Vision of a Healthy Village Program Results

Shinyanga, Tanzania
Project 1

A study evaluating the impact of Lifewater International's[1] Vision of a Healthy Village program in Shinyanga Project 1

March 2024

[1] Lifewater and Water For Good merged in 2024. Project implementation activities prior to January 2024 were conducted by Lifewater International.

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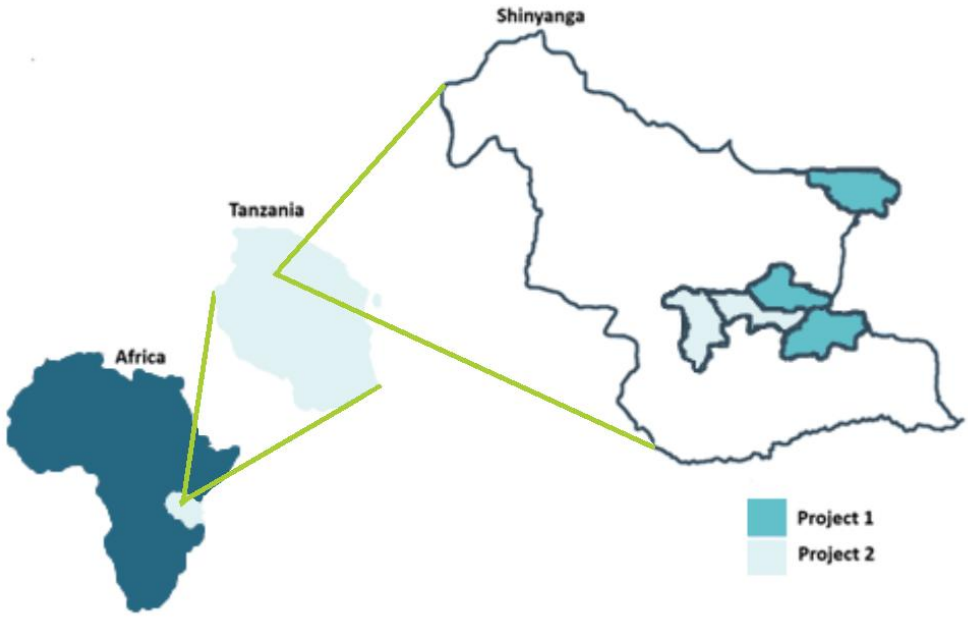
The Problem

Sub-Saharan Africa is estimated to have the lowest rates of water, sanitation, and hygiene (WASH) coverage globally. In rural Tanzania, safe access to WASH is largely inadequate, with an estimated 51% of people lacking at least basic access to drinking water, 79% lacking at least basic access to sanitation, and 78% lacking basic access to handwashing facilities in 2022.[2]

Shinyanga, Tanzania

The Shinyanga Rural District is administratively divided into 16 wards with a total population of 468,611 per the 2022 census. Lifewater's first project in this region operated in three rural wards (Mwantini, Mwamala, and Mwalukwa) serving 28,110 people across 82 sub-villages with WASH programming.

Figure 1. Map of the project area



During the baseline study conducted in this region in 2021 (before project implementation had begun), Lifewater found that access to safe WASH facilities and WASH knowledge was limited:

- 34% of respondents reported using an improved water source (designed to deliver safe water)[3] in both the dry and rainy seasons. Additionally, households reported a median roundtrip journey time of 87 minutes to collect their water.
- 35% of households were observed to have improved latrines (hygienically designed to prevent contact with human feces)[4].
- Proper handwashing facilities were not common at households; 3.0% had a handwashing station with soap/ash and water near their latrine, and 0.4% had one near their kitchen. Furthermore, less than a quarter of respondents washed their hands with soap and water at the two most critical times (before eating and after using the latrine) in the 24 hours prior to the survey (self-reported).

[2] WHO/UNICEF Joint Programme for Water Supply, Sanitation and Hygiene (2022). Retrieved from: https://washdata.org/data/household#!/dashboard/6138
[3] WHO/UNICEF Joint Programme for Water Supply, Sanitation and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/drinking-water
[4] WHO/UNICEF Joint Programme for Water Supply, Sanitation, and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/sanitation.

