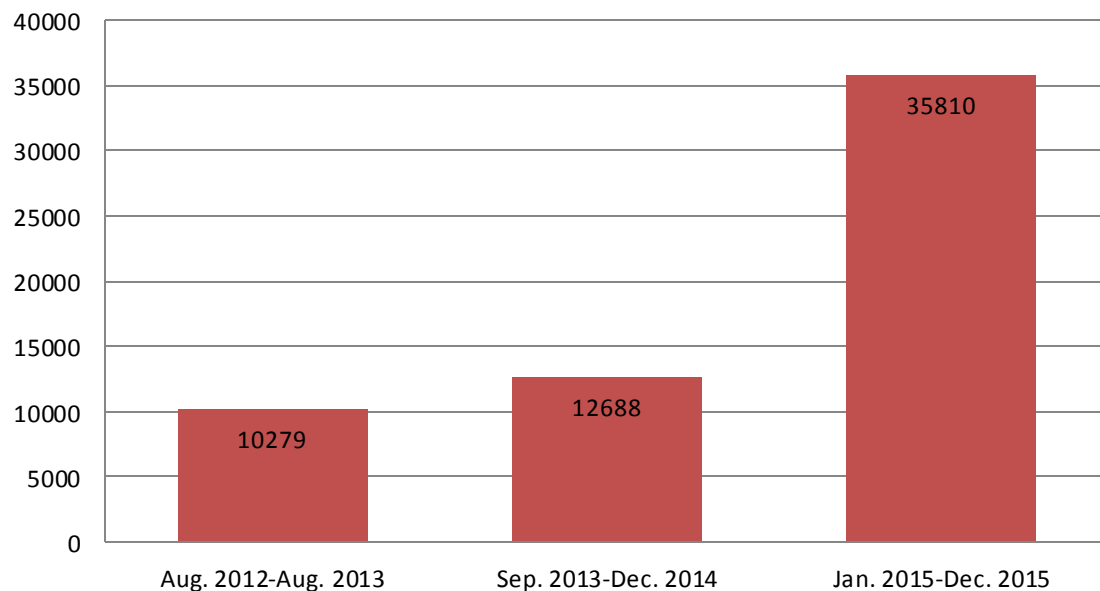
Since 2012, MSG has grown exponentially in all aspects of the organization: staff members, programs, program reach, and program participants.



### **Maji Safi Group's Overall Program Participation Growth (Including the Radio Program)**



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### MSG's IMPACT (2012-2015)

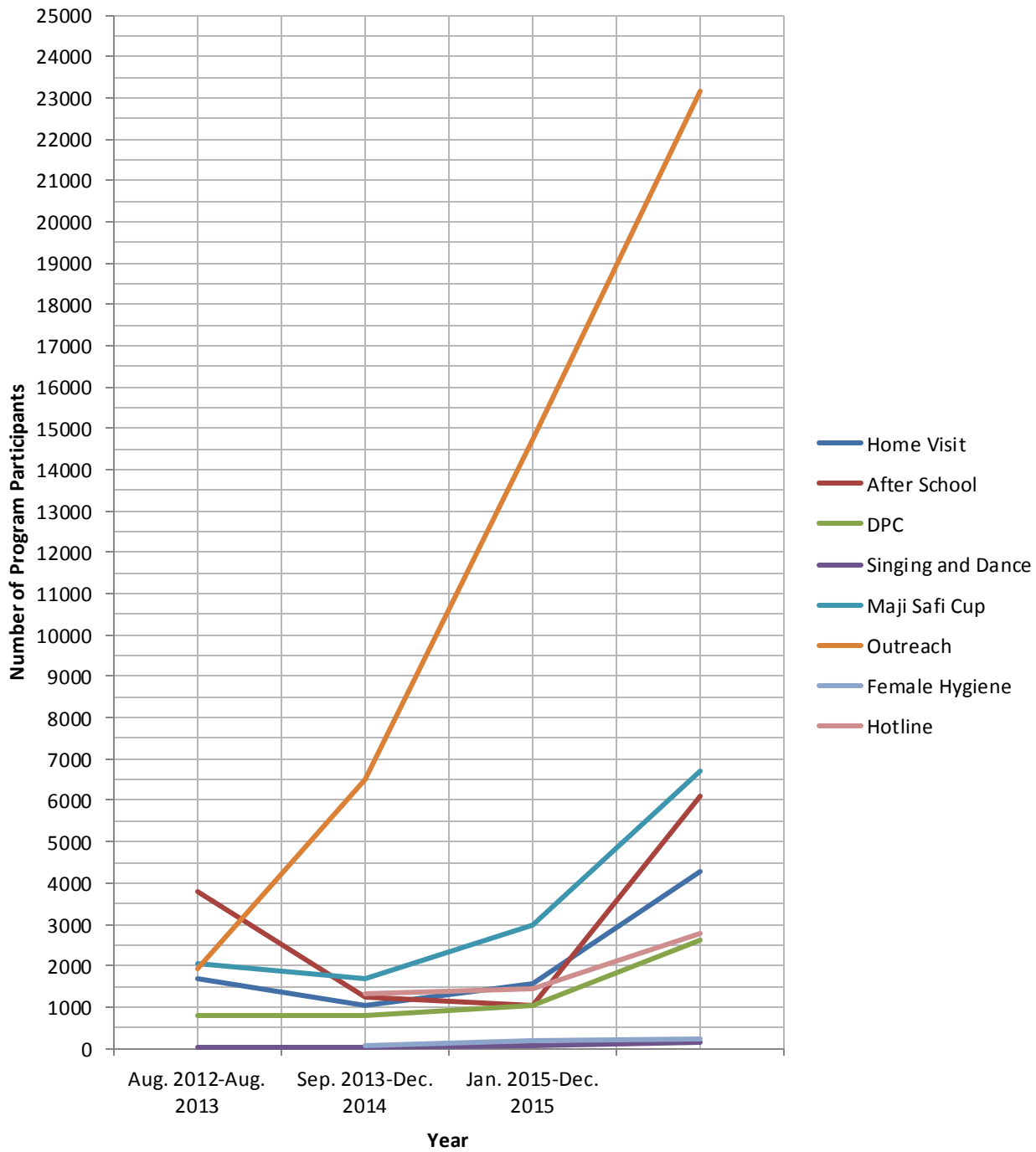
Program/Activity	Number Reached August 2012-August 2013	Number Reached September 2013-December 2014	Number Reached January 2015-December 2015	Total Number Reached Per Program
Home Visit	1,699 Family Members	1,025 Family Members	1,572 Family Members	4,296 Family Members
After School	3,808 Students	1,243 Students	1,035 Students	6,086 Students
Disease Prevention Center (DPC)	791 Visits to DPC	802 Visits to DPC	1,032 Visits to DPC	2,625 Visits to DPC
Singing and Dance Group	42 Program Participants	24 Program Participants	70 Program Participants	136 Program Participants
Maji Safi Cup	2,032 Participants	1,697 Participants	2,981 Participants	6,710 Participants
Outreach (including events, restaurants, market days, stores, and shops)	1,907 Community Members	6,521 Community Members	14,733 Community Members	23,161 Community Members
Female Hygiene	-	50 Program Participants	175 Program Participants	225 Program Participants
Hotline*	-	1,326 Participants	1,450 Participants	2,776 Participants
Radio Show**	-	31,500 Listeners	77,000 Listeners	108,500 Listeners
Health Screenings	-	-	3,060 Screened	3,060 Screened
Cholera Outreach***	-	-	9,702 Participants	9,702 Participants
<b>Total Reached each year</b>	<b>10,279 Community Members</b>	<b>44,188 Community Members</b>	<b>112,810 Community Members</b>	<b>Overall Total: 167,277 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.

\*\*\*In 2015, MSG assisted with two cholera outbreaks: March-April 2015 and December 2015-February 2016. The cholera outbreak continued into 2016. Only data from 2015 are indicated in the chart.

## Growth in Program Participation 2012-2015



## 2015 Overview

In 2015, Maji Safi Group Tanzania was able to accomplish many goals with the financial assistance from Maji Safi Group US. MSG was able to expand its programs to reach more community members. Overall, MSG directly taught 35,824 Rorya District community members lifesaving WASH lessons, while the total reach was 112,810 community members if you include the MSG disease prevention radio show.

MSG increased our total number of partners during 2015, most significantly TAWASANET (Tanzania Water and Sanitation Network) and the village and district councils. In the beginning of 2015, the District Education Officer granted MSG permission to work at all government primary schools in the Rorya District (126 schools). Therefore, MSG has been able to expand its reach with its After School Program and Female Hygiene Program. Concurrently, MSG has partnered with the local and regional governments during two cholera outbreaks. The Rorya District Health Officer has said, “MSG is [the government’s] biggest partner with WASH-related work in the District.”

In 2015, MSG started two new programs: Cholera Outreach and Health Screenings. These programs were established to reach vulnerable populations in the Rorya community while also developing new ways to measure the impact and success of our programs. Additionally, MSG programs are now running more efficiently and effectively with our newly hired Programs Manager and with the administrative and M&E improvements made within the office.

Our participatory model has gained acceptance in the community, and our monitoring and evaluation results indicate that the Shirati community is changing its WASH behaviors and becoming healthier, especially program participants and participants’ families that have worked with MSG throughout the years. To further demonstrate the success of our programs and WASH education, MSG conducted its first health screenings of program participants and community members in 2015. With help from local health authorities, MSG used blood, urine and stool samples to screen for the occurrence of waterborne and water-related diseases, including malaria, bilharzia, amoeba, intestinal worms, and urinary tract infections (UTIs). If the participants tested positive, they received medicine to treat any infections free of charge. To thoroughly document the effect of our work, we tested 903 program participants from our After School Program, Home Visit Program, Singing and Dance Group, and Female Hygiene Program and compared the results to 2106 Shirati residents in a control group from primary schools and the community. Data from the 2015 health screenings indicate that the disease rates among MSG participants were lower than disease rates in the control group.

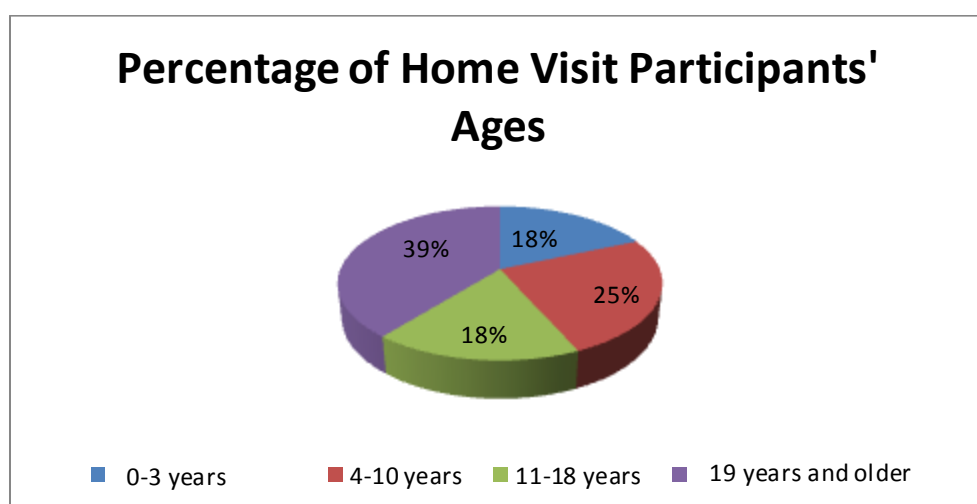
The rest of this report gives a detailed analysis of each program explaining the program’s reach, successes and opportunities for improvement.

## Home Visit Program

The Home Visit Program was MSG's first program, starting in August 2012. From the beginning, teaching women, 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 the comfort of their own home. During the non-farming dry season, CHEs conduct home visits with local families. During their first visit, they conduct intake assessments of the families to assess their current WASH and health situation. Three 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 CHE finishes teaching the MSG curriculum, he or she conducts a post assessment with the families to measure their WASH behavioral changes. Post assessments are conducted within 18 months of the first set of WASH lessons and/or followed up by calling participants on the MSG Hotline.

In 2015, MSG visited 264 families in the Home Visit Program. This information excludes families that were visited during the cholera outbreak. These families were broken up into two groups: 174 that were visited for the first time and went through the MSG WASH lessons for the first time and 90 families MSG revisited from 2012-2014 to assess if the families were changing their WASH behaviors at home. Throughout the year, we compared families that received MSG lessons in 2015 to families that received MSG lessons prior to 2015. In future analysis, the new method of intake and post assessment can be linked to individual families to measure change on a family level. This report will only provide a general overview of 2015 family intake and post assessments.

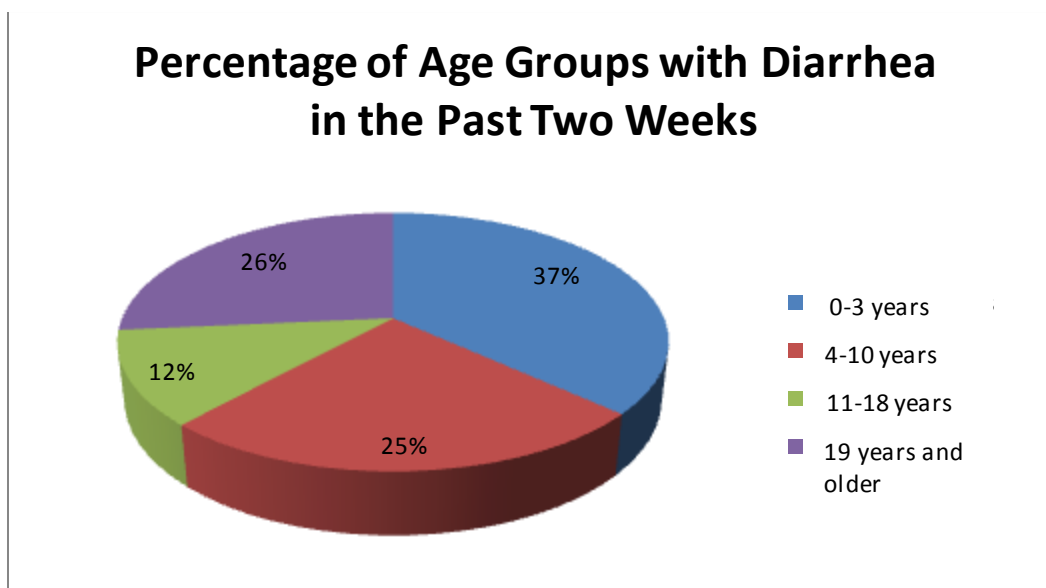
The 174 families who participated in the MSG Home Visit Program for the first time had 905 members. These families consisted of 51% males and 49% females. The average family had 5.2 people. The age groups within these families were broken up into 0-3 years, 4-10 years, 11-18 years, and 19 years and older. The percentage break down is charted below.



