

# Maji Safi Group

## 2016 Health Screening Report

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### Executive Summary

Maji Safi Group's model for promoting community-driven water, sanitation and hygiene (WASH) education and disease prevention in rural Tanzania focuses on behavioral change; however, measuring such changes in the community is a challenge. In 2016, Maji Safi Group (MSG) conducted its second annual health screening campaign, testing 5,060 people. In both 2015 and 2016, the 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. MSG screened for malaria, schistosomiasis, amoebas, 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 (i.e. schistosomiasis, amoebas, and intestinal worms) rate 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 into its education.

### Introduction

Maji Safi Group (MSG) started conducting annual health screenings in 2015 as a service to MSG program participants, their guardians, local community members and students from partnering schools as a means to evaluate our impact of our programs. MSG's model promotes behavioral change; however, measuring changes in the community is a challenge. MSG started measuring the effectiveness of its WASH education through health screenings in July 2015. During both health screening campaigns in 2015 and 2016, MSG partnered with the Tanzania Fisheries Research Institute (TAFIRI) and the Rorya District Government through the offices of the District Medical Officer (DMO) and District Education Officer (DEO) to plan and conduct the screenings according to Tanzanian government policies and laws.

Both years, MSG hired government nurses, clinical officers, and lab technicians to screen, diagnose, and prescribe medicine, while the MSG staff organized and ran the program. Health screenings were conducted through blood, urine and stool samples to determine if the participants had one or more of the following WASH-related diseases: malaria, schistosomiasis, amoebas, intestinal worms, and urinary tract infections (UTIs). If the participant tested positive for one or more diseases, medicine was distributed free of charge, and every participant received disease prevention education.

### Background Information and Partnerships

#### *Maji Safi Group*

Maji Safi Group 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 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 11 community programs. CHEs engage residents through home visits, hospital-based programs, school groups, singing and dancing groups, sports, and other community events. These programs touch a wide spectrum of stakeholders such as parents, teachers, health care providers, government leaders, and youths. 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 taught over 350,000 Mara Region residents WASH lessons and the importance of improving personal and community WASH behaviors as well as helped local authorities fight cholera outbreaks.

Maji Safi Group Facts	
<b>Country</b>	Tanzania
<b>Region</b>	Mara
<b>Approximate population of the 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 (2012-2016)</b>	365,403 Mara Region Residents

### MSG IMPACT (2012-2016)

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	Total Number Reached Per Program
Home Visit	1,699 Family Members	1,025 Family Members	2,464 Family Members	1,116 Family Members	6,304 Family Members
After School	3,808 Students	1,243 Students	931 Students	1,532 Students	7,514 Students
Disease Prevention Center (DPC)	791 Visits to DPC	802 Visits to DPC	1,210 Visits to DPC	1,032 Visits to DPC	3,835 Visits to DPC
Singing and Dance Group	756 Community Members	1,048 Community Members	1,746 Community Members	3,250 Community Members	6,800 Community Members
Maji Safi Cup	2,032 Participants	1,697 Participants	4,170 Participants	6,936 Participants	14,835 Participants
Outreach (events, market visits, stores and salons, restaurants)	1,907 Community Members	6,521 Community Members	8,827 Community Members	7,880 Community Members	25,135 Community Members
Female Hygiene*	-	1,282 Participants	7,890 Participants	2,342 Participants	11,514 Participants
Hotline**	-	1,326 Participants	4,603 Participants	1,433 Participants	7,362 Participants
Radio Show***	-	31,500 Listeners	49,000 Listeners	98,206 Listeners and callers	178,706 Listeners and callers
Health Screenings	-	-	3,060 Screened	5,160 Screened	8,220 Screened
Cholera Outreach	-	-	53,237 Participants	41,593 Participants	94,830 Participants
Male Hygiene	-	-	-	348 Participants	348 Participants
Total Reached each year (Excluding Radio Show)	10,993 Community Members	14,944 Community Members	81,138 Community Members	72,828 Community Members	Overall: 179,903 Community Members
<b>Total Reached each year (Including Radio Show)</b>	<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>Overall Total: 365,403 Community Members</b>

**Notes:** \*Female Hygiene (FH) numbers include women and girls who participated directly in the program as well as residents who attended events. In 2015, the FH program included numbers from 2 radio shows focusing on FH.

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

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

### *Rorya District Government and Malaria Focal Person*

In July 2016, MSG collaborated with the Rorya District Government offices. In particular, MSG worked with the District Development Office (DDO), District Education Office (DEO), District Medical Office and the Malaria Focal Person. Each office provided support and permission to continue our health screenings in 2016. The DDO provided MSG with a letter of support to continue health screenings. The DEO provided letters of support to continue health screenings in government schools. The DMO provided a letter of support and the following medicines for those who were diagnosed with WASH-related diseases: 90 treatments of Alu for children to treat malaria, 110 treatments of Alu for adults to treat malaria, 750 malaria rapid tests, 1,000 tablets of Proziquantal to treat schistosomiasis, and 10,000 tablets of Septron to treat UTIs. The DMO also approved MSG to work with government lab technicians, nurses and clinicians.

