Vision of a Healthy Village Program Results

Mayuge, Uganda
Project 3

A study evaluating the impact of Lifewater International's[1] Vision of a Healthy Village program in Mayuge Project 3

June 2025

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

Contents

03 The Problem

04 Lifewater's Program

05 Study Methods

07 Key Indicators

08 Results: Health

10 Results: Water

11 Results: Sanitation

13 Results: Hygiene

13 Results: Healthy Homes

14 Results: Community Institutions

16 Conclusion

The Problem

Sub-Saharan Africa is estimated to have the lowest rates of water, sanitation, and hygiene (WASH) coverage globally. In rural Uganda, safe access to WASH is largely inadequate, with an estimated 47% of people lacking at least basic access to drinking water, 80% lacking at least basic access to sanitation, and 81% lacking basic access to handwashing facilities in 2022.[2]

Mayuge, Uganda

The Mayuge District is administratively divided four parishes with a total estimated population of 577,563.[3] Lifewater's third project in this region operated in four rural parishes (Bubinge, Kitovu, Ndiaga, and Wandegeya) serving 18,786 people across 55 villages with WASH programming.

Figure 1. Map of the project area

During the baseline study conducted in this region in 2022 (before project implementation had begun), Lifewater found that access to safe WASH facilities and WASH knowledge was limited:

- 62% of respondents reported using an improved water source (designed to deliver safe water)[4] in both the dry and rainy seasons. Additionally, households reported a median roundtrip journey time of 110 minutes to collect their water in the dry season.
- 25% of households were observed to have improved latrines (hygienically designed to prevent contact with human feces)[5].
- Proper handwashing facilities were rare in households. None (0.0%) had a handwashing station with soap or ash and water near their kitchen, and 0.8% had one near their latrine. Furthermore, 19% of respondents washed their hands with soap or ash 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/6849
[3] City Population (2024). https://www.citypopulation.de/en/uganda/admin/busoga/214__mayuge/
[4] WHO/UNICEF Joint Programme for Water Supply, Sanitation and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/drinking-water
[5] WHO/UNICEF Joint Programme for Water Supply, Sanitation, and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/sanitation

Lifewater's Program

Lifewater identifies a district for long-term partnership and then begins working through the district, selecting several smaller administrative units (parishes) for each three-year project cycle. Lifewater implemented its third project in the Mayuge district of Uganda from April 2022 through March 2025. 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 Mayuge 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[6], 39 water points were completed and 16 ventilated improved pit latrines were constructed.

In addition to the construction of water and sanitation infrastructure, the project emphasized intensive behavior change activities at the household-level. For this purpose, 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. Key outputs of Mayuge Project 3 are displayed in Table 1.

Table 1. Mayuge Project 3 outputs as of May 2025

Outputs	Number (Percent)
Healthy Homes[7]	2,529 (96%)
Open Defecation Free villages	55 (100%)
Trained water committees	44
New and rehabilitated water points completed	39
New and rehabilitated ventilated improved pit latrines (VIPLs) completed	16
Healthy Villages[8]	29 (53%)

Nine water points were completed after the endline in June 2025. This results in a total of 48 completed water points.

[6] Data for the baseline study was collected in April of 2022; data for the endline was collected in June 2025.
[7] 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.
[8] 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

Study Methods

For this study, the following data were utilized:

Household survey: Household Knowledge, Attitudes, and Practices (KAP) surveys were conducted in April 2022 and June 2025, combining both observation and interview data. At baseline, 420 households were surveyed via a probability proportional to size sampling method of the 55 villages in the project areas. At endline, 417 households were surveys using the same sampling method. In both studies, enumerators chose which households to randomly sample in each village using the "Spin a Pen" method.[9]

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.

In the analysis, a Healthy Home Grade was calculated for each household, representing its ability to prevent the spread of WASH-related illnesses through their WASH infrastructure and practices. Final grades are assigned from 0% (lowest) to 100% (highest, Healthy Home). Grades were weighted based on the importance of each Healthy Home component in preventing diseases such as diarrhea; the more critical the Healthy Home component, the higher the weight the component received in this grading method. Table 3 displays the scoring method utilized.