Intake assessments also included how many family members had had diarrhea in the past two weeks. Overall, 8% of family members had had diarrhea in the past two weeks. The highest



percentage of diarrhea rates came from children ages 3 years and younger. The diarrheal rates per age groups are shown below.



The chart below is a comparison between program participants' intake and post assessment answers. The analysis suggests that families are improving their WASH behavioral habits after receiving MSG WASH education. However, for two questions, the families regressed (Question 5: Does the family cover their food? Question 6: Does the family use soap and treated water to wash their dishes?). This indicates that MSG needs to spend more time on these lessons when visiting families.

Question Asked	Family Answer	Intake Assessment Percentage	Post Assessment Percentage
1. Does the family filter their drinking water?	Yes	61%	78%
	No	16%	17%
	Unanswered	23%	5%
2. At which important times does the family wash their hands?	Before Food Prep	49%	57%
	Before Eating	98%	96%
	Before Feeding Babies	42%	62%
	After Defecation	79%	93%
	After Cleaning up after Babies Defecate	32%	66%
3. Does the family treat	Yes	34%	37%

their hand washing water?	No	65%	62%
	Unanswered	1%	1%
4. Does the family use soap when washing their hands?	Yes	58%	75%
	No	39%	23%
	Unanswered	3%	2%
5. Does the family cover their food?	Yes	97%	83%
6. Does the family use soap and treated water to wash their dishes?	Yes	22%	11%
	No	69%	86%
	Unanswered	9%	3%
7. Does the family have a bathroom?	Yes	66%	76%
	No	31%	21%
	Unanswered	3%	3%
8. Does the family use their bathroom?	Yes	64%	79%
	No	29%	17%
	Unanswered	7%	4%
9. Type of bathroom	Improved Pit	22%	41%
	Pit	55%	42%
	Bushes	11%	14%
	Digging Hole	12%	3%
10. How does the family dispose of trash?	No means of disposal	17%	1%
	Burning	32%	51%
	Pit	41%	35%
	Trash Pile	10%	13%
11. Does the family have good personal hygiene?*	Yes	93%	94%

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

### *Home Visit Discussion*

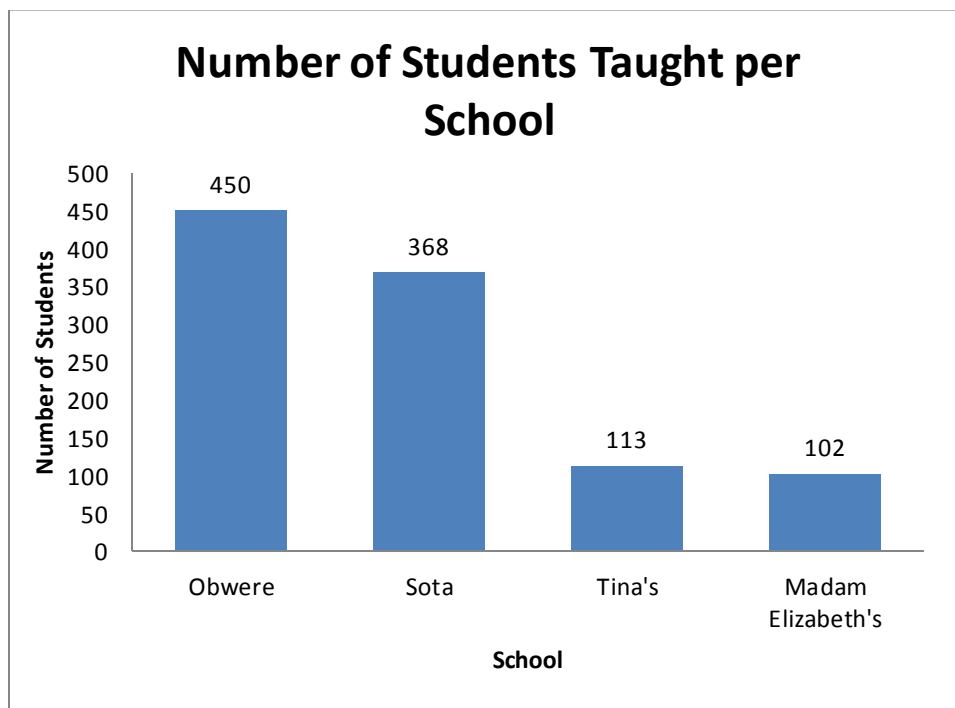
The Home Visit Program continues to be an important and impactful MSG program. Program participants continuously say that MSG's education has helped their families change their WASH behaviors and protect their families from waterborne and water-related diseases. Revisiting families showed MSG where the program's strengths are and areas that can be improved. It is encouraging to see the data reflect an improvement of the families' WASH behaviors in the core MSG WASH lessons about water treatment, hand washing during critical times, and toilet use.

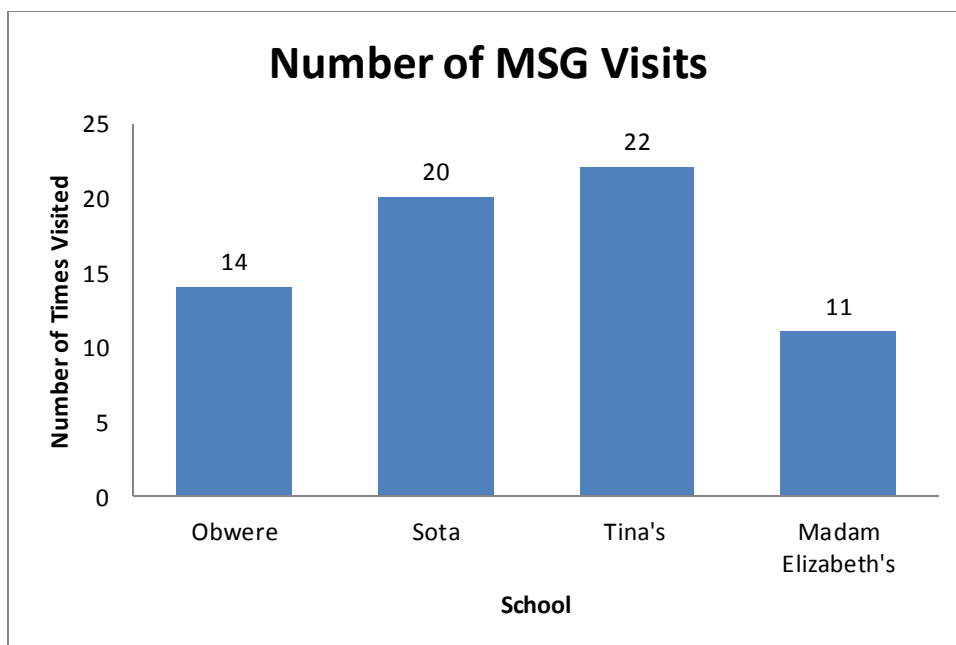
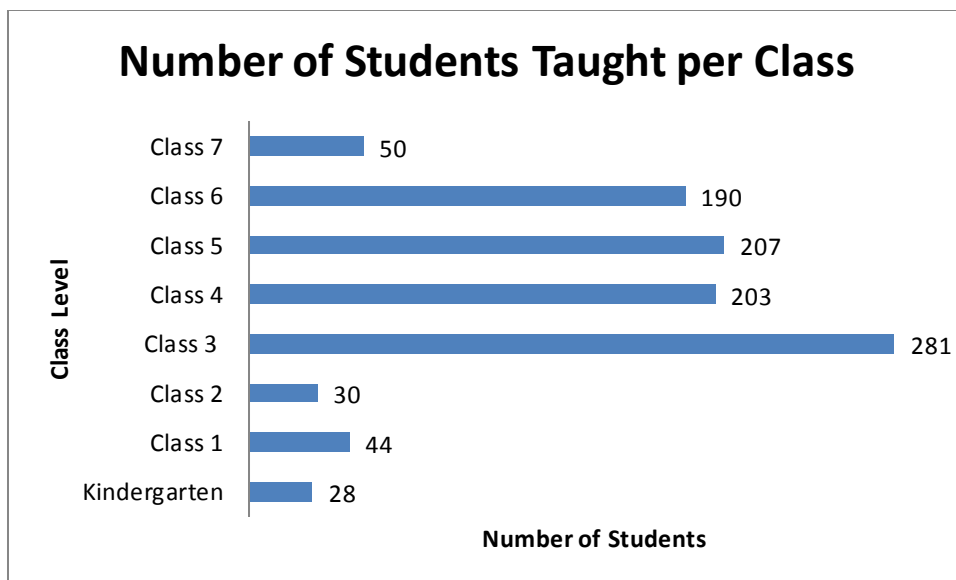
While we continue to strengthen this program via improved WASH lessons and data collection, there are still areas where it could be improved. Firstly, the data clearly illustrate that MSG could improve lessons on treating all water, not just drinking water, and covering food. Additionally, next year's data will enable us to examine each family's individual changes more closely due to new M&E methods. This analysis will give a more accurate picture of the WASH behavioral changes people are making as a result of MSG education. Lastly, due to the cholera outbreak, MSG was not able to reach as many families as planned with the Home Visit Program, nor able to continuously give lessons to families. Next year, it will be important to set aside ample time to give each family 2-4 lessons to complete the WASH education and show the greatest impact in WASH behavioral change. Additionally, we could improve this program by getting village leaders involved and having Home Visit families in the same neighborhood come together and explain what has or has not worked.

## After School Program

The After School Program started in 2012 and was 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 and ceramic drinking water filters to enable proper WASH techniques at the school.

Since starting this program in 2012, MSG has had a presence in 11 different primary schools, reaching over 6,000 students. One of the greatest successes of 2015 came when the District Education Officer granted MSG permission to work in all 126 primary schools in the Rorya District. It is now 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 2015, MSG focused on providing MSG education to four different schools – two government primary schools (Sota Primary School and Obwere Primary School) and two private primary schools (Madam Elizabeth's and Tina's Education Center). In total, MSG taught 1,035 students from kindergarten to class 7. CHEs taught 67 times throughout the year. These schools were chosen for partnership based on their interest in MSG and their willingness to continue MSG education after the lessons were completed.





Below is a summary of each school's results.

#### **Madam Elizabeth's Primary School**

Madam Elizabeth's is a private primary school that started partnering with MSG in 2014. In February 2015, MSG completed teaching WASH lessons at Madam Elizabeth's. It was then decided that it would be more constructive to have MSG's CHEs teach older students for the rest of the year. Therefore, MSG decided to focus on students in Class 3 and higher. However, while at Madam Elizabeth's, MSG taught kindergarten through class 2 for a total of 102 students. An average class size was 30 students with the highest number of students in a class being 41 students and the lowest number of students in a class being 22 students. See the summary of each class below.

### Madame Elizabeth Primary School Schedule

Date	Class	Number of Students Taught	Lesson Taught
22-Jan-15	Kindergarten	23	MSG Songs
22- Jan-15	1	36	Steps of Hand Washing
29- Jan-15	Kindergarten	24	Hand Washing
29-Jan-15	1	34	Personal Hygiene
29- Jan-15	2	28	Hand Washing
5-Feb-15	Kindergarten	22	Personal Hygiene
5-Feb-15	1	41	Personal and Dental Hygiene
5-Feb-15	2	27	Personal Hygiene
12-Feb-15	Kindergarten	25	Personal Hygiene
12-Feb-15	1	40	Open Defecation
12-Feb-15	2	29	Open Defecation

### **Tina's Education Center – Private Primary School**

MSG has had a partnership with Tina's Education Center since 2012. Tina's students from class 3 and class 5 were taught in the beginning of the year and then at the end of the year. These classes were assigned to MSG by the school. In total, MSG taught 113 students. The average class size was 40 students with the highest number of students being 64 students and the lowest number of students being nine students. Over the year, MSG taught 11 times in each class.

During the instruction period, the students took two tests to measure their understanding of WASH knowledge. The highest test score from Tina's was from a student in class 5 who received a score of 100%. The highest test score from a student in class 3 was 96%. We found that there was an increase of 4.5 percentage points with the second test in class 3 and an increase of 14 percentage points with the second test in class 5. This shows that there was an improvement as the students continued to learn. Class 5 students were able to attain more WASH knowledge than class 3. Out of all the schools where we taught the After School Program, Tina's Education Center performed the best on evaluation examinations.

### Tina's Education Center Schedule

Date	Class	Number of Students Taught	Lesson Taught
21-Jan-15	3	61	Fecal Oral Disease Cycle
22-Jan-15	5	9	Fecal Oral Disease Cycle
29-Jan-15	5	34	Test
2-Feb-15	3	51	Test
5-Feb-15	5	9	Test Review
11-Feb-15	3	64	Test Review
12-Feb-15	5	36	Open Defecation
11-Aug-15	3	59	Bilharzia
20-Aug-15	5	28	Bilharzia and Personal Hygiene
26-Aug-15	3	63	Bilharzia
16-Sep-15	5	32	Bilharzia Cycle
16-Sep-15	3	50	Open Defecation
17-Sep-15	3	51	Open Defecation
17-Sep-15	5	31	Bilharzia
30-Sep-15	3	56	Personal Hygiene
30-Sep-15	5	28	Personal Hygiene
1-Oct-15	3	53	Dental Hygiene
7-Oct-15	5	32	Hand Washing
8-Oct-15	5	40	Water Treatment
15-Oct-15	All Classes	275	Global Handwashing Day
11-Nov-15	5	24	Test Review: Personal Hygiene, Open Defecation, Water Treatment
12-Nov-15	3	49	Test Review: Personal Hygiene, Open Defecation, Water Treatment
23-Nov-15	5	27	Test
23-Nov-15	3	52	Test

### **Sota Primary School**

MSG has collaborated with Sota Primary School since 2014. After MSG's first Health Screening campaign, MSG started revisiting Sota Primary School from September 2015 to December 2015. MSG's education reached 318 students from class 3 through class 7. The average class size was 52 students. Each year, MSG tests its students' WASH knowledge. Out of all students at Sota Primary school, the highest test score was from a student in class 6 who received a score of 95%. The higher the class level, the higher the average test scores. We also found that

the overall test averages from government schools were much lower than the averages from private schools. There are several factors that could potentially contribute to this: more children per classroom or fewer WASH lessons learned. We will continue teaching students at Sota Primary School WASH lessons in 2016.