### *TAFIRI*

The mission of the Tanzania Fisheries Research Institute (TAFIRI) is to promote, conduct and manage fisheries research and consultancy for sustainable development of fisheries in Tanzania. There are five TAFIRI centers in Tanzania: Dar es Salaam (Headquarters), Mwanza, Sota, Kigoma, and Kyela. MSG partnered with the Sota TAFIRI Center, which is a substation of Mwanza. The Sota Center was established in 1988, first as a special center for Nile perch research. Now, the Center conducts research on social economics, cage fish, satellite lake surveys and water management surveys.

MSG and TAFIRI started collaborating in July 2016 to gain a better understanding of fishermen's health situations in the Shirati area, with specific interest in schistosomiasis. TAFIRI organized the fishermen to be tested and a location for the screenings. Health screenings for fishermen in 2016 acted as a pilot with the hope of expanding health screenings for fishermen in the years to come.

### *First Foundation*

In July 2016, First Foundation from the First Presbyterian Church of Birmingham, Michigan, donated funding to support screening and treating the participants in Maji Safi Group's After School Program and help the Health Screening Program become self-supporting. Funding from First Foundation contributed to screening 3,121 school-aged students (ages 5-18) from six primary schools and two secondary schools. In 2016, health screenings also acted as a means of evaluating our impact through the After School Program. The 2016 health screenings were conducted as a study for the After School Program as a means of assessing the participants' health in the future.

### *INTERTEAM*

In July 2016, INTERTEAM, a Swiss development organization, donated funding to support screening and treating MSG's Female Hygiene Program participants and their guardians. This health screening campaign also acted as the start of the expansion of the Female Hygiene Program. The 2016 health screenings were conducted as a study for the Female Hygiene Program as a means of assessing the participants' health in the future.

## Health Screening Results

### 2015 Health Screenings Summary

The first health screening campaign, conducted in 2015, was a means of detecting and treating any WASH-related diseases prior to MSG's WASH education intervention. During the pilot year, we found that many students and participants were sick with waterborne and water-related diseases; 81% percent of those screened tested positive to one or more waterborne or water-related diseases. MSG tested and educated 3,060 community members (including approximately 900 program participants) and treated 5,604 waterborne and 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 1 indicates the disease rates for each waterborne and water-related disease we tested for.

Figure 1: 2015 Health Screening Disease rates

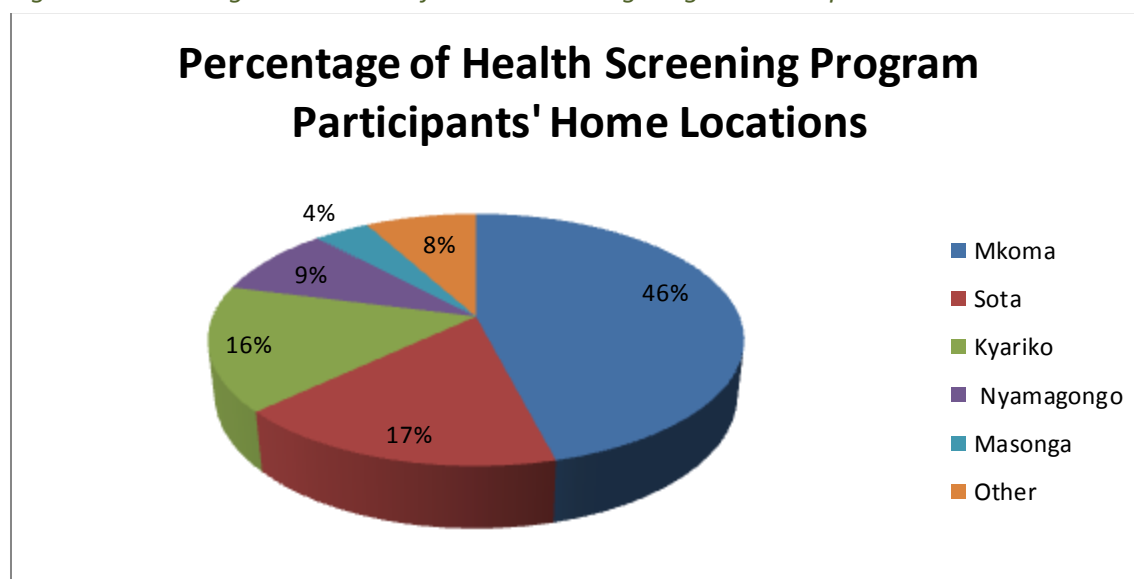
2015 Health Screening Rates	Amoebas	Intestinal Worms	Schistosomiasis in Stool	Schistosomiasis in Urine	UTIs
Overall percentage of health screening participants who tested positive	20%	18%	2%	31%	70%
New MSG Program participants who tested positive	28%	12%	17%	4%	66%
MSG Program participants	18%	16%	4%	14%	16%
Non MSG program participants	22%	30%	3%	16%	30%

### 2016 Demographics

The 2016, the MSG Health Screening Program was very well received among participants and community members. Overall, MSG screened and treated 5,160 program participants and community members. The screenings were conducted over 20 days from July 16-August 31, 2016. On average, MSG screened and treated 257 people per day with a range of 164 to 485 participants per day.