Lifewater's Program

Lifewater implemented its first project in the Shinyanga district of Tanzania from January 2021 through December 2023. The project focused on changing WASH behaviors (such as handwashing, water treatment, and latrine use) as well as constructing WASH infrastructure. The project had the following high-level goal: *Reduce WASH-related diseases and improve the health and wellbeing of children and families in the Shinyanga district through safe water, sanitation, and hygiene.*

Water points were constructed in communities, schools, and health facilities, and ventilated improved pit latrines were constructed at schools and health facilities. Between baseline and endline[5], 41 water points were completed and 18 ventilated improved pit latrines were constructed. Lifewater also partnered with Tanzania's Rural Water Supply and Sanitation Agency (RUWASA), who committed to constructing and providing regular maintenance services for 41 water points in the Shinyanga Project 1 area.

In addition to the construction of water and sanitation infrastructure, the project emphasized intensive behavior change activities at the household-level. For this purpose, 421 Community Conversation events were undertaken, in which the communities learned about 18 WASH-related topics, such as handwashing and clean compounds. In the communities, trained volunteers made educational visits to every household in the project (at least quarterly) to motivate and support behavior change and to monitor progress. Additionally, communities were encouraged to obtain government Open Defecation Free (ODF) verifications and declarations. Schools and health facilities in the project area were equipped with training on maintaining a healthy environment for students and patients, to prevent WASH-related diseases. As the first Vision of a Healthy Village project in Tanzania, Lifewater staff learned and adjusted their approaches based on the local context as the program progressed. Key outputs of Shinyanga Project 1 are displayed in Table 1.

Table 1. Shinyanga Project 1 outputs as of March 2024

Outputs	Number (Percent)
Healthy Homes[6]	4,133 (94%)
Open Defecation Free villages	99 (97%)
Trained water committees	7
New and rehabilitated water points completed	34
New and rehabilitated ventilated improved pit latrines (VIPLs) completed	18
Healthy Villages[7]	8 (7.8%)[8]

Since the data for the project endline was collected (March 2024), additional outputs have been achieved, including the registration of one Healthy Village and three Healthy Schools. Twenty-nine additional water points and three additional latrine blocks have been constructed.

[5] Data for the baseline study were collected in February and March of 2021; data for the endline were collected in March 2024. This project operated on a three-year schedule.

[6] Healthy Homes are verified to be drinking safe water in the dry and rainy seasons, use safe water storage containers, have improved latrines with dignity (with walls, a roof, a pit cover, and a door), two handwashing stations with soap/ash and water (one near the latrine and one near the kitchen), a hygienically raised dish drying rack, a bathing shelter that allows water to drain without pooling, and a clean compound.

[7] Healthy Villages are those that become Open Defecation Free (ODF), have access to safe water, functional water committees, and at least 90% Healthy Homes in their village

[8] This low achievement of Healthy Village status is likely due to the high number of delayed water point construction projects in the project area. At the time of this report, 23 additional improved community water points are either under construction or planned for Shinyanga Project 1 communities.

Study Methods

For this study, the following data were utilized:

Household survey: A household Knowledge, Attitudes, and Practices (KAP) survey was conducted in March of 2024, combining both observation and interview data. Using the probability proportional to size method, 321 households were surveyed from the ten wards, including 28 in Mwantini, 132 in Mwamala, and 89 in Mwalukwa. This is a population sample with a 90% confidence level[9] and a 5% margin of error.[10] Households were sampled from the 82 government sub-villages in the project[11]. Enumerators chose which households to randomly sample in each village using the "Spin a Pen" method[12].

Data was collected electronically by enumerators through mWater, a mobile data collection software platform, and downloaded into Excel where it was analyzed. If the data for an indicator were normally distributed, the average value is reported. If they were not normally distributed, the median is provided to give a more representative estimate.

School assessment data: Data on the 12 schools within the target area were collected in March 2024. Information on school water sources, sanitation facilities, school enrollment, dropouts, absences, and handwashing stations were analyzed using Excel.