Table 3. Healthy Home grading method

Healthy Home Criteria	Weight (out of 100%)
Having an improved latrine with dignity	30%
Drinking safe water	22.5%
Latrine handwashing device with soap/ash and water	15%
Storing water safely	12.5%
Clean compound free of feces and rubbish	5%
Kitchen handwashing device with soap/ash and water	5%
Raised dish drying rack	5%
Improved bathing shelter	5%

Child illness baseline: Normally, child illness data (including diarrhea and respiratory illness data) are collected during the household survey. During the baseline data collection in June 2022, enumerators misunderstood what symptoms were associated with diarrhea. As a result, a separate survey was conducted in October 2022 to replace the child illness data in the households survey. June and October are considered to be similar seasons in the Mayuge District. This survey followed the same methods as the household survey and resulted in 410 surveys with children under 5. Areas in this report where data from this separate survey is used are denoted with a footnote.

School assessment data: Data on the five schools within the target area were collected in July 2025. Information on school water sources, sanitation facilities, school enrollment, dropouts, absences, and handwashing stations were analyzed using Excel.

[9] UNICEF (n.d.). Retrieved from: https://mics.unicef.org/files?job=W1siZiIsIjIwMTUvMDQvMDMvMDYvNDIvNDgvMzgyL2NoYXAwNi5wZGYiXV0&sha=6509e495a61af931

Health care facility assessment data: Data from the two health care facilities within the target area were collected in June 2025, including information on the number of annual outpatient visits and cases of various WASH-related illnesses.

Qualitative data: Five focus group discussions (FGDs) and 6 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.

Key Indicators

Table 2. Summary of key data from baseline and endline household KAP survey of Mayuge Project 3

Theme	Indicators	Baseline	Endline	P-values[10]
Health Indicators	% of households with at least one child under 5 that had diarrhea in past 7 days	48%[11]	5.5%	<0.05
	% of respondents reporting that child health has improved in the past year	8.3%	94%	<0.05
	% of respondents reporting that their health has improved in the past year	8.4%	81%	<0.05
Water Indicators	% of households using an improved primary drinking water source in the dry and rainy season[12]	62%	100%	<0.05
	% of households drinking safe water (source and/or treatment)	62%	100%	<0.05
	Median journey time to fetch water (travel to/from water source plus queue time) during dry season[13]	90 mins	7 mins	<0.05
	% of households storing water safely (observed)[14,15]	0.5%	89%	<0.05
Latrine Indicators	% of households with latrines that are improved[16] (observed)[17]	25%	99%	<0.05
	% of households with latrines that are improved with dignity (slab, walls, roof, pit cover, and door) (observed)[18]	0.0%	43%	<0.05
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)	19%	71%	<0.05
	% of households with handwashing facility and materials (soap/ash and water or sanitizer) located close to latrine (within 10 paces) (observed)[19]	0.8%	95%	<0.05
	% of households with handwashing facility and materials (soap/ash and water or sanitizer) inside or near the kitchen (observed)[20]	0.0%	81%	<0.05
	% of households using a hygienic (raised) drying rack (observed)[21]	16%	100%	<0.05
	% of households with a bathing shelter (observed)[22]	2.9%	84%	<0.05
	% of households with a clean compound (no visible rubbish or feces) (observed)	19%	87%	<0.05
Healthy Homes	Median Healthy Home Grade[23]	28%	99%	<0.05

[10] A p-value tells you how likely it is that your results happened by random chance. If the p-value is below 0.05, it usually means there's strong enough evidence to suggest the result is not just due to chance. If the statistical significance for a key indicator is marked as "Yes", it has a p-value <0.05

[11] The child diarrhea prevalence data was collected in a separate survey at baseline due to errors in data collection in the original survey. This separate survey was collected October 2022, while the original survey was collected in June 2022. Both months are considered to be the dry season in the Mayuge District.

[12] 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

[13] This includes all households for whom we had sufficient data to evaluate their water fetching time (n= 394 at baseline; n=350 at endline)

[14] This includes all households for whom we had sufficient data to evaluate their water storage containers (n=77 at baseline; n=403 at endline)

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

[16] 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.

[17] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=323 at baseline; n=416 at endline)

[18] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=323 at baseline; n=416 at endline)

[19] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=237 at baseline; n=416 at endline)

[20] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=237 at baseline; n=416 at endline)

[21] This includes all households for whom we had sufficient data to evaluate their area for drying dishes (n=218 at baseline; n=417 at endline)

[22] This includes all households for whom we had sufficient data to evaluate their bathing shelter (n=291 at baseline; n=416 at endline)

[23] Healthy Home Grades describe a household's capacity to prevent waterborne illnesses such as diarrhea, according to the Healthy Home