Of those tested, 54% were female and 46% were male. The youngest person tested was two months old and the oldest person tested was 90 years old. The average age was 18. The screenings took place in several different locations: the MSG office, Michire Primary School, Mkoma Primary School, Obwere Primary School, Sota Primary School, Tina's Education Center, Shirati Primary School and the Sota Beach Management Unit (BMU) office. The majority of those screened came from the village of Mkoma (46%), followed by Sota (17%), Kyariko (16%), Nyamagongo (9%), and Masonga (4%), as indicated in Figure 2.

Figure 2: Percentage breakdown of Health Screening Program Participants' Home Locations



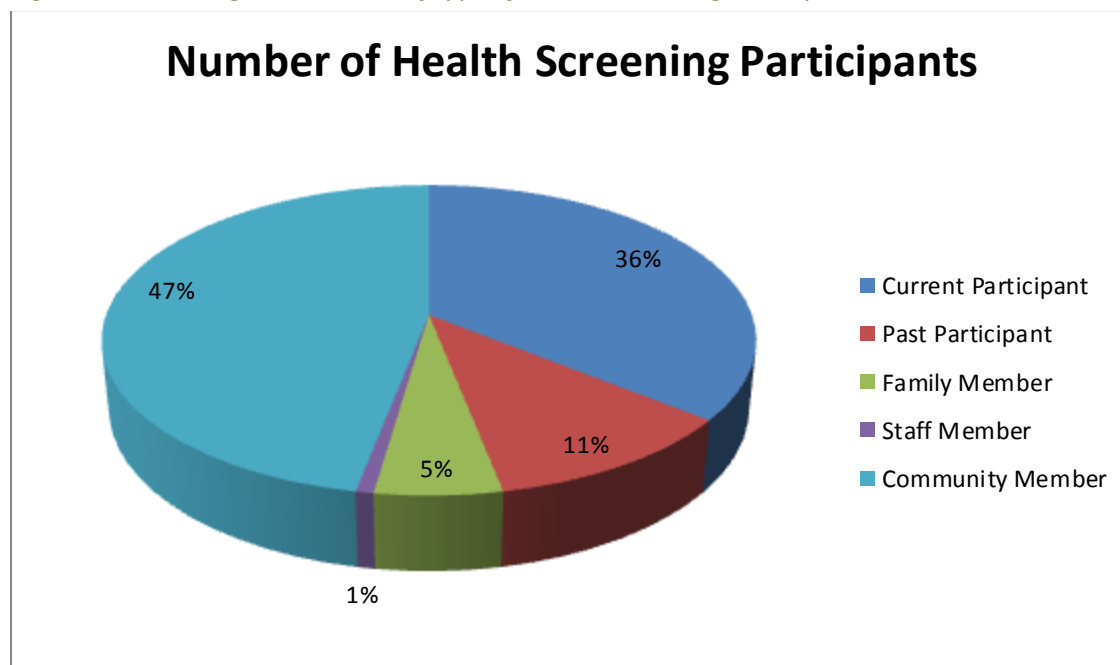
### Overall 2016 Results

It was found that 77% of the 2016 health screening participants tested positive for one or more waterborne or water-related diseases. Compared to the 2015 health screening results from the same area, this is a 4% decrease. The 2016 Health Screening questionnaire was changed to better understand the background of those screened and their participation status in MSG programs. More specifically, the questions assessed if those tested were 'current participants' (those who were attending a Maji Safi Group (MSG) program during the time of the screenings or had participated in an MSG program during the past year), 'past participants' (those who had attended an MSG program over a year ago), 'family members' (meaning they had a family member who had participated in one or more MSG programs or a family member who was currently participating in an MSG program), 'staff member' (people who currently worked for MSG), or 'community members' (those who lived in the community, but had never been involved with MSG programs). The breakdown of the health screenings participants' status is indicated in Figure 3 and Figure 4.

Figure 3: Health Screening Participant Status

Participant Status	Current Participant	Past Participant	Family Member	Staff Member	Community Member	Overall Total
Number of Health Screening Participants	1,840	571	277	39	2,413	5,140

Figure 4: Percentage Breakdown of type of Health Screening Participant



As indicated in Figure 5, there is a significant difference between disease rates among MSG program participants (current and past) and community members. These percentages indicate that community members, with no exposure to MSG programs or education, have a higher percentage of amoebas (8%-9% higher), intestinal worms (32% higher), schistosomiasis in stool (5% higher) and schistosomiasis in urine (13%-15% higher) than current and past MSG program participants. However, community members had the same percentage or lower than MSG program participants when comparing UTI rates (0%-4% lower). Additionally, community members had the same malaria rate (23%) as current MSG program participants, but a higher percentage than past MSG program participants (7% higher). These results lead us to believe that those who participate in Maji Safi Group programs (currently or in the past) have a better understanding of WASH knowledge and can better prevent WASH-related diseases, such as amoebas, intestinal worms, and schistosomiasis, than community members who have not had access to MSG education via programs. 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 community members. Malaria prevention is not taught in MSG education, which is shown in the disease rates, as there is no significant difference between MSG program participants and community members.