#### Sota Primary School Schedule

Date	Class	Number of Students Taught	Lesson Taught
21-Aug-15	5	50	Bilharzia
21-Aug-15	6	43	Bilharzia
21-Aug-15	7	50	Bilharzia
18-Sep-15	3	58	Bilharzia
18-Sep-15	4	65	Bilharzia
18-Sep-15	5	57	Bilharzia
25-Sep-15	4	74	Bilharzia
25-Sep-15	5	53	Bilharzia
25-Sep-15	6	47	Bilharzia
2-Oct-15	4	61	Bilharzia
2-Oct-15	6	46	Bilharzia
13-Nov-15	6	35	Fecal Oral Disease
20-Nov-15	3	63	Test
20-Nov-15	5	77	Test
20-Nov-15	6	61	Test
20-Nov-15	4	53	Test
27-Nov-15	3	49	Return Test
27-Nov-15	4	14	Return Test
27-Nov-15	5	48	Return Test
1-Dec-15	6	43	Test Review

#### **Obwere Primary School**

MSG first taught at Obwere Primary School in 2013. Since then, the students who were taught have graduated. Obwere Primary School participated in the first Health Screening Campaign in August, and then the After School Program was reestablished. MSG taught 450 students from Obwere Primary School from class 3 through class 6. The average class size was 73 students. Obwere had the highest number of students per classroom, which may have contributed to their low WASH knowledge test scores. The highest test score was a 94 from class 5 and class 6.



### Obwere Primary School Schedule

Date	Class	Number of Students Taught	Lesson Taught
22-Sep-15	3	123	Disease Prevention
22-Sep-15	6	99	Disease Prevention
29-Sep-15	4	115	Personal Hygiene
29-Sep-15	6	99	Personal Hygiene
6-Oct-15	4	115	Hand Washing
6-Oct-15	5	85	Hand Washing
13-Oct-15	3	90	Hand Washing
13-Oct-15	6	95	Hand Washing
10-Nov-15	3	61	Lesson Review: Personal hygiene, hand washing and disease prevention
10-Nov-15	4	70	Lesson Review: Personal hygiene, hand washing and disease prevention
10-Nov-15	5	50	Lesson Review: Personal hygiene, hand washing and disease prevention
27-Nov-15	3	89	Test
27-Nov-15	5	35	Test
27-Nov-15	6	68	Test

### *After School Discussion*

In 2015, MSG reorganized the After School Program, making it more effective. Each class level now receives 3-5 WASH lessons before the students take a test. The students are able to learn and retain the knowledge better than in previous years. This means that MSG is reaching fewer children in the After School Program, but it also means that the children are retaining the lessons better as indicated by the increase in the students' WASH test scores.

Recommendations for a successful After School Program in 2016 include:

- Getting more involved with district-wide sports events as a way to reach students we do not normally visit.
- Having the same two CHEs teach the same class each week. This will help the students get to know their teachers better, and the CHEs will know the students and which lessons they already understand or need to repeat.

- Giving every student a notebook to keep notes to help retain the lessons.
- Starting Health Clubs, so the students and teachers can continue the program even if MSG leaves.
- Setting up a system to identify and train teachers, parents and students who will be in charge of the School Health Clubs.
- Expanding the program only after the initial schools have received the lessons, and the students have a good knowledge of the WASH lessons.
- Incorporating more arts and games into the program to make learning more fun.
- Inviting the Singing and Dance Group to perform songs and dances after tests.

## Singing and Dance Program

The Singing and Dance Program started in 2012, which makes it one of MSG's original 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 the children remember these important WASH lessons. Ages of program participants range from 5-12 years old.

In the beginning of 2015, there were 26 program participants. By December 2015, the Singing and Dance Group had 70 program participants that attended the program at least once. That is an increase of 46 new program participants during 2015.

On average, 17 participants came to a Singing and Dance meeting, with the lowest number of participants being two and the highest number of participants being 65.

During the year, MSG's Singing and Dance Group met 44 times. The Singing and Dance Group did not meet every month due to outside factors (e.g. two cholera outbreaks, health screenings, the Tanzanian Presidential election, and outreach programs). In a typical week, the group met twice.

The Singing and Dance Group participated in six performances: two performances for the Shirati's Got Talent event, one for Day of the African Child, one for Miss Maji Safi, one for Global Handwashing Day, and an end-of-the-year celebration.

- **Shirati's Got Talent:** In 2015, MSG hosted its first ever Shirati's Got Talent event, which attracted close to 2,000 people. This event provides the opportunity for local talent to showcase their skills while providing a platform for health education to reach large numbers of community residents.
- **Day of the African Child:** The Day of the African Child is a day dedicated to children in Africa. This year, MSG was asked by the Mennonite church to participate in this event, which attracted close to 700 children.
- **Miss Maji Safi Event:** Each year, the MSG Female Hygiene Program hosts the Miss Maji Safi event. This event gives Female Hygiene Program participants the opportunity to

showcase the knowledge they have learned over the year and perform in front of the Shirati community.

- **Global Handwashing Day:** The Singing and Dance Group was asked by MSG to participate by performing original songs, dances and poems about disease prevention and stopping open defecation. In 2015, this event attracted over 450 community members.
- **End-of-the-year Celebration:** At the end of 2015, the Singing and Dance Group held a party to celebrate the participants' accomplishments for the year. The party started with songs, dances and skits that the group's participants had learned in 2015. The new songs and skits were about WASH lessons such as hand washing, water treatment, and stopping open defecation. The participants demonstrated a high level of understanding of WASH knowledge. Each participant who consistently had attended the Singing and Dance Group received three notebooks, a pen, and a pencil for school.

[Singing and Dance Schedule](#)

Time Period	Number of Times Met during the Week	Total Students	Total New Students	Lesson(s) Taught
2 <sup>nd</sup> week of January	1	10	0	Distribution of pens and notebooks for class
3 <sup>rd</sup> week of January	2	16	1	Prepare for event; art project
4 <sup>th</sup> Week of January	2	23	1	Practice
5 <sup>th</sup> week of January	2	39	2	Practice
1 <sup>st</sup> week of February	3	39	4	Practice; hand washing; Shirati Wanavipaji event
2 <sup>nd</sup> week of February	3	61	2	Practice; Shirati Wanavipaji event
1 <sup>st</sup> week of June	2	39	11	Create songs; skits
2 <sup>nd</sup> week of June	2	23	0	Create songs; disease prevention
3 <sup>rd</sup> week of June	2	31	0	Day of the African Child; songs
4 <sup>th</sup> week of June	2	11	0	Personal hygiene; cleaning the environment
1 <sup>st</sup> week of July	2	20	0	Create songs; skits
3 <sup>rd</sup> week of August	2	17	0	Create songs; skits

<b>4<sup>th</sup> week of August</b>	1	7	0	Create songs
<b>1<sup>st</sup> Week September</b>	2	23	3	Bilharzia prevention
<b>2<sup>nd</sup> Week September</b>	2	17	3	Disease prevention
<b>3<sup>rd</sup> Week September</b>	2	26	0	Creating new songs and poems
<b>1<sup>st</sup> Week October</b>	2	74	0	Stopping open defecation Performed during the Miss Maji Safi Event
<b>2<sup>nd</sup> Week October</b>	1	29	1	Performed during Global Handwashing Day
<b>1<sup>st</sup> Week November</b>	2	23	3	Hand washing and bilharzia
<b>2<sup>nd</sup> Week November</b>	2	47	5	Drawing activity for INTERTEAM
<b>4<sup>th</sup> Week November</b>	2	35	3	Cleaning the environment
<b>1<sup>st</sup> Week December</b>	2	45	0	Worms
<b>2<sup>nd</sup> Week December</b>	1	28	0	End-of-year celebration

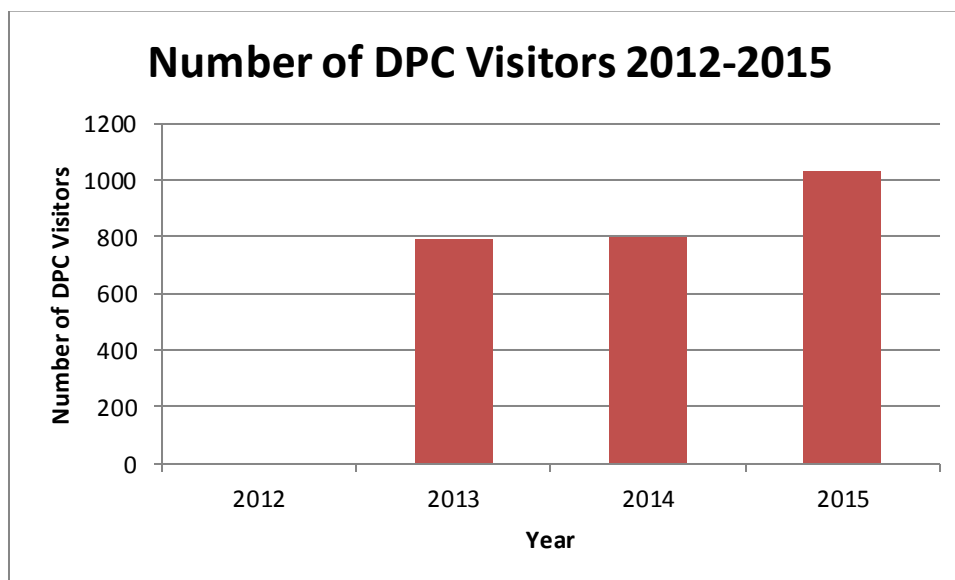
### *Singing and Dance Discussion*

The Singing and Dance Group was very successful in 2015. The program gained 46 new members, and the group was able to perform in front of their peers and community members. Future recommendations include:

- Start a troop for older kids (12 years and older). This troop can help teach the younger children.
- When we had to shut the Singing and Dance Program down for cholera and health screenings, we lost program participants. We need to find ways to incentivize program participants to continue coming to the Singing and Dance Program.
- We need to test the participants' knowledge on WASH to see what they are retaining.
- Involve their parents more in 2016 to connect their households to the program.
- Evaluate how program participants perform in school compared to other students who do not participate in the Singing and Dance Program.

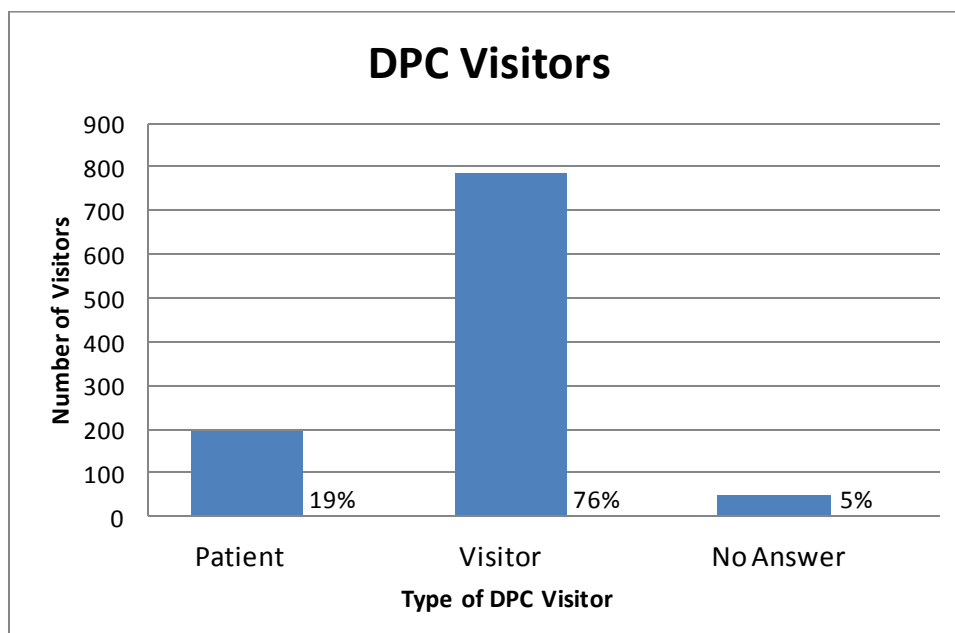
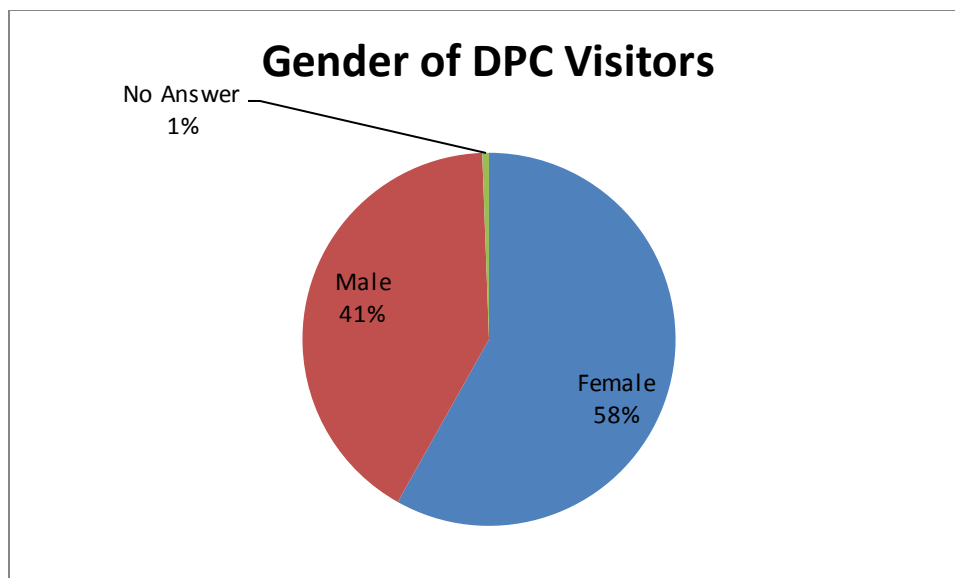
## Disease Prevention Center

The Disease Prevention Center (DPC) started in 2012, which makes it one of MSG's original programs. The goal of this program is to provide a disease prevention education option at the hospital. The DPC is located at the Shirati KMT District Hospital's visitor center. This program provides health education in the form of demonstrations of proper hygienic behaviors, oral lessons, written materials, and interactive worksheets the visitors keep as a reminder of the lesson. Education is given to patients, people visiting patients, and hospital staff. Visitors to the DPC learn about disease transmission, avoiding diseases in the future, and why preventing disease is more economical than treating disease. After disease prevention lessons, they are asked questions to monitor their demographics, knowledge of WASH, and familiarity with MSG. This program reaches people from far away because the KMT Hospital is where patients from the entire Rorya District are treated. Since starting this program, we have seen a steady increase of visitors to the DPC, as indicated in the chart below.