Health

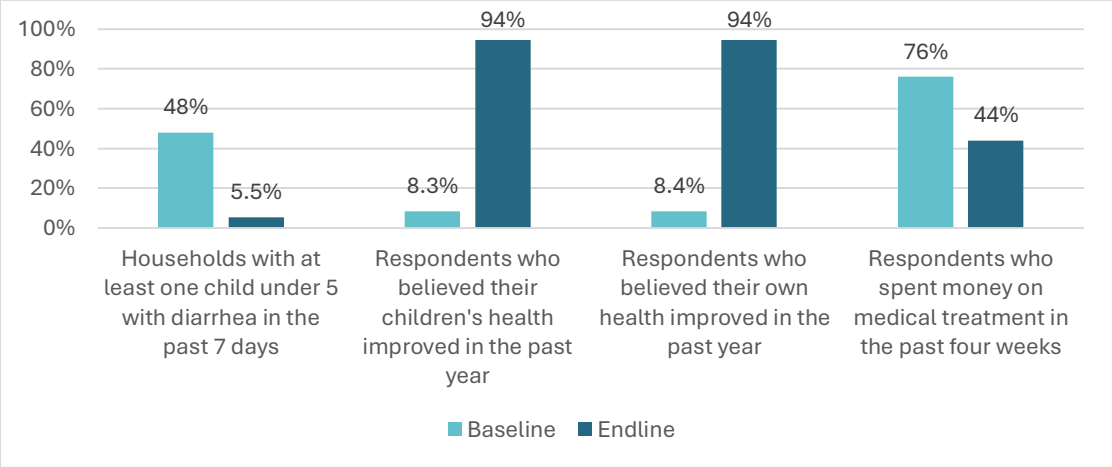
Diarrhea is the third leading cause of death for children under 5 globally, resulting in approximately 443,832 deaths per year.[24] The majority of these deaths are attributed to inadequate WASH.

Key improvements in health were observed between baseline and endline in Mayuge Project 3. The percentage of households who reported having at least one child under five that had diarrhea in the past week decreased from 48%[25] at baseline to 5.5% at endline. Additionally, the percentage of respondents who believed that their children's health had improved in the past year increased from 8.3% at baseline to 94% at endline, and the percentage who believed their own health had improved in the past year increased from 8.4% to 81%. These changes were statistically significant with a p-value less than 0.05.

During the qualitative interviews, participants attributed these health improvements at endline to their improved WASH practices. They believed that the adoption of practices such as drinking safe water, using a drying rack, using a latrine, keeping a clean environment, and regular handwashing has contributed to the improved health of their communities.

The percentage of respondents who spent money on medical treatment in the previous four weeks decreased from 77% at baseline to 44% at endline. These respondents spent a median of 6,710 UGX ($1.84 USD) on visits to medical facilities at baseline, compared to 5000 UGX ($1.37 USD) at endline.

Figure 2. Key health indicators at baseline and endline



A focus group discussion with mothers in the project area revealed that reduced illness and medical expenditures has increased families' economic opportunities and quality of life:

> "We started up small-scale enterprises – in groups, we make soap, clothing and reusable pads, [and] cook food in evening markets…Money previously spent on medical expenses are now helpful in money for other ways. We are able to educate our children (pay school fees, buy uniforms, books, etc.). We now invest in small businesses as earlier mentioned. We are now able

components they are observed to have on the day of the survey. For a more detailed explanation of the Healthy Home criteria and grading method, see Table 3 in Methods.

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

[25] The child diarrhea prevalence data was collected in a separate survey at baseline due to errors in data collection in the original survey. This separate survey was collected October 2022, while the original survey was collected in June 2022. Both months are considered to be the dry season in the Mayuge District.

to buy tolls and farm seeds to increase our income. We now do a lot of home improvement, we save to buy solar panels for lighting, cement for floors, and able to maintain WASH facilities. We also save for future needs."

Water

Overall satisfaction with the current water situation greatly improved 4.3% at baseline to 99% at endline. In the qualitative interviews, most respondents reported that they now had access to safe water. This access led to a reduction in waterborne illnesses, decreased water fetching time, and increased satisfaction with their water situation. One respondent reflected on the difficult conditions before the program:

> "Before the Lifewater International program, we had no option. We had no water but to live by swampy and unprotected wells."

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"[26]. Basic access to water[27] increased from baseline to endline, from 5.3% to 96% in the dry season and 5.9% to 97% in the rainy season (Table 3).