The disease rate trends of those who have been exposed to MSG programs compared to those of community members also hold for family members of MSG program participants and staff members. There are higher amoeba, intestinal worm, and schistosomiasis rates among community members compared to family members and staff. However, there is a lower UTI disease rate among community members than among family members and staff. Malaria rates indicate that family members have a lower disease rate (2% lower), and staff members have a lower rate as well (12% lower) compared to community members. It is speculated that WASH diseases are lower among family members and staff because they are exposed to MSG education. Additionally, one potential reason for the lower malaria

rates among staff members could be that they are professional health educators and understand the importance of prevention. They have also participated in malaria prevention continuing education classes.

*Figure 5: 2016 Health Screening Disease Rates*

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

*Maji Safi Group Program Disease Rates*

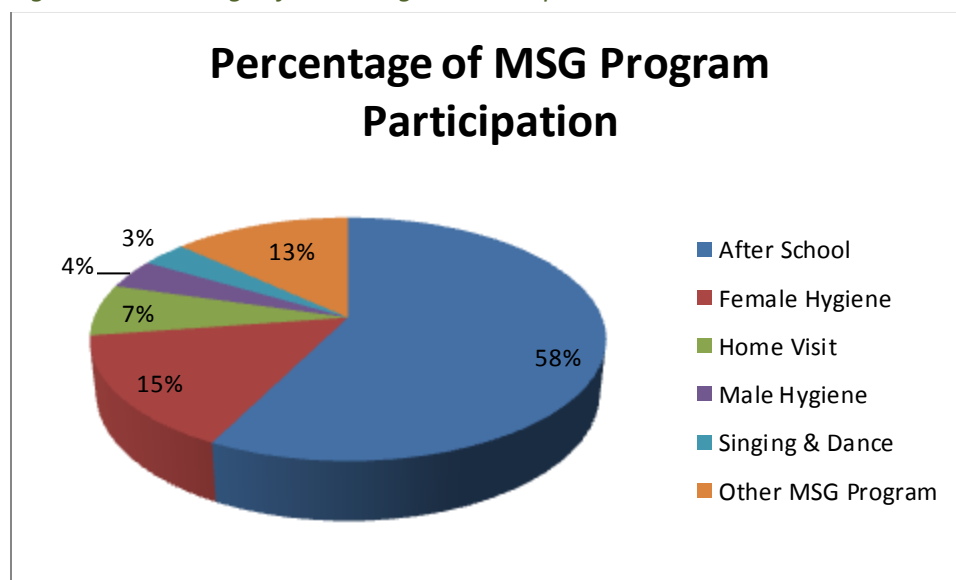
The 2016 Health Screening questionnaire was designed to ask health screening participants if they were current or past program participants. MSG tested 1,840 current and past program participants which made up 47% of all those who were tested during the 2016 health screenings. The registration form was also designed to indicate which MSG programs they have participated or are currently participating in. MSG programs included After School, Female Hygiene, Male Hygiene, Singing and Dance, Home Visit, and other programs such as Outreach, Disease Prevention Center, hotline, radio show, and Maji Safi Cup. It is important to note that 1,012 health screening participants partake (or partook) in more than one MSG program. This number indicates that they are currently in more than one MSG program or have participated in a program in the past and are currently participating in another program. As indicated in Figure 6 and Figure 7, the majority of program participants (past and current) came from the After School Program (58%), then Female Hygiene (15%), followed by Other MSG Programs (13%), Home Visit (7%), Male Hygiene (4%), and Singing and Dance (3%).



Figure 6: Number of Current and Past MSG Program Participants

Program	After School	Female Hygiene	Home Visit	Male Hygiene	Singing and Dance	Other MSG Program	Total
<b>Number of Current and Past Participation</b>	1,638	434	196	113	96	376	2,853

Figure 7: Percentage of MSG Program Participation



According to Figure 8, all MSG programs had lower WASH disease prevalence rates than community members who have not had any exposure to MSG programs: amoebas (5%-11% lower), intestinal worms (29%-36% lower), schistosomiasis in stool (1%-7% lower), and schistosomiasis in urine (15%-17% lower). Disease rates among the program participants also varied. Amoeba rates ranged from 7% positive in the Male Hygiene Program to 13% positive in the Home Visit, Female Hygiene, and Other MSG Programs. Intestinal worm rates ranged from 5% positive in the Singing and Dance Program to 12% positive in the Female Hygiene and Other MSG Programs. Schistosomiasis in stool rates ranged from 4% positive in the After School Program to 9% in Other MSG Programs. Schistosomiasis in urine rates ranged from 6% in the Male Hygiene and Singing and Dance Program to 8% in the Female Hygiene Program and Other MSG Programs.

When looking at UTI rates, however, it was found that only three programs (After School, Male Hygiene, and Singing and Dance) had a lower UTI disease rate than community members. The other programs (Home Visit, Female Hygiene and Other MSG Programs) screened were (8%-17%) higher than community members. Lastly, while malaria rates were around 21%-24% positive, Other programs, Singing and Dance, and the Home Visit Program had much lower malaria rates (8%- 15%) than the other programs and community members.