### *DPC Demographics*

In 2015, the DPC was open for 104 days (31% of working days of the year), and 1,032 people visited. On average, the CHEs saw 10 people per day. This number would vary from one person to 36 people depending on the time of year. Approximately 58% were women, 41% were men, and 1% did not answer the question, as shown in the chart below. The average age of DPC visitors was 36, ranging from 6 years old to 85 years old. The majority of DPC participants were visiting someone in the hospital (76%), as shown in the second chart below. Of those who visited the DPC, 249 people were repeat visitors.

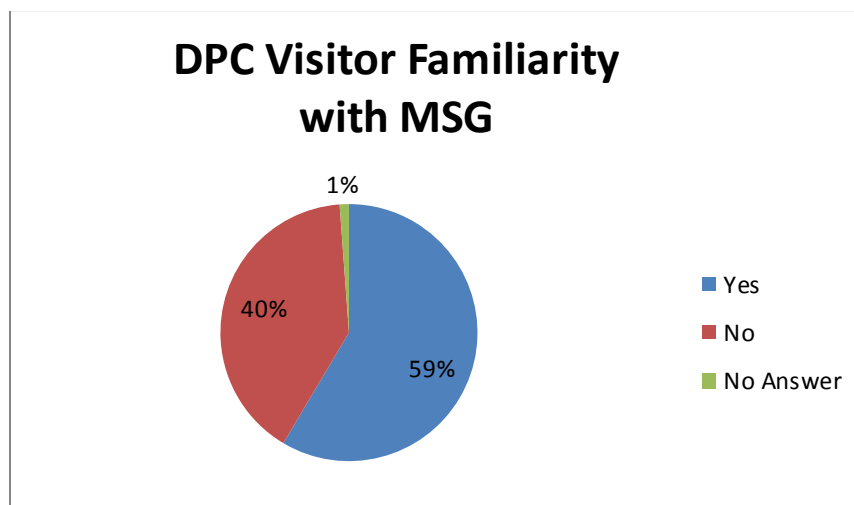


Participants are asked five questions when they visit the DPC: 1. Have they heard of MSG before? 2. Have they participated in an MSG program? 3. Do they treat their water before they use it? 4. Do they know where to get WASH products? 5. Do they have someone in the household under the age of three who has had diarrhea in the past two weeks? The garnered information enables MSG to track who participates at the DPC and what is needed to improve public health and behavior patterns the Shirati community. In future years, we will compare this analysis to this year's benchmarks to see how MSG education is affecting the community.

### ***DPC Questions:***

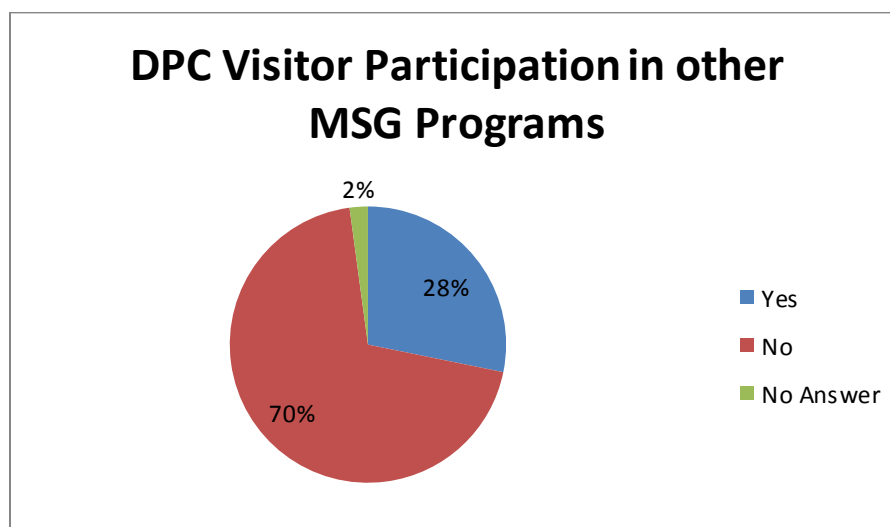
#### **1. Have they heard of MSG before?**

Of those we educated at the DPC in 2015, 59% of the visitors (604 people) had heard of MSG before, while 40% had never heard of MSG. The majority of the participants had heard of MSG through Rorya FM, market outreach, or previous visits to the DPC. Other ways visitors had heard of MSG was through church, MSG's After School Program, MSG's hotline, announcements, the government, MSG's Singing and Dance Program, Population Services International (PSI), by seeing the MSG office in town, or by seeing MSG T-Shirts.



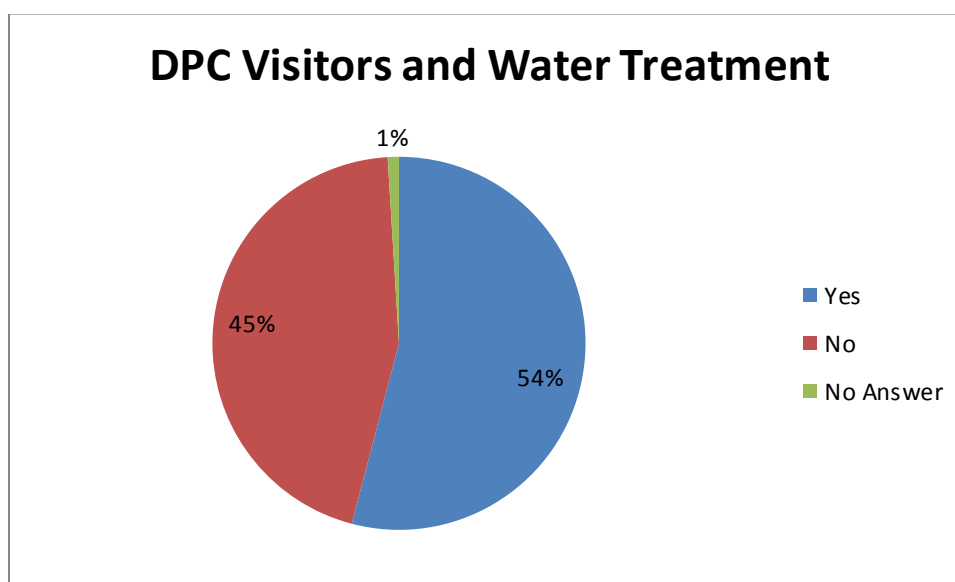
#### **2. Have they participated in an MSG Program before?**

We found that only 28% (291 people) of DPC visitors had participated in an MSG program. We found that the majority had participated in Rorya FM, DPC, and/or market outreach. Other programs that visitors had participated in were the Home Visit, Hotline, Maji Safi Cup, Singing and Dance, or After School. Additionally, some participants had visited MSG's Office.



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

We found that 54% (558 people) reported that they treat their water before they use it. That leaves 45% who did not treat their water before use, but now understand the importance of water treatment. The majority treat their water by boiling it. Only 45 people stated that they use WaterGuard (chlorine tablets) to treat their water. We also found that 17% of those who do not treat their water have already received MSG education. This percentage shows that the majority of residents who do not treat their water had never received MSG education before.

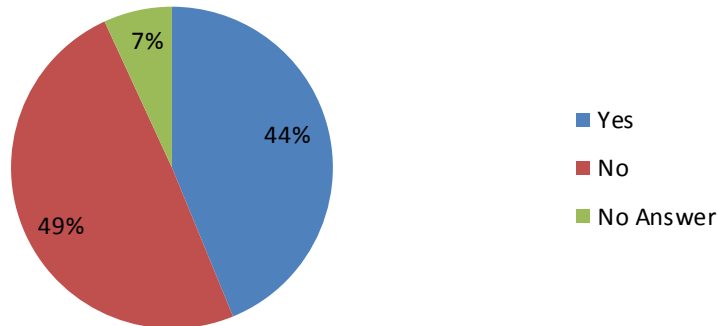


### 4. Do they know where to get WASH-related products?

We asked the DPC visitors if they knew where to get WASH-related products. We found that only 44% (453 people) knew where they could buy WASH-related products; 49% did not know where to find WASH-related products. However, only 22% of those who did not know where to get WASH-related products were previous MSG program participants. That means that MSG program participants are much more familiar with this information than those who have not yet attended an MSG program.



## DPC Visitors and Knowing Where to Get WASH Products



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

We found that 29% of DPC visitors had a child under three who had had diarrhea in the past two weeks. Only 25% of previous MSG program participants had had a child under three with diarrhea. This indicates that MSG program participants have healthier families than those who have yet to receive MSG education.

#### *DPC Discussion*

In 2015, the DPC was a success. MSG continues to reach more DPC visitors each year. The survey questions about familiarity with MSG, water treatment, WASH products, and child diarrhea rates will be used in future analyses to see how MSG is impacting the community and changing behaviors. This year will act as a benchmark for future years. 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 more well-informed and have healthier families compared to those who have never received MSG education. We could improve the DPC Program by distributing MSG WASH learning materials to other hospitals or by opening centers at other hospitals. This could expand our reach.

## **Maji Safi Cup**

The Maji Safi Cup Program started in June 2013 and consists of month-long sports tournaments (i.e. soccer or netball) where local 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 the Maji Safi Cup are awarded the traditional Shirati trophy — a goat. 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).

In 2015, MSG hosted two Maji Safi Cups: one women's netball tournament and one boys soccer tournament. These tournaments reached a total of 2,981 community members via 29 matches. On average, 103 people came to each match. See below for a detailed account of each Maji Safi Cup.

### ***Women's Netball Maji Safi Cup***

The first 2015 Maji Safi Cup was a female netball tournament that went from February 19-May 16. Women no longer in school were invited to participate, including an MSG Community Health Educator team. During this time, they played 13 games and reached 1,111 community members. Of those that came out, 83% were women supporting the netball teams. During the final match, 280 community members attended to celebrate the teams. On average, excluding the final match, 70 community members attended each match.

### ***Boys Soccer Maji Safi Cup***

The second 2015 Maji Safi Cup was a boys soccer tournament held in November and December. Ten teams participated in 16 matches, including the final. Overall, this Maji Safi Cup reached 1,870 program participants and community members. The final match alone attracted 250 community members. On average (excluding the final match), the games attracted 108 community members per match.

### ***Maji Safi Cup Discussion***

This year, both Maji Safi Cup tournaments were successful. However, the first netball tournament was difficult to organize, as women in the community have obligations to care for their families and farms. There was also a lack of sportsmanship among the female teams. In the future, it would be wise to start partnering with primary and secondary schools for both male and female Maji Safi Cups to gain program participants and gain further collaboration with the local schools.

## Hotline

The Disease Prevention Hotline Program started in October 2013. This program is a way for the community to get in touch with MSG to learn about health and disease prevention and 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) if they do not have time to talk in person. This program also aims to reach more men in the community, as they often do not have time to talk at home. However, reaching men can still be a challenge because they are usually busy during the day. The number is also available to the entire community as a means to getting answers to questions about water, sanitation, hygiene, disease prevention, and health.

In 2015, we reached 1,432 people through the hotline. SMS text messages were sent to 913 people, 335 of whom received messages specifically about the cholera outbreak. In total, 519 people called the hotline or were called by someone at the hotline. Of those callers/called, 426 were first time callers, 79 of them called twice, and 14 of them called three times or more.

Type of Call	Number who called/were called	Percentage
<b>Incoming</b>	58	11%
<b>Outgoing</b>	428	83%
<b>No Answer</b>	34	6%

The hotline was open 107 days in 2015. On average, five people were contacted a day (minimum calls — 1, maximum calls — 13).

Gender	Number who called/were called	Percentage
<b>Female</b>	270	63%
<b>Male</b>	144	34%
<b>No Answer</b>	12	3%

The average age of those who indicated their age was 38 (minimum age — 15 years old, maximum age — 80 years old).

The reasons for the calls are listed below.

Reason	Number of calls	Percentage
<b>1. WASH-related question</b>	190	28%
<b>2. Interested in Home Visit</b>	161	24%
<b>3. Information about MSG Programs</b>	242	36%
<b>4. Question for hospital</b>	13	2%
<b>5. Other</b>	67	10%

Most WASH-related questions concerned water treatment, fecal oral diseases, and open defecation. Several callers were interested in having MSG come to their home to provide their family with WASH education. These callers were listed in a file to be considered for participating in a home visit. The largest percentage of callers were interested in receiving more information about other programs. This information was provided during the call. Only 2% of callers were interested in something only the hospital could answer. If MSG could not answer a question, the CHE called staff members at the Shirati KMT District Hospital and received the answer. The CHE then called the original caller back and answered the question.

### *Hotline Discussion*

The MSG Hotline is a great option for those who live far away or have short WASH-related questions. During the cholera outbreak, it proved to be extremely useful in terms of informing the community about the recent outbreak. Future recommendations to improve this program are to develop a better system for tracking first-time callers versus those who call multiple times. It would also help the Hotline to have a system where we can see how our callers are improving their WASH knowledge and scheduling future Home Visits. Additionally, MSG could also have a more organized and efficient system for sending out mass text messages.

## **Outreach**

There are many ways to teach WASH education to the community. Our Outreach Program utilizes a variety, including event days, market outreach, visiting groups, shops, salons and restaurants, a district-wide radio show, and emergency responses to regional cholera outbreaks. This program started in 2012, but has developed over time to reach more community members and to respond to community crises. The goal of this program is to teach the local community about WASH practices through various forms of local outreach methods. Each outreach method is explained below.

### *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 2015, MSG hosted 18 events and directly reached 11,583 community members.

Thirteen of the 18 events were considered major events. The breakdown of each event is listed below.