Health care facility assessment data: Data from the four health care facilities within the target area were collected in April 2024, including information on the number of annual outpatient visits and cases of various WASH-related illnesses.

Qualitative data: Five focus group discussions (FGDs) and 16 in-depth interviews (IDIs) were conducted at endline with key project stakeholders and community members. Data were analyzed using ATLAS.ti, a qualitative data analysis software tool. For each theme that emerged from the data, a detailed description was created.

[9] How sure you can be of your results
[10] The amount of error you are willing to tolerate
[11] Lifewater divided these 102 government villages into 82 smaller sub-villages for project planning and implementation purposes
[12] UNICEF (n.d.). Retrieved from: https://mics.unicef.org/files?job=W1siZiIsIjIwMTUvMDQvMDMvMDYvNDIvNDgvMzgyL2NoYXAwNi5wZGYiXV0&sha=6509e495a61af931

Key Indicators

Table 2. Summary of key data from baseline and endline household KAP survey of Shinyanga Project 1

Theme	Indicators	Baseline	Endline	P-values
Health Indicators	% of households with at least one child under 5 that had diarrhea in past 7 days	30%	20%	<0.05
	% of respondents reporting that child health has improved in the past year	14%	30%	<0.05
	% of respondents reporting that their health has improved in the past year	15%	15%	0.500
Water Indicators	% of households using an improved primary drinking water source in the dry and rainy season[13]	34%	34%	0.500
	% of households drinking safe water (source and/or treatment)	46%	42%	0.806
	Median journey time to fetch water (travel to/from water source plus queue time) during dry season[14]	87 minutes	30 minutes	<0.05
	% of households storing water safely (observed)[15,16]	6.0%	7.3%	0.325
Latrine Indicators	% of households with latrines that are improved[17] (observed)[18]	35%	38%	1.5
	% of households with latrines that are improved with dignity (slab, walls, roof, pit cover, and door) (observed)[19]	0.0%	0.0%	0.500
Hygiene Indicators	% of respondents who washed hands in past 24 hours (with soap/ash and water or alcohol-based rub) at the two most critical times (after defecation and before eating)	22%	25%	0.230
	% of households with handwashing facility and materials (soap/ash and water or sanitizer) located close to latrine (within 10 paces) (observed)[20]	3.0%	29%	<0.05
	% of households with handwashing facility and materials (soap/ash and water or sanitizer) inside or near the kitchen (observed)[21]	0.4%	2.9%	<0.05
	% of households using a hygienic (raised) drying rack (observed)[22]	33%	59%	<0.05
	% of households with a bathing shelter[23] (observed)[24]	71%	84%	<0.05
	% of households with a clean compound (no visible rubbish or feces) (observed)	46%	36%	0.995
Healthy Homes	% of households meeting all Healthy Home requirements[25]	0.0%	0.0%	0.500

[13] Improved sources of water include "those that have the potential to deliver safe water by nature of their design and construction, and include: piped water, boreholes or tubewells, protected dug wells, protected springs, rainwater, and packaged or delivered water". WHO/UNICEF Joint Programme for Water Supply, Sanitation and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/drinking-water

[14] This includes all households for whom we had sufficient data to evaluate their water fetching time (n=296 at baseline; n=235 at endline)

[15] This includes all households for whom we had sufficient data to evaluate their water storage containers (n=298 at baseline; n=316 at endline)

[16] Safe water storage containers are those that are narrow mouthed, covered, and clean/mostly clean

[17] Improved latrines are "designed to hygienically separate excreta from human contact, and include: flush/pour flush toilets connected to piped sewer systems, septic tanks or pit latrines; pit latrines with slabs (including ventilated pit latrines), and composting toilets". WHO/UNICEF Joint Programme for Water Supply, Sanitation, and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/sanitation.

[18] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=308 at baseline; n=321 at endline)

[19] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=308 at baseline; n=321 at endline)

[20] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=236 at baseline; n=306 at endline)

[21] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=236 at baseline; n=306 at endline)

[22] This includes all households for whom we had sufficient data to evaluate their area for drying dishes (n=301 at baseline; n=316 at endline)

[23] Appropriate drainage of bathing shelters was not considered in these studies.