Figure 8: Disease Rates among MSG Program Participants

2016 Health Screening Rates	Amoebas	Intestinal Worms	Schistosomiasis in Stool	Schistosomiasis in Urine	UTIs	Malaria
<b>Overall percentage of health screening participants who tested positive</b>	14%	24%	7%	13%	51%	22%
<b>Home Visit Program Participants</b>	13%	8%	3%	7%	57%	8%
<b>Female Hygiene Program Participants</b>	13%	12%	7%	8%	66%	21%
<b>After School Program Participants</b>	8%	7%	4%	7%	48%	24%
<b>Male Hygiene Program Participants</b>	7%	9%	6%	6%	47%	23%
<b>Singing and Dance Program Participants</b>	9%	5%	5%	6%	43%	15%
<b>Other MSG Program Participants</b>	13%	12%	9%	8%	58%	13%
<b>Non-Program Participants: Community Members</b>	18%	41%	10%	21%	49%	23%

### Fishermen Results

MSG collaborated with TAFIRI and the Sota Beach Management Unit (BMU) to reach the fishing community to evaluate the fishermen’s health. The 2016 health screenings acted as a baseline for a fishermen cohort to measure if there is a need for education and further support within the fishing communities in the Rorya District. On August 5, 2016, MSG screened a total of 214 people in Sota; 106 of them were fishermen from the community. It was found that 100% of the fishermen screened were men between age 14 and 76; the average age was 35.

When comparing disease rates from the overall health screening participants to those of the fishermen, it was found that fishermen have a much lower prevalence rate of malaria, amoebas, and intestinal worms, as shown in Figure 9. However, fishermen have a much higher prevalence rate of schistosomiasis (22% higher in stool and 17% higher in urine) and UTIs (14% higher) compared to other non-fishermen health screening participants. MSG recommends that fishermen gain a better understanding of schistosomiasis and UTIs through MSG education. It is also recommended that fishermen living in this area get screened for schistosomiasis every three months to maintain a clean bill of health while working in Lake Victoria.

Figure 9: Waterborne and water-related disease rates

	Amoebas	Intestinal Worms	Schistosomiasis in Stool	Schistosomiasis in Urine	Schistosomiasis in both Stool and Urine	UTIs	Malaria
<b>Overall percentage of health screening participants who tested positive (including fishermen)</b>	<b>14%</b>	<b>24%</b>	<b>7%</b>	<b>13%</b>	<b>1%</b>	<b>51%</b>	<b>22%</b>
<b>Percentage of all 214 participants tested on August 5, including fishermen who tested positive</b>	<b>5%</b>	<b>17%</b>	<b>21%</b>	<b>21%</b>	<b>1%</b>	<b>65%</b>	<b>7%</b>
<b>Percentage of non-fishermen who tested positive on August 5</b>	<b>5%</b>	<b>16%</b>	<b>11%</b>	<b>10%</b>	<b>0%</b>	<b>62%</b>	<b>9%</b>
<b>Percentage of fishermen who tested positive</b>	<b>4%</b>	<b>16%</b>	<b>29%</b>	<b>30%</b>	<b>2%</b>	<b>64%</b>	<b>5%</b>

### Primary and Secondary School Results

MSG was able to include eight schools that collaborate with MSG in the 2016 Health Screening Program. The eight schools participated in the After School Program either as a past or current location for MSG education. All primary schools are located in the Tai or Mkoma ward in the Rorya District: Michire Primary School, Mkoma Primary School, Obwere Primary School, Sota Primary School, Tina’s Education Center, and Shirati Primary School. Additionally, MSG was able to screen a small sample of secondary school students from schools where MSG has taught Male and Female Hygiene Groups. These schools also educate students who have completed the MSG After School Program in previous years. Like the primary schools, the secondary schools are also located in the Tai and Mkoma Wards: Katuru Secondary School and Tai Secondary School.

When looking at the data from the After School Program participants, we also looked at MSG participation levels, broken up into seven levels: participated in After School Program for 1-3 lessons over a year ago, participated in After School Program for 4 lessons over a year ago, participated in After School Program for 5+ lessons over a year ago, participated in After School Program for 1-3 lessons within the current year, participated in After School Program for 4 lessons within the current year, participated in After School Program for 5+ lessons within the current year, and never participated in the After School Program. MSG is given class grades to teach during the After School Program; therefore, there are some class levels that have not received MSG education yet. Of those who were screened at a school, 48% (1,501 participants) participated in the After School Program either as a past participant or as a current participant, and 52% (1,617 participants) have yet to receive MSG WASH education during

the After School Program. In Figure 10 - Figure 14, there is a breakdown of the different schools, classes, and overall MSG participation level.