- [Cleanup days](#): Maji Safi Group partners with a group of volunteers who have met monthly since the end of 2014. They hosted four community cleanup days in 2015, attracting 95 participating community members in total. On average, 24 people attended each cleanup day. These events are a great way to spread awareness about the importance of keeping a clean environment at home and in the Shirati community.
- [Day of the African Child](#): Every June 16 is Day of the African Child, a day to celebrate children who grow up in Africa. MSG was invited by the Anglican Compassion of Obwere and the Rorya District Development Officer to partner in this event. Our Singing and Dance Group and Female Hygiene Program performed skits, songs and dances about WASH issues for 1,203 community children who attended this event.
- [Mwenge](#): The Mwenge is the Independence Flame of Tanzania. The Independence Flame visits every district of Tanzania annually to symbolize that the country is united. Shirati was chosen as a place where the Tanzania Independence Flame would stay for the night in the Rorya District in 2015. MSG was invited by the Rorya District Commissioner and the Director of the Small Town of Shirati to participate in the celebration by setting up a tent where community members could visit and learn about WASH issues. Throughout the day, 756 community members visited the MSG tent and learned about the fecal oral disease cycle, hand washing, and/or female hygiene.
- [Global Handwashing Day \(GHD\)](#): Every October 15, MSG hosts a celebration of hand washing and its key role in preventing disease. This year was our third annual GHD event. We partnered with three schools (Tina's Education Center, Obwere Primary School and Sota Primary School) where CHEs taught students the importance of hand washing via coloring handouts, songs, and demonstrations. In the afternoon, children were invited to attend a hand washing party at the office. The Singing and Dance and Female Hygiene Program participants performed skits, dances and songs in front of their peers. This event reached 2,018 community members in a single day!
- [Sanitation Week \(World Toilet Day\)](#): Our partners at TAWASANET invited MSG to collaborate in a weeklong awareness campaign about the importance of practicing good sanitation. The week included World Toilet Day on November 19. The CHEs reached out to 436 community members by teaching them the importance of using a toilet and ending open defecation to stop cholera outbreaks.
- [World Water Week](#): TAWASANET asked MSG to represent the WASH network during the Tanzania World Water Week. This week includes celebrating World Water Day on March 22. During this week, MSG taught 1,799 children and 2,013 adults about the importance of WASH education and changing their WASH behaviors at home. Fun WASH demonstrations and coloring sheets were used. MSG was thrilled to be a part of this event, and the Vice President of Tanzania visited our booth on World Water Day.
- [Menstrual Hygiene Day](#): On May 28, the Female Hygiene Program hosted Menstrual Hygiene Day by teaching 18 women who participated in the first female Maji Safi Cup

(netball tournament) about menstrual hygiene management. The women each left the event with a donated reusable Afripad menstrual hygiene kit. Additionally, Rorya FM hosted a special Menstrual Hygiene Management lesson on the radio for the Rorya District to hear. The lesson was created by the Female Hygiene CHEs.

- [Miss Maji Safi Event](#): The Female Hygiene Program hosted its third annual Miss Maji Safi Event, reaching 450 people. At this annual event, young women showcase what they have learned throughout the year while also teaching the community about menstrual hygiene management and female hygiene. These young women compete for the Miss Maji Safi crown by displaying confidence and showing their knowledge of female hygiene-related issues.
- [Dining for Female Hygiene](#): In 2015, the Female Hygiene Program hosted one Dining for Female Hygiene event. This event attracted 85 program participants and their female guardians. Mothers, grandmothers, aunts and older sisters shared a meal and menstrual hygiene management lessons with the Female Hygiene Program participants. This was also a safe space for daughters to answer questions that their female guardians asked about MHM.
- [Shirati's Got Talent](#): This was the first event of its kind in Shirati. Area artists auditioned with MSG to compete for becoming the first ever Shirati's Got Talent winner. Three events were held to see who would earn that title. The first event was the auditions, the second showcased the semi-finalists' talents, and the third event chose the winner among the top five finalists. This event reached 2,710 community members. The Singing and Dance Program participants sang and danced with WASH-themed performances in all the events.

### *Market Days*

Throughout the year, CHEs visit markets located in the Rorya District. These 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 salts. These products are sold at cost to make them more accessible to the community. We found that on average, about 150 people are taught during a market day. In total, we visited seven market locations over 18 days, reaching approximately 2,700 people. See the chart below.

Name of Market Town Visited	Number of Days Visited
Randa	4
Obwere	3
Utegi	2
Ochuna	3
Busurwa	3
Kirongwe	1
Kanga	2
Total	<b>18</b>

### *Group Visits*

CHEs set up meetings with local groups that meet regularly. The community forms groups based on interest (e.g. women's groups, loan groups, fishermen groups, environment groups, etc.) and location. In 2015, MSG taught seven groups. Each group had approximately 35 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 245 people during group visits.

### *Salons, Shops and Restaurants*

In 2015, MSG visited local salons, shops and restaurants to teach local business people how to protect their customers and how to keep their environment clean and provide a better service. Our CHEs taught at local businesses in the centers of Obwere and Kabwana. We reached a total of 20 restaurants and 90 salons and shops. Two people per restaurant received instruction, which means that MSG directly reached 40 restaurant owners and employees. MSG taught 90 salons and shops that had a range of 1-3 employees present, re-teaching seven shops and salons twice and re-teaching three shops and salons three times.

After each session, the shops and salons were given a 1, 2, 3 or 4, depending on their level of understanding with 1 being no understanding, and 4 being the highest level of understanding. Below is a chart, indicating the majority having a middle to high level of understanding of the lessons taught. MSG re-taught shops and salons if they scored a 1 or 2.

*Chart: Number of Salons and Shops Visited.*

Month	Number of Salons and Shops Visited
January	26
February	10
March	6
May	6
June	29
July	6
September	5
November	2

*Chart: Score of re-taught shops and salons.*

Score	Number of Shops and Salons
1	3
2	10
3	59
4	8
No score	10

### *Radio Show (Rorya FM)*

MSG has a partnership with the local radio station in Shirati, 90.3 Rorya FM. 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. In 2015, MSG aired 22 shows, indirectly reaching approximately 77,000 people (including repeat listeners). Indirectly means that there was no face-to-face lesson. April had the greatest number of shows because this was when the first cholera outbreak of 2015 occurred. Each show provides the community with the opportunity to call in and ask questions and/or make comments for our CHEs to answer. Throughout the year, MSG had 256 callers who were directly served by the CHEs. The lowest number of callers was four people, and the greatest number of callers was 30 people. Below is a by month breakdown of shows that aired in 2015.

### *Radio Shows in 2015*

Month	Number of Shows	Lesson Taught
January	1	Food Preparation
February	1	Water Treatment and How to Store Water
March	2	World Water Day
April	5	The Cholera Outbreak and How to Prevent Cholera
May	2	Female Hygiene and Menstrual Hygiene Management
June	2	Bilharzia
July	1	Hand Washing and Storing Water
August	2	Health Checkups and the Importance of Using a Toilet
September	2	Water Treatment and How to Store Water, Personal Hygiene
November	1	Cleaning the Environment
December	2	The Cholera Outbreak and How to Prevent Cholera

### *Outreach Discussion*

This year, MSG reached more community members than previous years through the Outreach Program. The program expanded this year because MSG made more of an effort to reach more remote areas, and there was an increased interest from communities throughout the Rorya District. While MSG was able to teach more community members important WASH lessons (directly or indirectly), it is difficult to measure WASH behavioral change or WASH knowledge attained from the Outreach Program because most interactions with the community are one-time encounters. In the future, MSG should develop a better pre/post assessment system for



measuring the WASH knowledge learned by Outreach Program participants from restaurants, groups, shops and salons. Visiting these businesses at least two times and measuring the change that occurs over time would strengthen our program and help us determine if our outreach education is effective.

## **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 sanitary pads, and be encouraged to stay in school. The overall objective for this program is to keep young women and youth in school and to reduce school absences/dropouts related to menstruation by educating them about MHM and supporting them with their studies.

Throughout the year, the Female Hygiene Program worked in two wards in two schools with approximately 50 students per school, teaching 1-4 classes per week. On average, there were 82 young women present per lesson (minimum 14 girls, maximum 207). In addition, all Female Hygiene Program participants, as well as girls from other communities, were invited to meet on Saturdays at MSG's office. The Female Hygiene Program currently has approximately 150 young female change makers registered who participate in MHM lessons. Overall, it has had 9,172 program participants in the Rorya District, including young women attending lessons, radio show listeners, and event participants.

The lessons have been developed 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. MSG mentors 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. Throughout the year, the Female Hygiene Program hosts fun, educational community awareness events, including the Miss Maji Safi event. Program participants invite community members to attend this event and learn about female hygiene and health issues through songs, dances, and skits. The young women perform in front of hundreds of community members of all ages. The winner of this event is selected based on her ability to teach her peers and community about female leadership, menstrual hygiene, and puberty while demonstrating her confidence.

In 2015, the young women from our Female Hygiene Program performed their Miss Female Hygiene show in front of 450 community members. It was a very successful event, which allowed 70 young women to perform and compete in front of their peers and parents. Group leaders and participants from each Female Hygiene Group organize a special dinner once a year for participants and their female guardians (mothers, grandmothers, aunts). During the event, female health and hygiene issues are discussed, new members are welcomed, and the young

women showcase what they have learned through songs, dances, and skits. In 2015, the Female Hygiene Program hosted the largest Dining for Female Hygiene event to date with a total of 90 participants and their female mentors attending.

In addition to dining events and Miss Maji Safi, the Female Hygiene Program partnered with other MSG programs to perform skits, dances, and songs that focus on female hygiene themes. In 2015, the Female Hygiene Program performed in front of 550 community members during MSG's annual Global Handwashing Day event and in front of 1,250 community members during the Day of the African Child celebration. They prepared skits that taught about the importance of using menstrual hygiene products and how to prevent early pregnancy, so girls can stay in school.

### *Female Hygiene Discussion*

The Female Hygiene Program continues to grow and be one of our most popular programs. There has been an interest to expand this program to reach more secondary level schoolgirls. Additionally, there are young women who are not in school, but still school-aged, who are interested in joining this program. If MSG receives more funding, this would be one of the first programs recommended to receive money. We should also start thinking of ways to generate income with the Female Hygiene Program participants by starting to manufacture and sell female WASH products.

## **Health Screening Program**

July 2015 was the start of MSG's first Health Screening campaign. MSG's aim was to screen its program participants to create a baseline assessment to see if MSG program participants have a lower prevalence rate of WASH-related diseases than non-program participants. This Health Screening campaign also proved to be a large incentive for the community to get involved with MSG because they were able to get a free annual health screening and free medicine if diagnosed. MSG treated all health-screening participants for worms and gave them all disease prevention lessons.

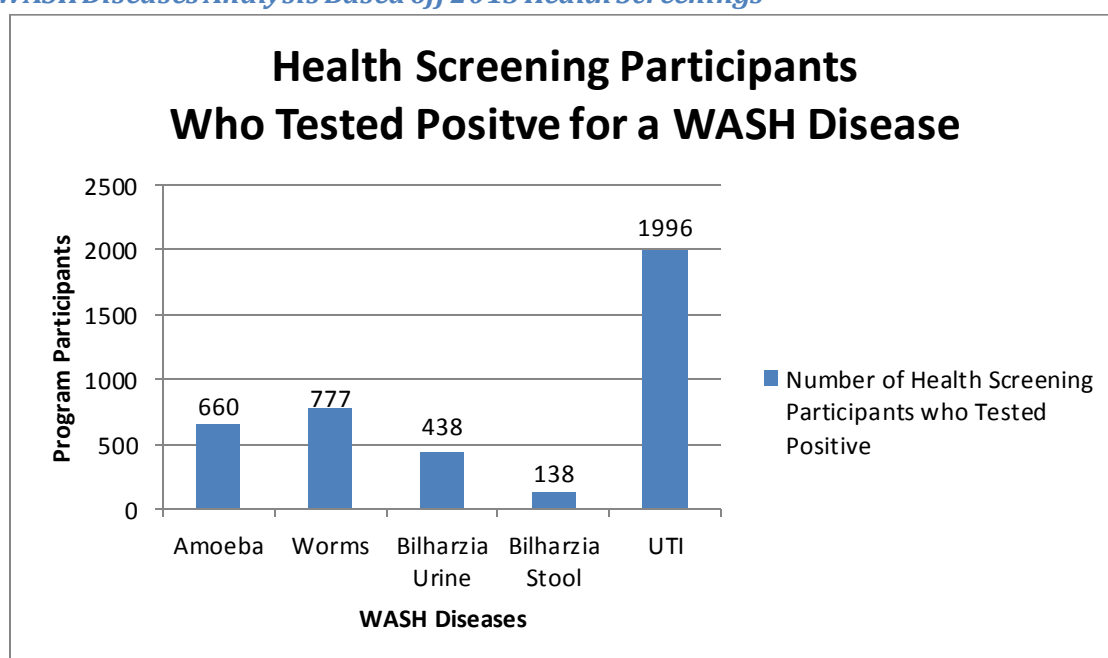
Initially, MSG made contact with about 4,600 potential and current participants to invite them to attend the health screenings. Between July 11 and August 10, there were 13 full days of health screenings. In total, 3,068 people attended the health screenings; however, 51 entries were lost or incomplete and were not entered in the data set. Therefore, the data of 3,017 participants were analyzed in this report. The participants consisted of approximately 44% men and 55% women, and 1% left the gender question unanswered. The average participant's age was 14.4 years.