[24] This includes all households for whom we had sufficient data to evaluate their bathing shelter (n=295 at baseline; n=308 at endline)

[25] This includes all households for whom we had sufficient data to evaluate Healthy Home criteria (n=221 at baseline; n=290 at endline)

Health

Diarrhea is the third leading cause of death for children under 5 globally, resulting in approximately 443,832 deaths per year.[26] The majority of these deaths are attributed to inadequate WASH. At baseline, 30% had at least one child in this age group with diarrhea, compared to 20% at endline (p-value <0.05). Respondents were also asked general questions about how their household's health had changed in the 12 months prior to the surveys. The percentage of respondents reporting that their children's health had improved in the last year increased from 14% at baseline to 30% at endline (p-value <0.05).

The percentage of respondents who reported having diarrhea in the week prior to the survey decreased from 14% at baseline to 7.2% at endline. Regarding their own health, the percentage of respondents reporting their health had improved did not change between baseline and endline (15%). More respondents reported that their health had stayed the same at endline (56% at baseline, 74% at endline), and the percentage who reported their health declining decreased from 29% at baseline to 11% at endline.

The percentage of respondents who reported missing days of work in the past two weeks due to illness decreased from 60% at baseline to 17% at endline, and the median number of days these respondents missed decreased from 7 days to 3 days. Respondents also reported spending less money on medical treatment; the percentage of households who reported spending money related to medical treatment in the four weeks prior to the survey decreased from 55% at baseline to 21% at endline, and the median amount they spent decreased from 18,102 ETB ($6.82 USD) to 15,000 ETB ($5.65 USD).

Water

Lifewater is interested in understanding the level of "basic access" to drinking water within the project area, which is defined as "Drinking water from an improved source, provided collection time is not more than 30 minutes for a roundtrip including queuing"[27]. Lifewater was able to assess the rate of basic access for 96% (n=296) of respondents for the dry season at baseline, 90% (n=278) of respondents for the rainy season at baseline, 73% of respondents for the dry season at endline (n=235), and 64% of respondents for the rainy season at endline.

Basic access increased at endline for the dry season and decreased for the rainy season; basic access in the dry season increased from 8.8% to 51%, and basic access in the rainy season decreased from 53% at baseline to 32% at endline. The reduced basic access in the endline rainy season is primarily due to the higher use of rainwater to open containers (47%), an unimproved drinking water source.

[26] WHO (2024). Retrieved from: https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease

[27] WHO/UNICEF Joint Programme for Water Supply, Sanitation and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/drinking-water

Table 3. Drinking water source types in the dry and rainy seasons

	Season	Source type	% of respondents	Median water fetching time	% with basic access
Baseline	Dry	All sources Improved Unimproved	100% (n=296) 47% (n=140) 53% (n=156)	87 minutes 120 minutes 70 minutes	8.8% (n=26)
	Rainy	All sources Improved Unimproved	100% (n=278) 65% (n=181) 35% (n=97)	8 minutes 6 minutes 10 minutes	53% (n=147)
Endline	Dry	All sources Improved Unimproved	100% (n=235) 94% (n=221) 6.0% (n=14)	30 minutes 29 minutes 46 minutes	51% (n=120)
	Rainy	All sources Improved Unimproved	100% (n=205) 43% (n=88) 57% (n=117)	6 minutes 20 minutes 5 minutes	32% (n=65)

A substantial number of water points had not been constructed or completed at the time of the endline data collection, which may have impacted the achievement of access to improved water sources at endline. Construction activities are ongoing and are expected to increase basic access to improved water sources in the coming months.

A household is considered to be drinking safe water if they fetch water from an improved source in both seasons, or if they do not use an improved source, they always treat their water with an acceptable water treatment method[28]. At baseline, 53% of households were drinking safe water in the dry and rainy seasons, compared to 43% at endline (p-value >0.05).

Overall satisfaction with the current water situation more than doubled from baseline to endline; 23% reported being satisfied at baseline, compared to 55% at endline.