Figure 10: School Level of Health Screening Participation

School Name	Number of Health Screening Participants	Percentage of School Participation in Overall Health Screening Campaign
Michire Primary School	368	7%
Mkoma Primary School	460	9%
Obwere Primary School	781	15%
Sota Primary School	362	7%
Tina's Education Center	300	6%
Shirati Primary School	384	7%
Katuru Secondary School	107	2%
Tai Secondary School	359	7%
Non-School Participants	2,022	40%
<b>Total</b>	<b>5,143</b>	<b>100%</b>

Figure 11: Pie Chart of Health Screening Participants

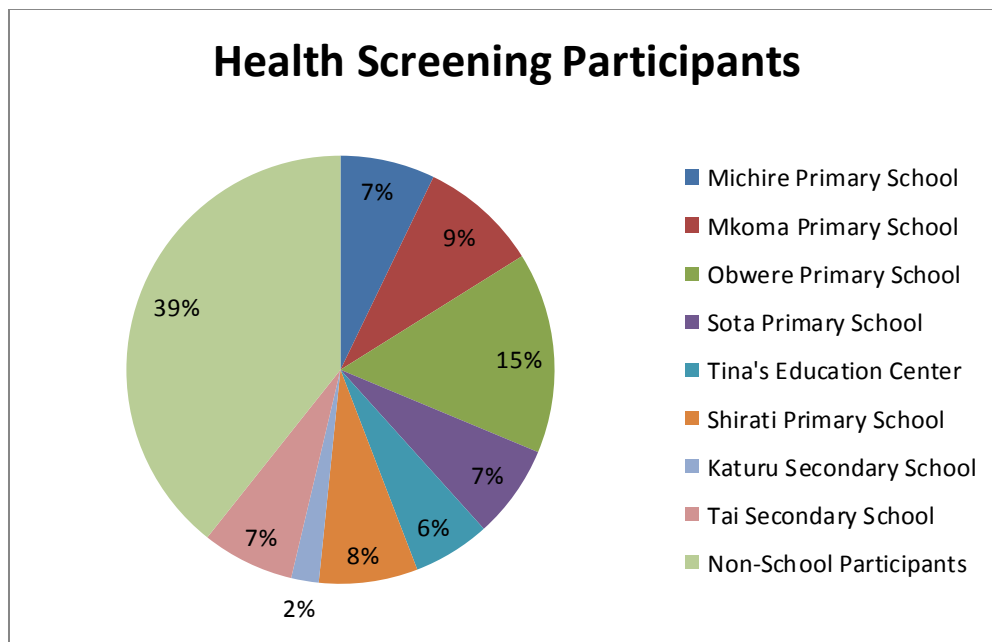


Figure 12: Chart of School and Class Breakdown

School Name	# of Pre-Kindergarten	# of Class 1	# of Class 2	# of Class 3	# of Class 4	# of Class 5	# of Class 6	# of Class 7	# of Form 1	# of Form 2	# of Form 3	# of Form 4	# of Parents	# of Teachers	# of Community Members screened at the school
Michire Primary School	42	57	37	33	21	35	25	50	0	0	0	0	0	11	54
Mkoma Primary School	39	78	48	30	73	44	56	80	0	0	0	0	0	1	11
Obwere Primary School	25	114	53	98	117	90	74	83	0	0	0	0	2	4	121
Sota Primary School	19	24	30	45	39	50	57	62	0	0	0	0	22	1	5
Tina's Education Center	47	27	40	52	48	46	36	0	0	0	0	0	1	2	1
Shirati Primary School	54	38	52	48	33	30	43	71	0	0	0	0	4	9	2
Katuru Secondary School	0	0	0	0	0	0	0	0	51	22	0	34	0	0	0
Tai Secondary School	0	0	0	0	0	0	0	0	231	114	6	6	0	2	0
<b>Total</b>	<b>226</b>	<b>338</b>	<b>260</b>	<b>306</b>	<b>331</b>	<b>295</b>	<b>291</b>	<b>346</b>	<b>282</b>	<b>136</b>	<b>6</b>	<b>40</b>	<b>29</b>	<b>30</b>	<b>194</b>