MSG recruited new program participants with the aid of village leaders, as well as through primary schools within the Rorya District of Tanzania. The health screenings took place at MSG's office and four local schools in the area to be equally accessible by different participant populations. MSG created new intake forms to gather demographic information, health history, and previous symptoms at the registration table before testing began. The registration table

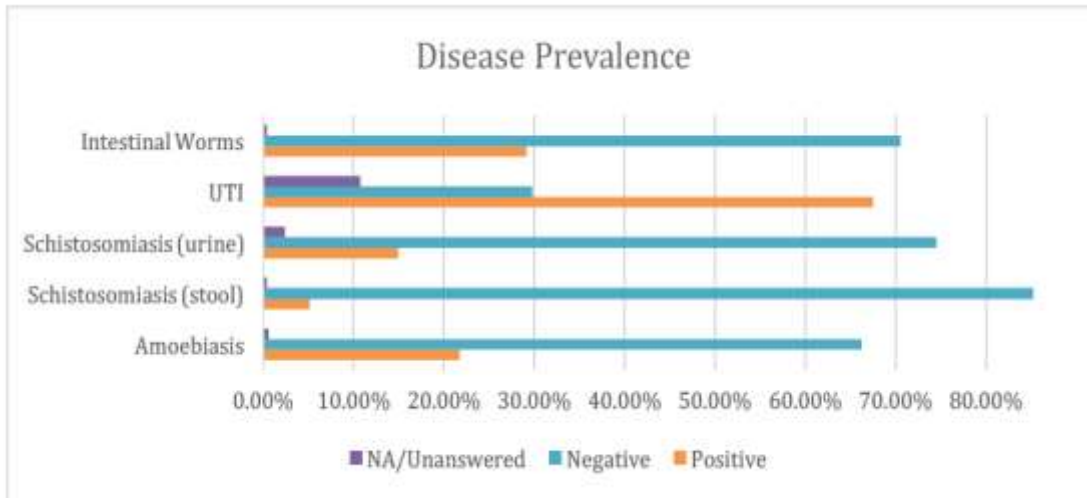
assigned program participants ID numbers. The ID numbers were labeled on the participants' stool and urine collection containers to ensure that the containers were not mixed up during the testing process. Health screening participants were tested for amoebas, worms, bilharzia, and UTIs. There was also a random sampling of malaria. After the lab technicians found visible signs of waterborne or water-related illnesses, clinical officers and nurses diagnosed participants and distributed appropriate doses of medication on site based on age and weight. Only participants over 18 years received medicine without a parent or guardian's consent.

The first year's results indicated that 81% of health screening participants tested positive for one or more waterborne diseases. In total, 4,014 waterborne diseases were diagnosed, and 91.1% of participants with diseases were treated (100% of those with consent were treated).

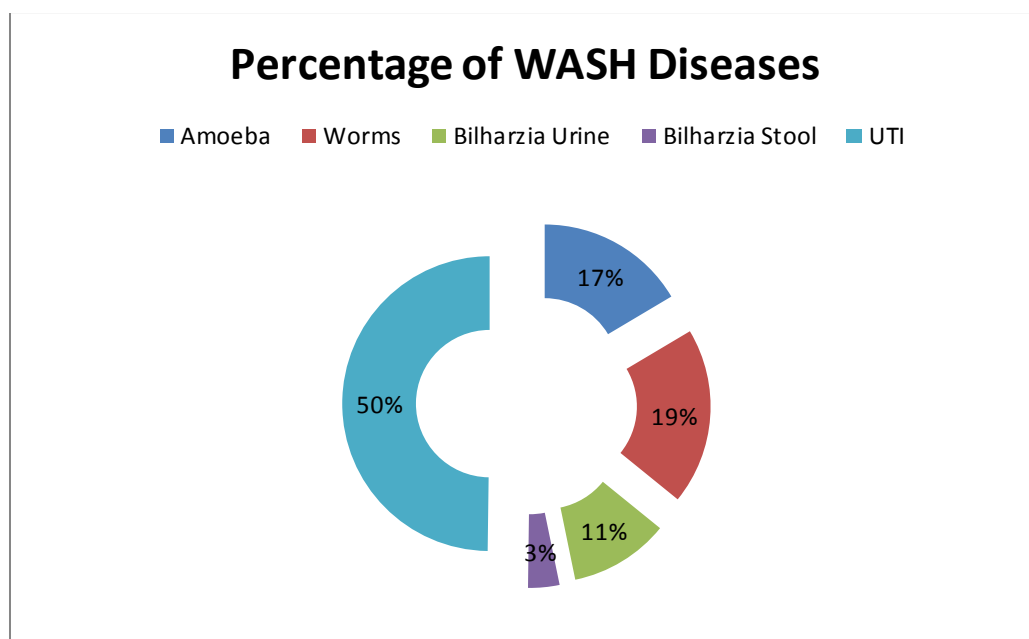
### *WASH Diseases Analysis Based off 2015 Health Screenings*



1. **Amoebas:** Out of 3,017 people, 88% could provide a stool sample. Therefore, 2,678 people could be screened for amoebas. Of those, 22% tested positive (660 people).
2. **Worms:** Out of 3,017 people, 88% could provide a stool sample. Therefore, 2,678 people could be screened for worms. Of those, 26% tested positive (777 people).
3. **Bilharzia:** Out of 3,017 people, 88% could provide a stool sample. Therefore, 2,678 people could be screened for bilharzia found in stool. Of those, 5% tested positive (138 people). Out of 3,017 people, 98% could provide a urine sample. Therefore, 2,794 people could be screened for bilharzia in urine. Of those, 15% tested positive (438 people).
4. **UTI:** Out of 3,017 people, 98% could provide a urine sample. Therefore, 2,794 people could be screened for UTIs. Of those, 66% tested positive for UTI (1996 people).



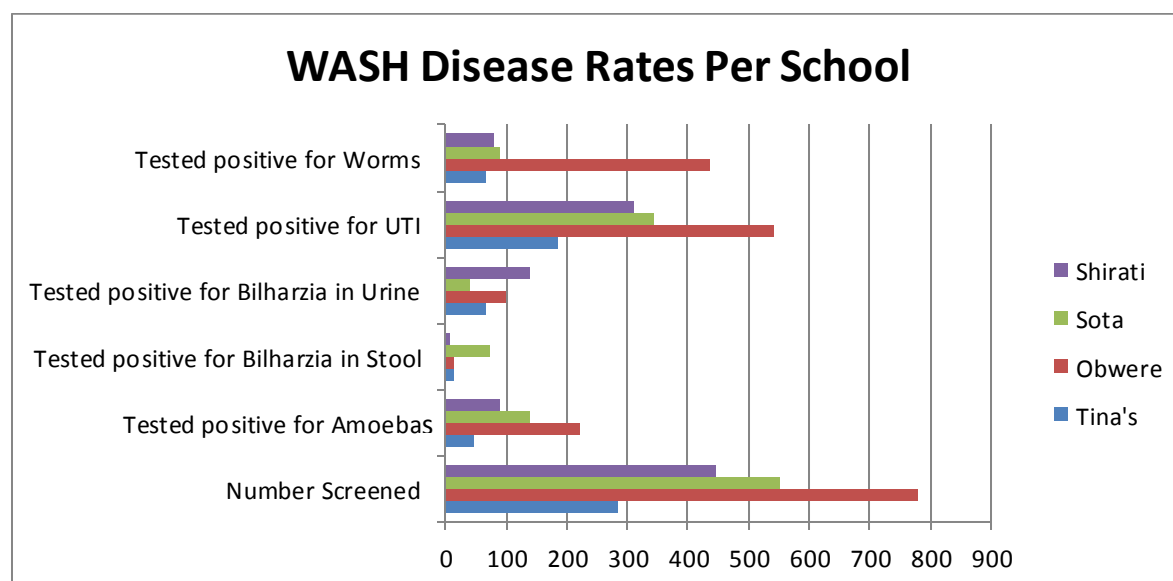
It was found that UTIs made up 50% of all the WASH diseases detected. The graph below indicates the percentages of the WASH-related diseases found during 2015 health screenings.

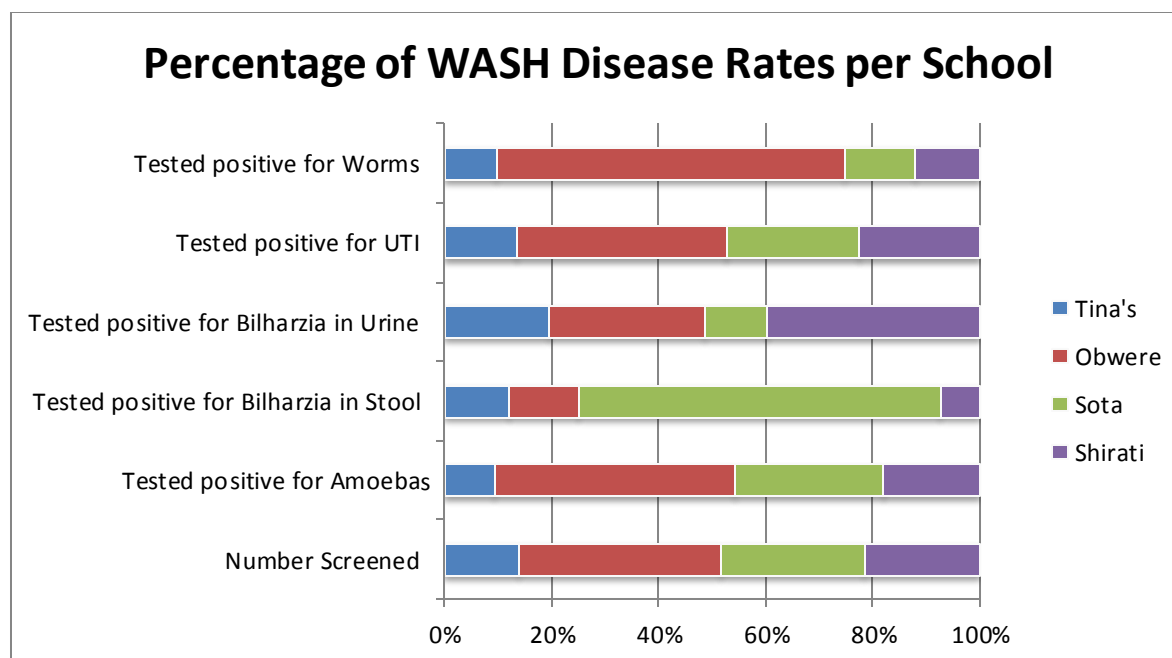


### *WASH Disease Rates per School*

In Total, MSG screened 2,061 students, teachers and parents from four different primary schools.

School	Number of people Screened	Number who tested positive for amoeba	Number who tested positive for bilharzia in stool	Number who tested positive for bilharzia in urine	Number who tested positive for UTI	Number who tested positive for worms
<b>Tina's</b>	285	46	13	68	187	65
<b>Obwere</b>	779	223	14	101	542	436
<b>Sota</b>	551	138	73	41	344	88
<b>Shirati</b>	446	89	8	138	312	81





Results of disease rates and number of students per school are listed below.

#### *Tina's Primary School*

Class Level	Number of Health Screening Participants
Kindergarten	71
1	43
2	50
3	47
4	39
5	27
Teachers	8
<b>Overall Total</b>	<b>285</b>

Waterborne disease	Number of participants who tested positive	% of participants who tested positive	Number of participants who tested negative	Number of participants not tested due to no sample
<b>Amoebas</b>	46	16%	208	31
<b>Bilharzia in Stool</b>	13	5%	241	31
<b>Bilharzia in Urine</b>	68	24%	217	0
<b>UTI</b>	187	66%	98	0
<b>Worms</b>	65	23%	189	31

*Obwere Primary School*

Class Level	Number of Health Screening Participants
Kindergarten	92
1	120
2	70
3	102
4	112
5	82
6	98
7	89
Teacher	6
Parents	8
<b>Total</b>	<b>779</b>

Waterborne disease	Number of participants who tested positive	% of participants who tested positive	Number of participants who tested negative	Number of participants not tested due to no sample
<b>Amoebas</b>	223	29%	523	30
<b>Bilharzia in Stool</b>	14	2%	726	28
<b>Bilharzia in Urine</b>	101	13%	666	11
<b>UTI</b>	542	70%	229	11
<b>Worms</b>	436	56%	301	40

*Sota Primary School*

Class Level	Number of Health Screening Participants
Kindergarten	23
1	73
2	54
3	54
4	78
5	62
6	56
7	75
Teacher	11
No Answer	65
<b>Total</b>	<b>551</b>

Waterborne disease	Number of participants who tested positive	% of participants who tested positive	Number of participants who tested negative	Number of participants not tested due to no sample
Amoebas	138	25%	382	19
Bilharzia in Stool	73	13%	445	29
Bilharzia in Urine	41	7%	500	7
UTI	344	62%	198	6
Worms	88	16%	434	29

### *Shirati Primary School*

Class Level	Number of Health Screening Participants
1	69
2	58
3	38
4	35
5	50
6	65
7	70
Parent	1
No Answer	60
<b>Total</b>	<b>446</b>

Waterborne disease	Number of participants who tested positive	% of participants who tested positive	Number of participants who tested negative	Number of participants not tested due to no sample
Amoeba	89	20%	314	33
Bilharzia in Stool	8	2%	388	33
Bilharzia in Urine	138	31%	297	4
UTI	312	70%	130	3
Worms	81	18%	320	43



### ***WASH Disease Rates of MSG Program Participants***

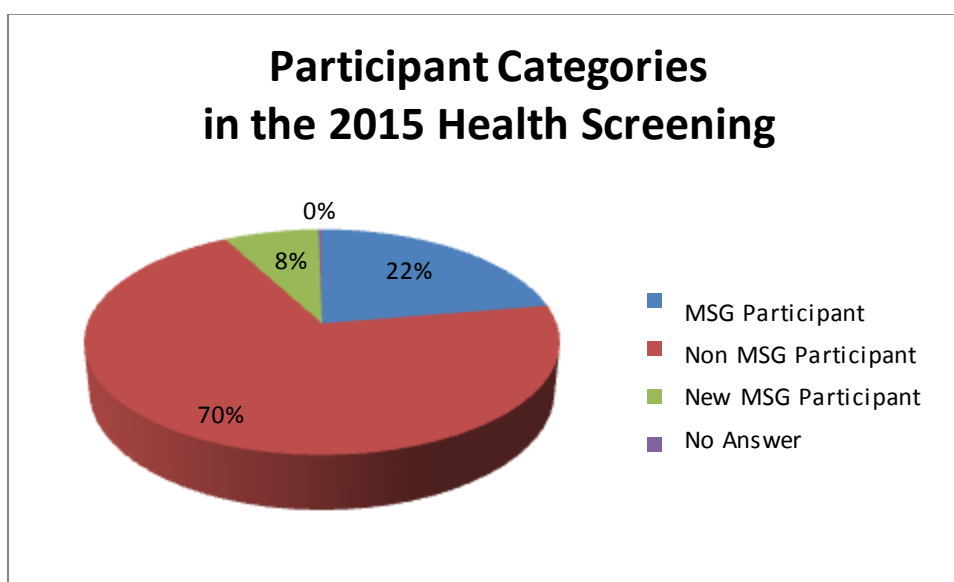
The Health Screening data were used in several ways. We were able to split the data into categories created by the MSG staff: “MSG Participant”, “Non MSG Participant”, and “New MSG Participant”. Those in the MSG Participant category had received MSG health education before. Non MSG Participants had never received health education before. New MSG Participants had received 1-3 MSG lessons before.