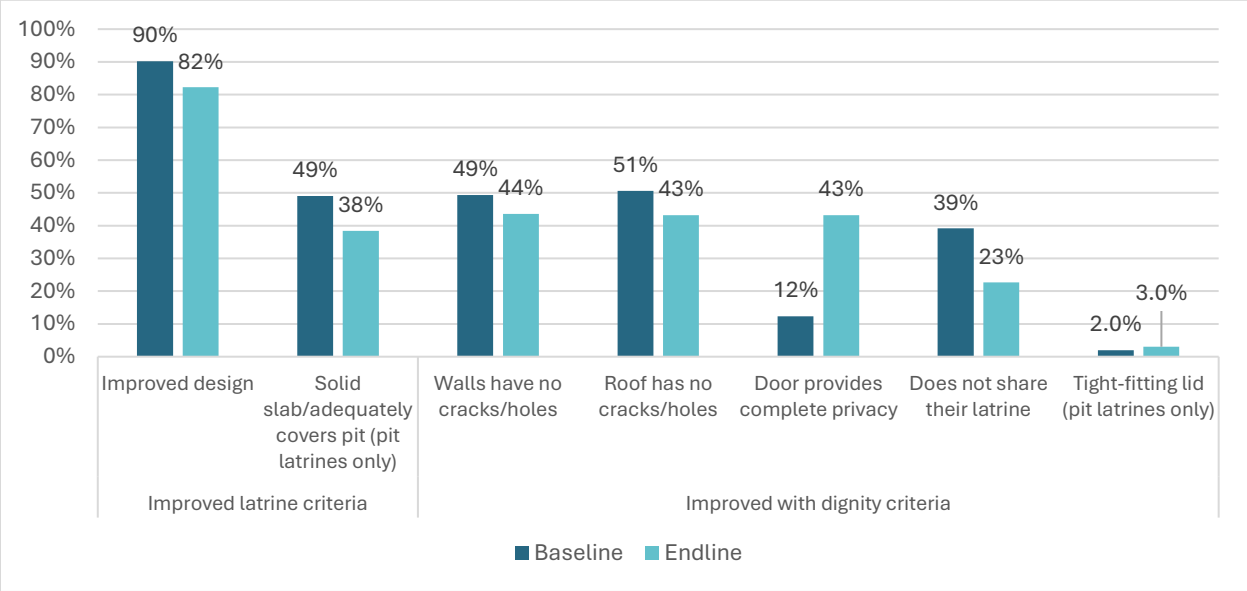
Sanitation

Interview respondents reported that before the Lifewater program, people in their community practiced open defecation and did not know the importance of using latrines for health. Since community members built their latrines, they noticed that diarrhea cases have decreased, and the environment has become cleaner. Overall, the percentage of households with an improved latrine (with a pour/flush latrine to an enclosed tank or a dry pit latrine with a tight-fitting lid and solid slab) increased from 35% at baseline to 38% at endline (p-value 1.5), and no (0.0%) households at baseline or endline were observed to have improved latrines with dignity.

These results regarding latrine prevalence and quality at endline may have been impacted by the timing of data collection, which took place after heavy flooding that caused the collapse of many household latrines. This flooding was confirmed by both the Shinyanga program team and the qualitative interviews, where some respondents described difficulties with latrine sustainability related to flooding. The Shinyanga team also found that some of the local methods for constructing improved latrines with dignity were not climate-resilient; for example, many households constructed their latrine doors out of sunflower stems, which quickly deteriorated. Non-durable construction materials may have contributed to lower latrine quality achievements at endline.

[28] Effective water treatment methods include boiling, adding chlorine, using a biosand filter, using a ceramic filter, or solar disinfection.