Figure 13: After School Participant Status

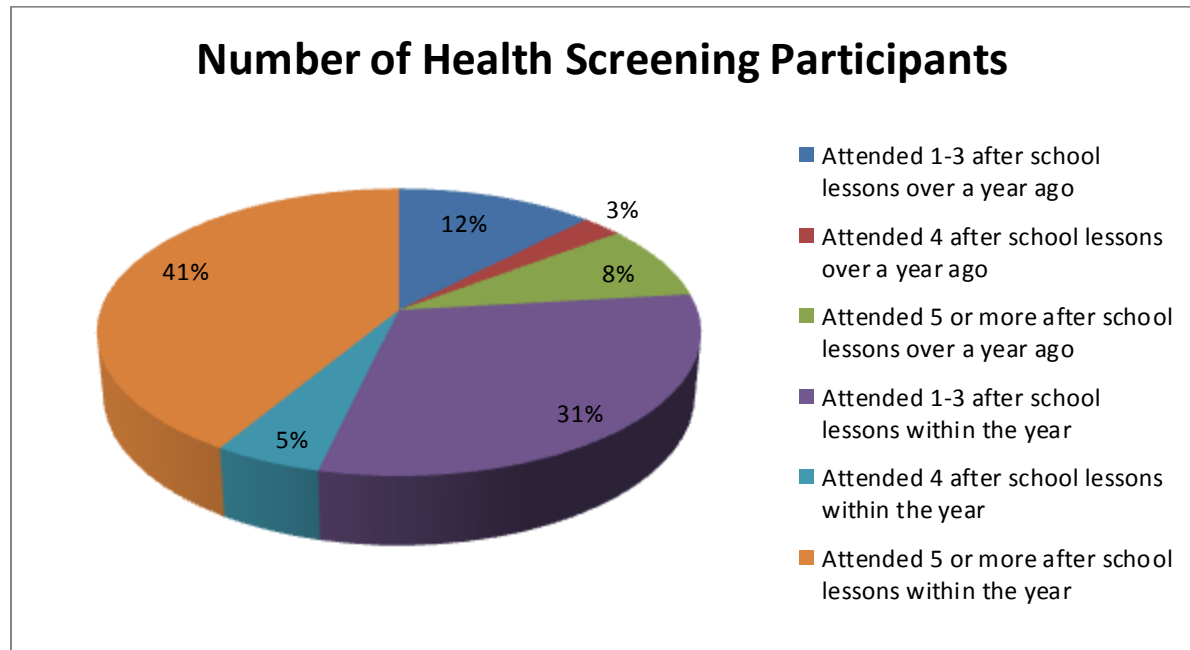


Figure 14: After School Participant Status

Level of After School Participation	Attended 1-3 after school lessons over a year ago	Attended 4 after school lessons over a year ago	Attended 5 or more after school lessons over a year ago	Attended 1-3 after school lessons within the year	Attended 4 after school lessons within the year	Attended 5 or more after school lessons within the year	Student never participated in After School Program
Number of Health Screening Participants	184	38	126	458	75	620	1617

### Primary and Secondary School Demographics

Conducting the 2016 health screening campaign was a great opportunity for us to gain a better understanding of MSG's After School Program's past and present participants in terms of age and gender. It was found that the average overall age in primary and secondary schools was 13 years, and the gender breakdown was 47% male and 53% female. These results are indicated in Figure 15.

Figure 15: Participants' Average Age and Gender

School Name	Average Age	Percentage of Males	Percentage of Females
Michire Primary School	14	48%	52%
Mkoma Primary School	11	46%	54%
Obwere Primary School	12	45%	55%
Sota Primary School	13	44%	56%
Tina's Education Center	11	48%	52%
Shirati Primary School	12	47%	53%
Katuru Secondary School	16	64%	36%
Tai Secondary School	16	53%	47%

### Primary School and Secondary School Disease Rate Analysis

During this health screening, the program participants were screened and tested for amoebas, intestinal worms, schistosomiasis in stool, schistosomiasis in urine, UTIs and malaria. Figure 16 shows an analysis of the program participants' waterborne and water-related disease rates.

Figure 16: Disease Rates per School

School Name	Percentage tested positive for Amoebas	Percentage tested positive for Intestinal Worms	Percentage tested positive for Schistosomiasis in Stool	Percentage tested positive for Schistosomiasis in Urine	Percentage tested positive for UTI	Percentage tested positive for Malaria
All Health Screening Participants	14%	24%	7%	13%	51%	22%
Michire Primary School	18%	11%	9%	5%	56%	30%
Mkoma Primary School	10%	32%	2%	15%	34%	16%
Obwere Primary School	11%	24%	6%	12%	45%	31%
Sota Primary School	6%	6%	6%	1%	57%	20%
Tina's Education Center	10%	13%	7%	14%	35%	33%
Shirati Primary School	12%	25%	1%	15%	47%	22%
Katuru Secondary School	11%	8%	4%	21%	41%	12%
Tai Secondary School	27%	52%	12%	22%	65%	27%

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

Figure 16 illustrates that Tai Secondary School has the highest disease rates, aside from the malaria rate which is the highest at Tina’s Education Center. MSG does not have an active After School Program at the secondary schools; however, several of the students participate in the Male Hygiene and Female Hygiene Programs. The school with the lowest disease rates for amoebas, intestinal worms and schistosomiasis in urine was Sota Primary School which has a long-standing collaboration with MSG. The lowest disease rate for schistosomiasis in stool was at Shirati Primary school, and the lowest disease rate for UTIs was at Tina’s Education Center. These schools are also long-time partners in the MSG After School Program. However, it was found that the lowest disease rate for malaria was at Katuru Secondary School.

This data indicate that if MSG obtains the funding to expand the After School Program, it should consider expanding it to the secondary schools because they have the highest disease rates and therefore the greatest need for education. The data also indicate that lessons should be taught on malaria prevention. As of now, malaria is not a disease that MSG teaches about regularly, but it is a disease that has high rates. However, it should be noted that the District Malaria Focal Person noted that 19-20% of people living in the Rorya District have malaria. Lessons about UTIs should also be looked into and taught in a different way that enables participants to lower their disease rates.