The data were also analyzed using just two participant categories: “MSG Participant” and “Non MSG Participant”.

The analyses were performed using only the information provided by the program participants during the health screenings.

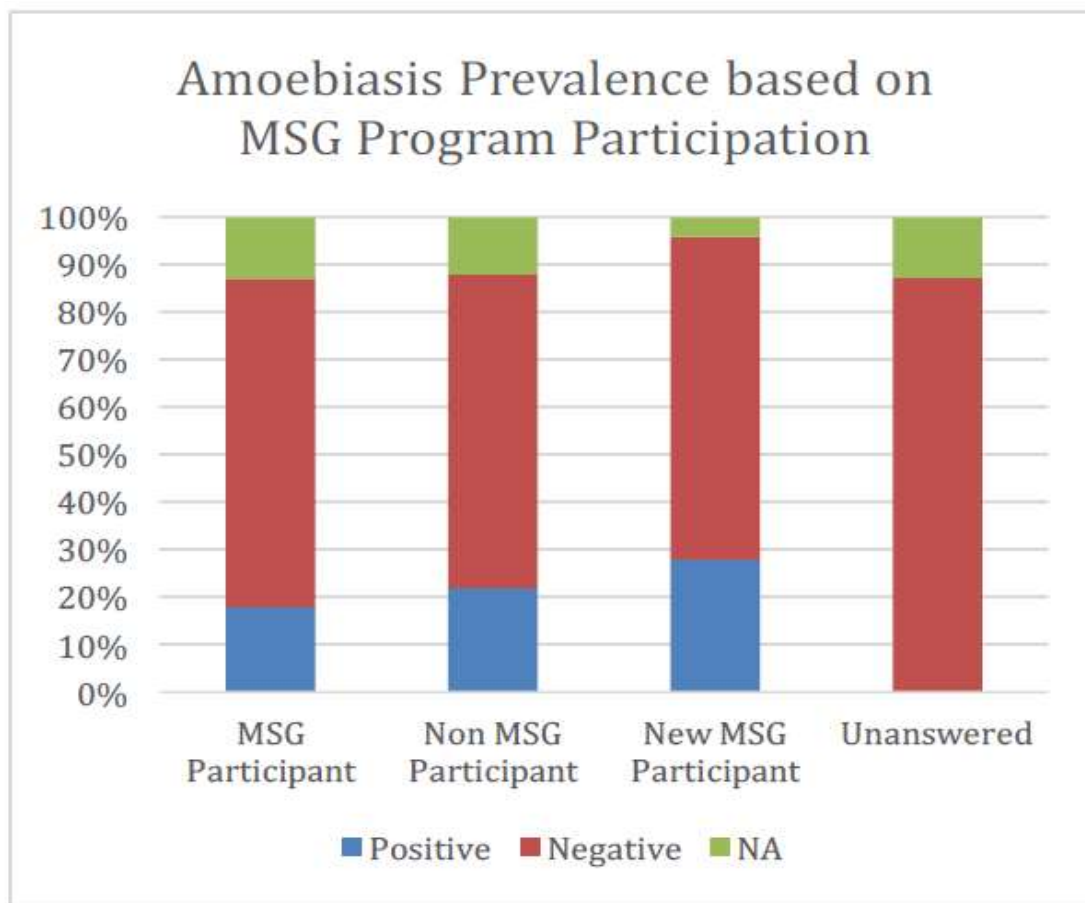
### **Three Program Participant Categories**

When using the three categories (MSG Participant, Non MSG Participant, and New MSG Participant), it was found that 22.34% were MSG Participants, 69.8% were Non MSG Participants, 7.59% were New MSG Participants, and 0.27% left this question unanswered.



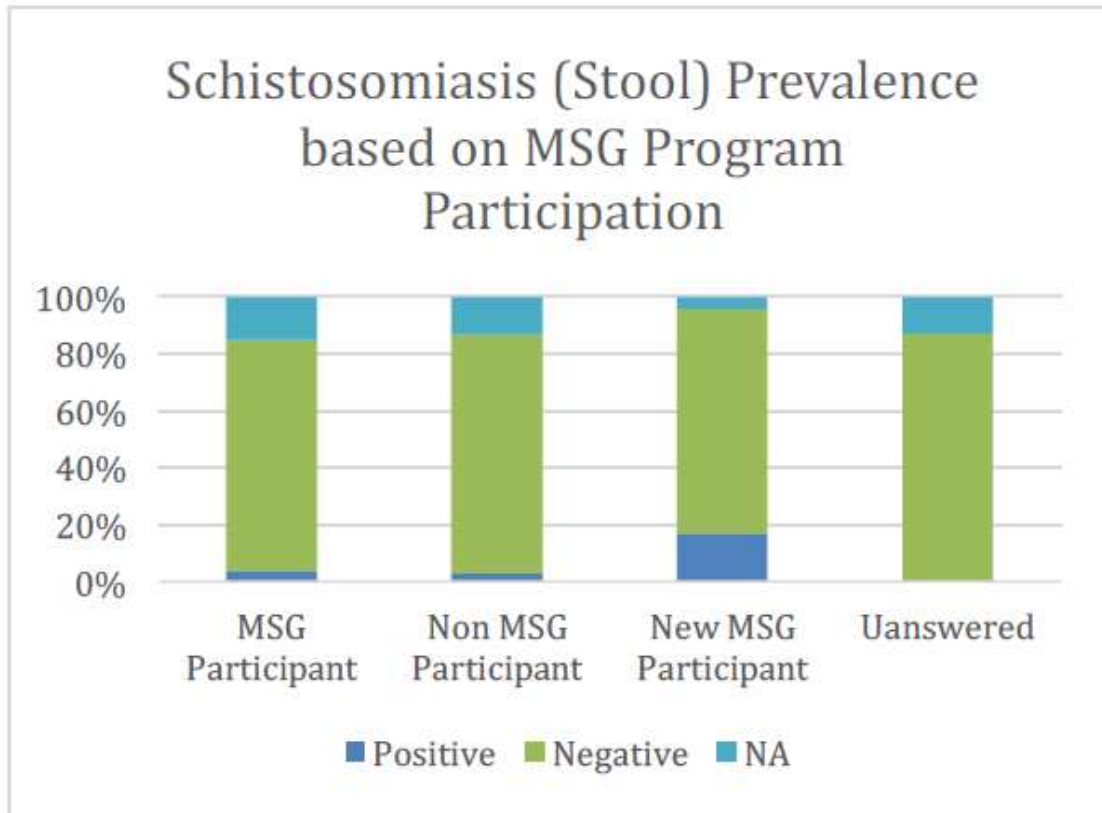
When looking at each participant category, percentages for those who tested positive were calculated for each disease. Below, is an analysis that practicum student Michelle Dunacjik wrote about as part of her master’s work.

Amoebiasis was diagnosed in 18% of MSG Participants (122 participants), 22% of Non MSG Participants (473 participants), and 28% of New MSG Participants (65 participants). This reveals that those who had received MSG’s full curriculum were less likely to test positive for Amoebiasis than those who had partial or no health education from MSG.

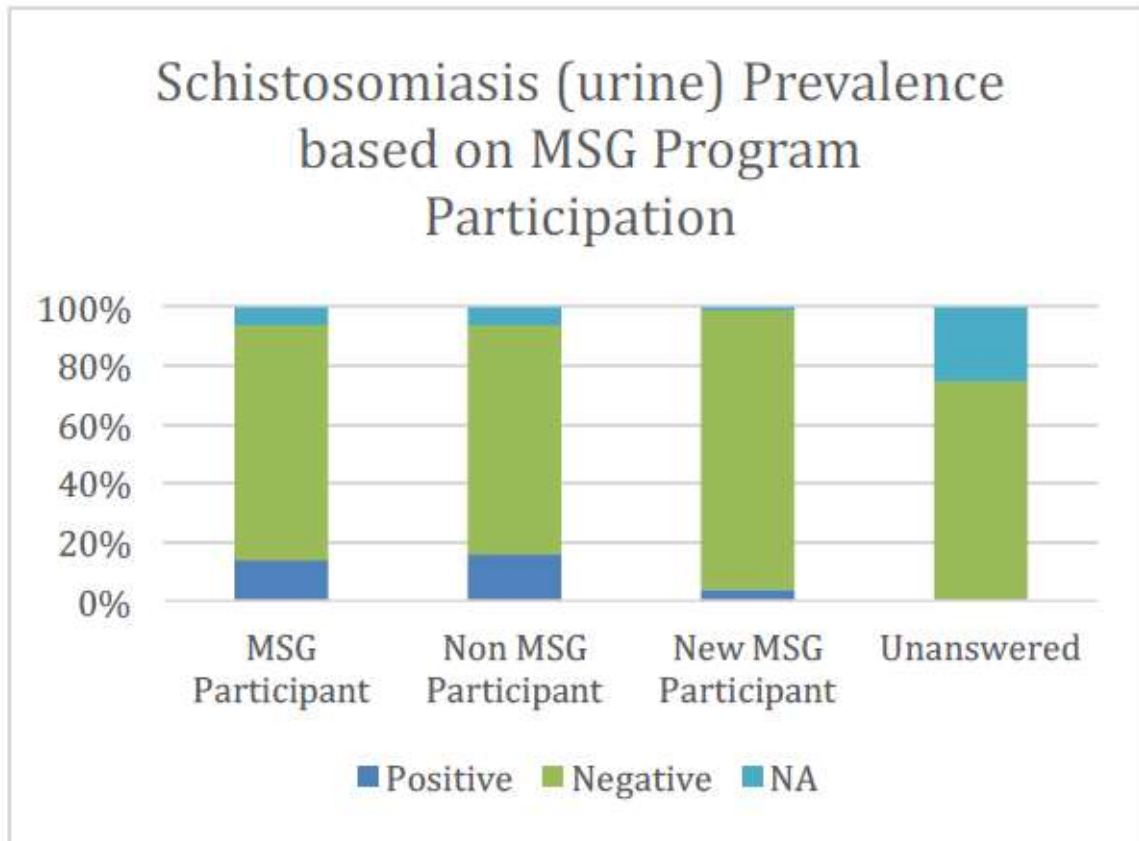


Health screening attendees who were MSG Participants were also 3% more likely to test negative than Non MSG Participants.

Of the bilharzia (*bilharzia*= *schistosomiasis*) in stool screening for MSG Participants, 4% (30 participants) tested positive, of the Non MSG Participants 3% (69 participants) tested positive, and of the New MSG Participants 17% (39 participants) tested positive. Therefore, those who were new MSG participants had a higher percentage of testing positive for bilharzia in stool.

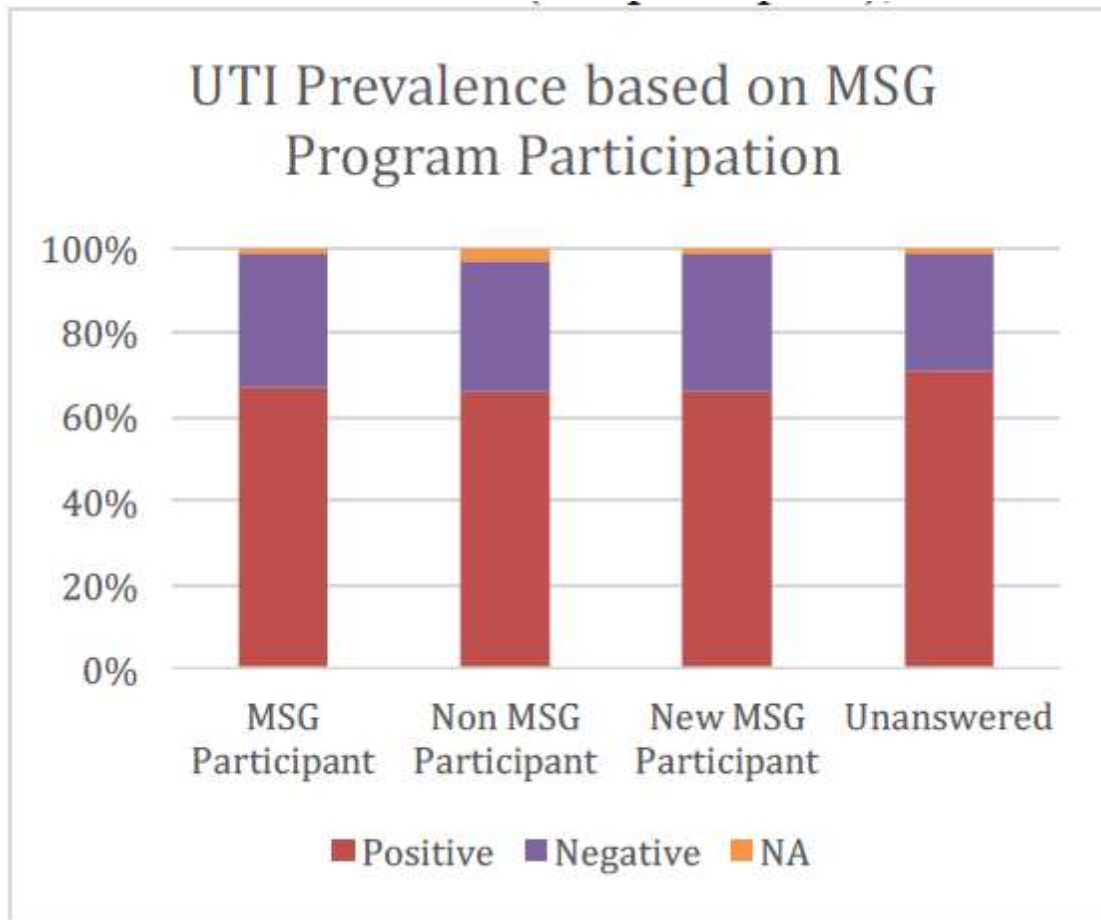


Furthermore, 14% of MSG Participants (96 participants), 16% of Non MSG Participants (332 participants), and 4% of New MSG Participants (6 participants) tested positive for bilharzia (*bilharzia*= *schistosomiasis*) in their urine, and 80% MSG Participants (539 participants), 78% Non MSG Participants (1,648 participants), and 94% New MSG Participants (216 participants) tested negative.