Figure 1. Quality of observed latrines at baseline and endline



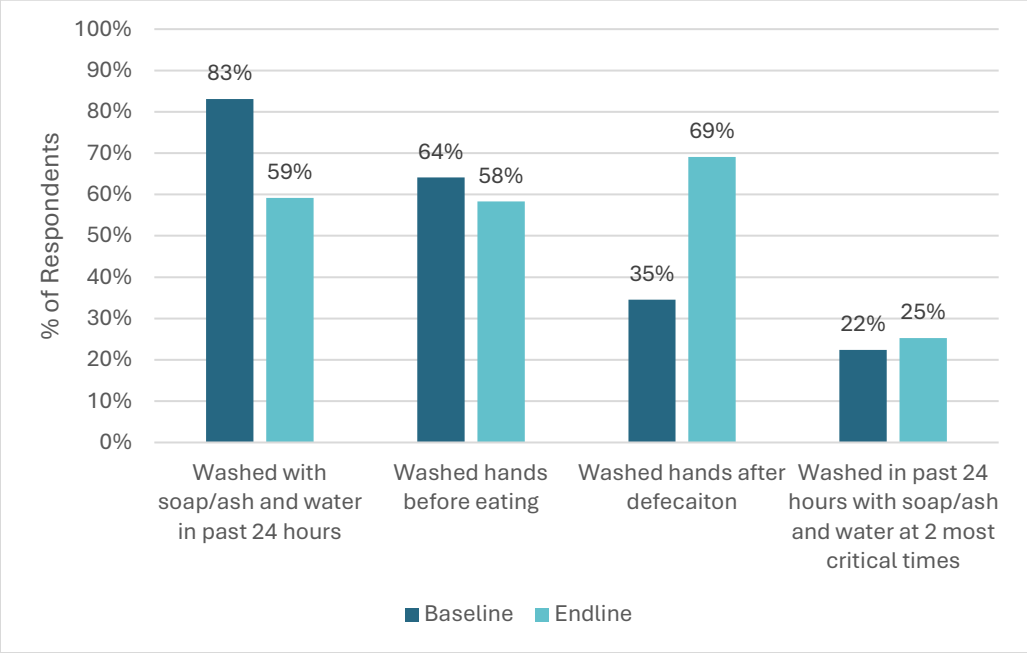
Hygiene

Handwashing facilities and self-reported handwashing behaviors were investigated in each study. The prevalence of handwashing stations near the latrine with the appropriate materials (soap/ash and water) increased from baseline to endline, from 3.0% to 29% (p-value <0.05). Additionally, the percentage of households with handwashing stations near their kitchen (with soap/ash and water) increased slightly from 0.4% at baseline to 2.9% at endline (p-value <0.05).

During interviews, one participant noted that “everybody in the community has a tippy tap”. This and other qualitative data indicates an increased awareness in the importance of maintaining handwashing stations, although many participants recognized this as the most difficult Healthy Home criteria to maintain. Not only is it a new concept for households to have tippy taps, but they have difficulties with children stealing and selling their equipment.

The percentage of respondents who reported washing their hands after defecation/using the latrine increased from 35% to 69%, while the percentage who reported washing their hands before eating decreased slightly from 64% to 58%. Overall, the percentage of respondents who washed their hands with soap/ash and water at the two most critical times increased from 22% at baseline to 25% at endline (p-value >0.05). One mother of children under five reported that before the Lifewater program, she did not think it was important to wash her hands before cooking, since everything would be heated. Now she knows the importance of this practice and washes her hands before preparing meals.

Figure 2. Self-reported handwashing behavior in the 24 hours prior to the survey



Enumerators also observed the households' waste management. The percentage of households observed to have animal feces on the compound decreased from 30% at baseline to 22% at endline, and the percentage observed to have rubbish on their compound increased from 47% to 63%. Overall, the percentage of households observed to have clean compounds decreased from 46% at baseline to 36% at endline (p-value <0.05).