Figure 17: Disease Rates per MSG Participant Status

Participant Status	Percentage tested positive for Amoebas	Percentage tested positive for Intestinal Worms	Percentage tested positive for Schistosomiasis in Stool	Percentage tested positive for Schistosomiasis in Urine	Percentage tested positive for UTIs	Percentage tested positive for Malaria
All Health Screening Participants	14%	24%	7%	13%	51%	22%
After School Current Program Participant	9%	9%	5%	8%	50%	26%
After School Past Program Participant	20%	20%	4%	7%	45%	19%
Student who has family member in MSG program	5%	14%	4%	8%	48%	8%
Non-Program Participant Students	18%	43%	8%	20%	46%	27%

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

According to Figure 17, it is clear that those who are associated with MSG as a current program participant, past program participant or has a family member as a MSG program participant, typically have a lower WASH-related disease rate. However, there are high UTI rates among current program participants and high disease rates for amoebas among past program participants. UTI lessons should be revisited and revised to better educate on how to prevent this disease. While past participants have a high rate of amoebas, according to the data, disease rates for current program participants are low. Overall, these statistics indicate that health-screening participants generally are healthier if they are or have been exposed to Maji Safi Group’s WASH education.

**Malaria Results**

In partnership with the Rorya District Focal Malaria Person, we were able to administer 4,644 malaria rapid tests. Of those who received malaria tests, 44% were male and 56% female. The overall average age of those who were tested for malaria was 18 years old. However, the average age of those who tested positive for malaria was 13 years old, and those who tested negative had an average age of 19 years old. This indicates that according to our data, it was more likely for someone who was younger to get malaria compared to those who are older.

Figure 18 shows that the overall malaria rate was 22%. When broken down, the range was between 23% (among current program participants and community members) and 11% (among staff members). Additionally, when looking at the malaria rates among primary and secondary schools, it was found that Tina’s Education Center had the highest malaria rate with 33% testing positive, and Katuru Secondary School had the lowest malaria rate with 12% testing positive (indicated in Figure 19).



Figure 18: Malaria rates among MSG Program Participants

MSG Participant Status	Percentage tested positive for Malaria
Overall health screening participants	22%
Current MSG participants	23%
Past MSG participants	16%
Family members of MSG program participants	21%
MSG staff members	11%
Community members with no MSG exposure	23%

Figure 19: Malaria Rates among Primary and Secondary Schools

School Name	Percentage tested positive for Malaria
All Health Screening Participants	22%
Michire Primary School	30%
Mkoma Primary School	16%
Obwere Primary School	31%
Sota Primary School	20%
Tina's Education Center	33%
Shirati Primary School	22%
Katuru Secondary School	12%
Tai Secondary School	27%

## Discussion

Maji Safi Group (MSG) gained a lot of information during the 2016 Health Screening Program. Thanks to our partners, we were able to screen 2,100 participants more than in 2015, add two secondary schools and two primary schools, and start a baseline study for the fishermen at the Sota BMU. New indicators allowed us to look further into MSG program participation and gain a better understanding of community needs in terms of WASH education.

In short, the community is getting healthier. Overall disease rates dropped four percentage points and significantly more among program participants. It was also found that any type of exposure to MSG education (current and past program participants, family members and staff) lowered WASH disease rates (amoeba, intestinal worms, and schistosomiasis in stool and urine). UTI disease rates, however, were higher or the same among those with MSG exposure compared to community members. This

indicates that MSG needs to improve its UTI education by reviewing and revising the curriculum. Lastly, malaria rates are similar among program participants (current and past), family members and community members. MSG staff members have a lower prevalence rate of malaria; however, it is believed that their rates are lower because they have had outside education about malaria. Malaria education in the community is much needed and could potentially be a lesson MSG adds to its curriculum.

### **Recommendations for the Future**

The 2016 Health Screening Campaign was very successful; however, there is always room for improvement. MSG recommends the following:

- Improve UTI education by reviewing lessons and content
- Add more health screening participants from different locations
- Add malaria education to MSG's curriculum
- Provide more days to screen fishermen to create a larger data set
- Screen fishermen from different BMUs on Lake Victoria to diversify the locations they come from
- Encourage BMUs to gain MSG education, especially education about UTIs and schistosomiasis

### **Conclusion**

Maji Safi Group always aims to demonstrate a lower prevalence of disease rates than the previous year among program participants who have completed MSG's WASH lessons. Health screening results measure WASH disease prevalence rates among those who have received MSG WASH education and participated in programs compared to new MSG program participants and potential program participants who have never participated in MSG programs. In 2016, in collaboration with the local and district governments, TAFIRI, First Foundation and INTERTEAM, MSG was able to screen 2,100 more community members than in 2015, start screening a new sample group of fishermen living in the Rorya District, and add more schools to the health screening campaign. Results indicated that MSG significantly improves the lives of program participants and community members who are exposed to MSG education. Certain groups, like the fishermen groups, are in desperate need of schistosomiasis education. It is our hope that we can continue our collaboration with the local and district governments, TAFIRI, INTERTEAM and First Foundation in 2017 to continue to evaluate MSG programs and improve the lives of community members. Together, we can provide a clean bill of health coupled with community-driven education, which is a sustainable intervention for decreasing WASH-related diseases in rural areas of Tanzania.