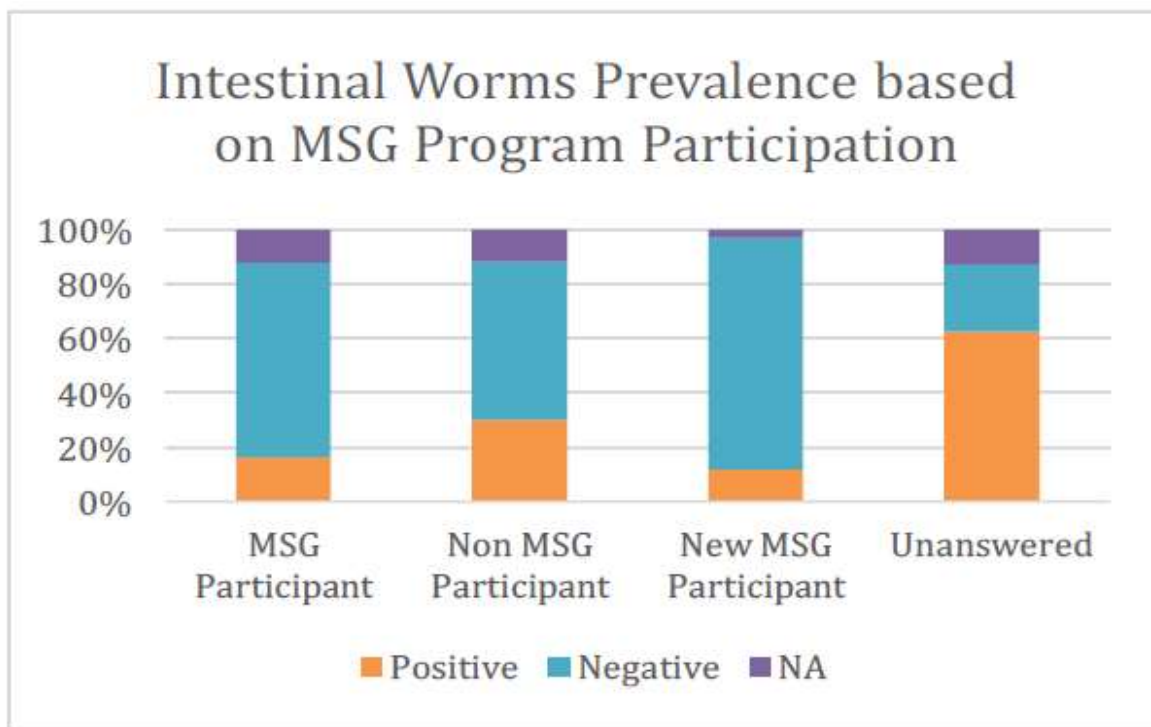
These results indicate that MSG Participants were slightly more likely to test positive for the kind of bilharzia (*bilharzia=schistosomiasis*) that is present in their stool, but slightly less likely to test positive for the kind of bilharzia that manifests itself in urine. There may be extraneous variables, like age or geographical location that affect the likelihood of contracting bilharzia in each participant category.

The proportion of health screening attendees who tested positive or negative for UTIs in each participant category was relatively similar – 67% MSG Participants (451 participants), 66% Non MSG Participants (1,388 participants), and 66% New MSG Participants (152 participants) tested positive for UTIs.



These results indicate that regardless of health education, people living in Shirati are all at a similar level of risk for contracting a UTI. Further analysis should be done to determine if factors such as gender or location change the rates of UTI infections.

Lastly, in regards to intestinal worms, 16% of MSG Participants (109 participants), 30% of Non MSG Participants (639 participants), and 12% of New MSG Participants (27 participants) tested positive.



Almost twice as many Non MSG Participants as MSG Participants tested positive with worms. Furthermore, 13% of MSG Participants tested negative, again meaning there is a higher proportion of MSG Participants without the burden of worms. This may be in part because of the strength of MSG’s curriculum; however, without further research, causal correlations cannot be made. Likewise, other outside variables or the disproportionate number of participants within each participant category may be influencing the results.

#### Two Program Participant Categories

Practicum student Dorothy Ochieng analyzed the data between two categories: MSG Participant and Non MSG Participant. Therefore, even if the health-screening participants only participated in one MSG lesson, they were categorized as an MSG Participant. Ochieng’s findings showed that:

- a. MSG Participants were less likely to have bilharzia and amoebas.
- b. MSG Participants were more likely to develop intestinal worms.
- c. Females were more likely to develop UTIs than males.
- d. Those who received prior health education were less likely to develop bilharzia and amoebas than those who did not receive prior health education.
- e. Adults were less likely to have bilharzia and malaria, but more likely to develop intestinal worms than children.

Ochieng’s research poster is shown below. To explore her findings further, please see the attachment labeled, “Ochieng\_Dorothy\_Final Poster”.



## Evaluation of a Water-Related Disease Prevalence Health Screening Program in Shirati, Tanzania

Dorothy Ochieng, MPH 2016, Brown School



Table 1: Descriptive Statistics, N=3,017

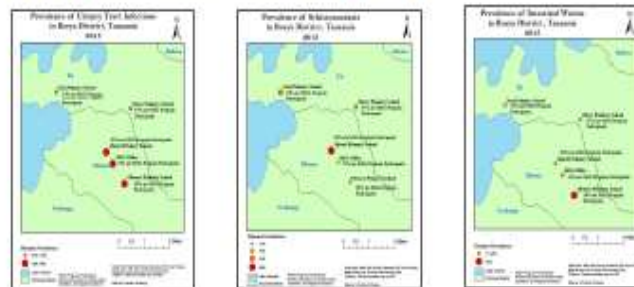
MSG Program Participation	Gender	Received Prior Health Education	Class Category
No	77.6% Male	No	54.05% Child
Yes	22.4% Female	Yes	45.95% Adult

Table 2: Results of Logistics Regression (All models were statistically significant,  $p \leq 0.05$ )

	Schistosomiasis (N=2,470)	Intestinal Worms (N=2,493)	Amoeba (N=2,506)	Urinary Tract Infection (N=2,748)	Malaria (N=477)
Independent Variables	AOR (95%CI)	AOR (95%CI)	AOR (95%CI)	AOR (95%CI)	AOR (95%CI)
Participant in MSG Program	0.40 (0.25-0.63)*	1.46 (1.10-1.94)*	0.75 (0.57-0.99)*	0.96 (0.75-1.22)	0.42 (0.16-1.08)
Female (vs. male)	0.76 (0.58-0.98)*	1.00 (0.85-1.19)	1.04 (0.86-1.25)	1.52 (1.29-1.78)*	0.72 (0.45-1.13)
Received Prior Health Education	1.5 (1.12-2.00)*	1.15 (0.94-1.42)	1.30 (1.05-1.62)*	1.16 (0.95-1.41)	0.75 (0.44-1.26)
Adult (vs. child)	0.50 (0.35-0.72)*	2.59 (2.07-3.28)*	0.85 (0.68-1.06)	0.95 (0.79-1.14)	0.09 (0.05-0.16)*

\*Bold indicates significant values ( $p \leq 0.05$ ). The AORs were mutually adjusted for other factors shown on the table.

Figure 1: Disease Prevalence Rates by Screening Location



### Acknowledgements

I would like to thank Maji Safi Group, Dr. Charlene Cabumay, Dr. Joseph Steensma, Dr. Lora Iannotti, Valentine Wanga, MS, and Michele Dunajcik, MSW, MPH for their support on this project.

### Results

#### > Odds ratios:

- > Current MSG program participation was protective against schistosomiasis and amoeba, but MSG program participants were 1.46 more likely to have intestinal worms than non MSG program participants.
- > Being female was protective against schistosomiasis, but females were 1.52 times more likely to have urinary tract infections.
- > Those who stated they had received prior health education were 1.5 times more likely to have schistosomiasis and 1.3 times more likely to have amoeba.
- > Being an adult was protective against schistosomiasis and malaria, but adults were 2.59 times more likely to have intestinal worms.
- > Prevalence of water-related illnesses is distributed throughout the Shirati area, including villages located nearby Lake Victoria, and those far from Lake Victoria.
- > According to screening locations, disease prevalence rates were highest at Obwere Primary School and lowest at the MSG Office.

### Limitations

- > Participants were not randomly selected, therefore, results are not generalizable to the rest of Tanzania.
- > Temporality cannot be established to decipher whether individuals contracted disease before or after receiving health education or participating in MSG programs.
- > Data was not collected regarding content or frequency of health education received, or the time period between receiving education and being screened.
- > Possible confounding variables:
  - > Participants may have received health education from other sources.
  - > MSG program participants may not attend health education dates on a regular basis.
  - > Verification of MSG program participants was not completed (relied on self-reporting).
  - > Multiple interviewers/Community Health Workers collected participant health demographics.

### Discussion and Recommendations for Future Screenings

- > MSG can utilize these results to better tailor their education programs to the needs of the community.
  - > Content and frequency of health education provided by MSG should be reviewed and adjusted.
  - > Timing of health screening program should be considered in respect to frequency of provided health education or vice versa.
  - > Revise health screening intake forms so they are better understood by both the interviewers and participants.
  - > More thorough training of Community Health Workers and outside staff in order to become familiar with the screening process prior to the first day of health screening.
  - > Limit the number of interviewers/Community Health Workers who record participant information in order to minimize interviewer bias.
  - > Limit the number of data entry clerks and verify data entries in order to minimize measurement bias.

### Background

- > Lake Victoria, the world's second largest freshwater lake, is located to the north of Tanzania and is the primary water source for residents living nearby.<sup>1</sup>
- > The quality of untreated water in the lake is poor, with organisms that cause infections such as cholera, dysentery, typhoid, intestinal worms, enteroviruses, and polio.<sup>1-12</sup>
- > Maji Safi Group (MSG), a disease prevention and health promotion NGO in Shirati, Tanzania, implemented a health screening program in Summer 2015 to identify the prevalence of helminth infections: schistosomiasis, intestinal worms; and other water-related infections: amoeba, malaria, and urinary tract infections, among the community.<sup>13</sup>

### Factors that Increase Likelihood of Contracting Water-related Illness<sup>14-16</sup>



### Research Goals

- > Analyze the relationships between disease prevalence rates of water-related illnesses and multiple binary explanatory variables such as age, gender, program participant status, and health education participation.
- > Analyze the geospatial relationship between disease prevalence rates of water-related illnesses and proximity to Lake Victoria.

### Methods

- > Collected disease prevalence data of 3,017 participants during MSG's 2015 Health Screening Program.
- > GPS coordinates of the five screening locations were used to map disease prevalence rates using ArcGIS.
- > Logistic regression model was used to analyze the relationship between the binary outcomes and the rates of disease.

### *Disease Rates in Program Participants*

Program	Number of Program Participants Tested	Percent Positive for Amoebas	Percent Positive for Bilharzia Stool	Percent Positive for Bilharzia Urine	Percent Positive for UTI	Percent Positive for Worms
Female Hygiene	31	16%	6%	13%	77%	10%
Singing and Dance	30	13%	3%	3%	47%	10%
Home Visit	338	16%	3%	9%	59%	13%
MSG Staff and their Families	134	16%	4%	6%	74%	8%
Community Members with no MSG Education	390	19%	3%	12%	66%	10%

### *Health Screening Discussion*

MSG's first Health Screening was a great success! We were able to screen over 3,000 community members and gather information about our program participants and how they are improving their health. The biggest obstacle we had in 2015 when analyzing the data was whether a health screening participant had previously participated in an MSG program and if so, when did they participate and in how many sessions? For 2016, we suggest creating a log frame with goals, so we can better structure the intake questions to answer our questions. We should also limit the number of people who are entering data to reduce inaccuracy. We should also have an extensive training program for those who will be collecting and entering data. Next year, we should spend more time training the staff and find a way to allow staff rotation to reduce potential burnout. Additionally, if we are able to obtain more outside funding, we should try to screen more community members next year.

### *Cholera Emergency Response*

Two cholera outbreaks ravaged the Rorya District in 2015. During the months of March, April, and May and again in December 2015, MSG partnered with the Rorya District Government to assist in spreading health education about cholera. Overall, MSG directly taught 6,090 community members and indirectly taught 37,090 residents (when the MSG radio show is included). MSG continued to conduct cholera emergency outreach into 2016. Education included teaching community members in infected areas about cholera transmission, treatment, and prevention. The Rorya District Government first requested MSG's assistance in March to help develop and implement a cholera health education campaign targeting areas affected by the outbreak and a wider-ranging initiative to provide information to the general public of the District. At this time, the Tanzanian government had confirmed 30 cases of cholera in seven villages.



MSG ran a cholera health education campaign from the date of the District Government's request until two weeks after the last confirmed case of cholera had recovered (April 13 - May 22) and again from December 11, 2015 into 2016. Because there was a time gap between the two cholera emergency responses, the two outreach periods are separated below.

#### ***April 13 - May 22: Cholera Emergency Response***

MSG directly taught 4,925 community residents in the Rorya District through home visits, market outreach, hotline, lessons at primary and secondary schools, and hospital disease prevention centers. Additionally, MSG aired eight radio shows on Rorya FM, reaching an estimated 24,000 listeners, for a health education campaign total of 28,925 participants.

MSG collected demographic and disease data on 1,504 of these participants. Sixty-one percent of the respondents self-reported that they knew the three primary symptoms of cholera, but only 10% in fact knew these symptoms when tested. We believe that this is related to the fact that only 3% of the respondents self-reported that they had previously received health education.

MSG Community Health Educators and staff met 37 individuals who self-reported as being suspected of having cholera or having been confirmed as having cholera by the government. Of these, a home visit was conducted with 27, where interviews and disease prevention lessons took place. Seventy percent of suspected cholera cases self-reported as having fully recovered, while 11% were reported as having passed away.

For a more thorough analysis, please see the attachment titled "Cholera\_Report".

#### ***December 11: Cholera Emergency Response***

On December 11, MSG was called back into the field to help with another Rorya District cholera outbreak. Since this outbreak has continued into 2016, a final report will be created at another date. However, this report includes information from December 11 - December 31.

MSG directly taught 1,165 community residents in the Rorya District through home visits during 13 days in December. Additionally, MSG held two radio shows on Rorya FM, reaching an estimated 7,000 listeners, for a health education campaign total of 8,165 participants.

MSG collected demographic and disease data on 1,504 of these participants. Fifty-seven percent of the respondents self-reported that they knew the three primary symptoms of cholera, but only 17% in fact knew these symptoms when tested.

MSG Community Health Educators and staff met 40 individuals who self-reported as being suspected of having cholera or who had been confirmed as having cholera by the government. All these individuals received a home visit with an interview, and disease prevention lessons took place.