Community Institutions

Schools

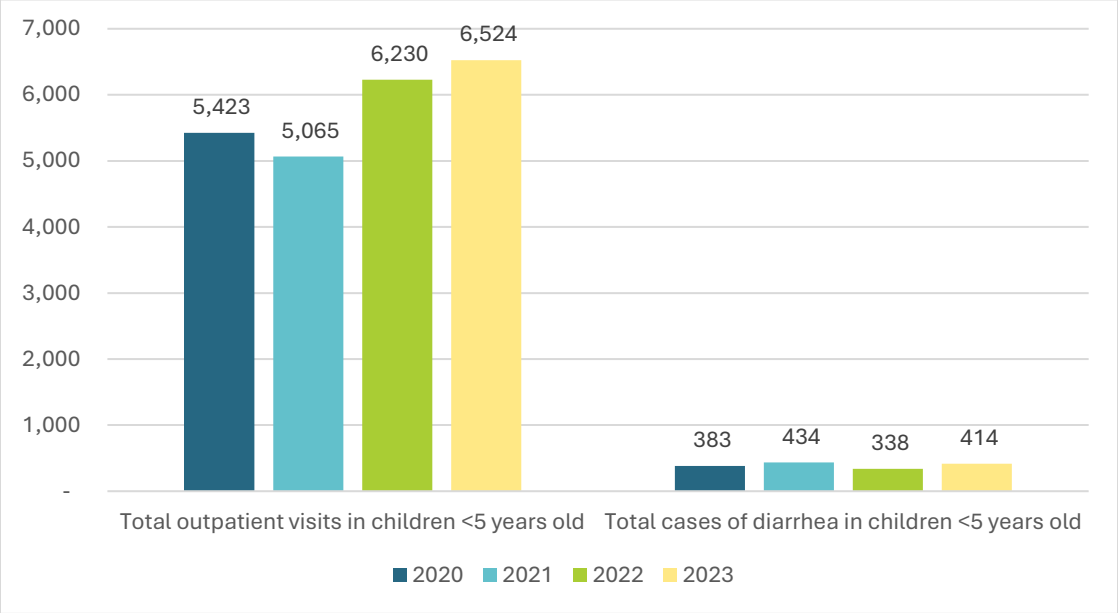
During the interviews, participants reported that the WASH conditions at schools have overall improved. Absenteeism has reduced, due in part to the increased menstrual hygiene management support that girls receive at schools. Multiple respondents mentioned that student WASH clubs have been educating children about WASH behaviors and mobilizing them to keep the school environment safe. Quantitative changes in school enrollment, dropouts, or absenteeism were inconsistent throughout the course of the project.

Health Facilities

Health extension workers noted that the burden of WASH-related diseases observed at health facilities has decreased since the Lifewater program. Some noted that there have been improvements in WASH infrastructure at health facilities, although some health facilities had not yet received safe water from Lifewater or RUWASA. They recognized that this lack of safe water at their facilities was contributing to outbreaks of diarrhea and cholera.

Annual case data collected from the four health posts in the project area produced mixed results regarding the changes in the WASH disease burden in this area. While cases of intestinal parasites and scabies/skin disease decreased over the years of the project, consistent changes were not observed in the total number of patient visits, diarrhea cases, or respiratory infections.

Figure 3. Health facility case data for children under 5 from 2020-2023 (total outpatient visits and diarrhea infections)



Conclusion

Through this project, households received training on WASH practices, schools were mobilized to teach their students about WASH, water points were rehabilitated and constructed, and water committees were established for ongoing maintenance and operations of water points. As a result, communities are equipped to prevent WASH-related diseases through healthy practices such as safe water consumption, handwashing, and improved latrine use. Of the 4,411 households in the project area, 94% were registered as Healthy Homes, and 97% of the 102 village groups were registered as Open Defecation Free.

This evaluation found mixed results regarding changes in WASH conditions and behaviors in the Shinyanga project 1 area between baseline and endline. Key improvements were observed in the prevalence of child diarrhea, the reduction in the median journey time to fetch water, and the prevalence of proper latrine handwashing devices, hygienic drying racks, and bathing shelters.

Outcomes that did not improve include the percentage of households reporting their health had improved, the percentage of households using improved water in both seasons, the percentage of households with improved latrines with dignity, and the prevalence of observed Healthy Homes. Outcomes that declined include the percentage of households drinking safe water and the percentage observed to have clean compounds.

Despite heavy flooding in the project area before data were collected at endline, staff report that many households have already reconstructed latrines damaged or destroyed by extreme weather. This suggests that households understand the health benefits of their WASH infrastructure and are willing to maintain it long term. Lifewater projects should not only provide WASH resources, but empower communities with the knowledge and strategies necessary to reduce the spread of WASH-related illnesses.

These findings will be used to inform future project implementation. A post-project evaluation study will be conducted in 2026 to evaluate any changes that may occur in these results after endline.