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

Study	Season	Source type	% of respondents	Median water fetching time	% with basic access[29]
Baseline	Dry	All sources Improved Unimproved	100% (n=394) 68% (n=268) 32% (n=126)	90 minutes 110 minutes 66 minutes	5.3% (n=21)
	Rainy	All sources Improved Unimproved	100% (n=387) 65% (n=251) 35% (n=136)	78 minutes 82 minutes 48.5 minutes	5.9% (n=23)
Endline	Dry	All sources Improved Unimproved	100% (n=350) 100% (n=350) 0.0% (n=0)	7 minutes 7 minutes N/A	96% (n=337)
	Rainy	All sources Improved Unimproved	100% (n=354) 100% (n=354) 0.0% (n=0)	7 minutes 7 minutes N/A	97% (n=344)

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] Overall, the percentage of households reporting that they were drinking safe water

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

[27] Lifewater was able to assess the rate of basic access for 93% of respondents for the dry season and 92% of the respondents for the rainy season at baseline. At endline, we were able to assess 85% of respondents for the dry season and 85% of respondents for the rainy season. To be included in this analysis, respondents had to know the time to walk to their water source, the time to queue, and the time to walk home from their water source.

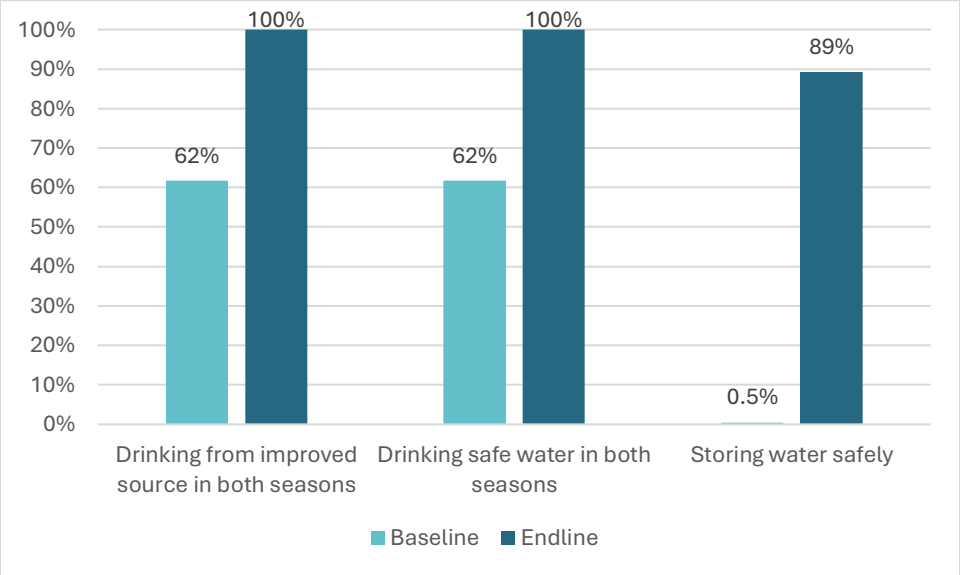
[28] Effective water treatment methods include boiling, adding chlorine, using a biosand filter, using a ceramic filter, or solar disinfection.

in both seasons (either from an improved source or through consistent treatment of water) increased from 62% at baseline to 100% at endline (p-value <0.05).

One respondent noted that these time savings have transformed daily life since baseline, reporting that "There is now more time to cultivate crops, rear animals, and do business." This highlights how access to safe, nearby water not only improves health but also frees up time for productive and income-generating activities, contributing to long-term household resilience.

Households are also trained to prevent the contamination of their drinking water by storing it in containers that are covered, narrow-mouthed (4 cm or less), and clean. The percentage of households with water storage containers meeting all three criteria on the day of the survey increased from 0.5% at baseline to 89% at endline.

Figure 3. Water key indicators at baseline and endline



Sanitation

Lifewater trains households to invest in "improved latrines with dignity", which meet all the criteria to be considered an improved latrine (designed to prevent the spread of disease through human feces) while also protecting the dignity of the users. Improved latrines with dignity are not shared with other households and have walls, a roof, a door that provides complete privacy, and a tight-fitting pit cover that keeps flies and insects out. These meet the criteria for a household to have basic access to sanitation.

Enumerators observed the households' latrines to assess their quality. Of those who allowed enumerators to see their latrines (n=323 at baseline, n=416 at endline**),** most had dry pit latrines in both studies (63% at baseline, 99.8% at endline). All improved latrine with dignity components improved between baseline and endline, and as a result, more households have latrines well-equipped to prevent the spread of WASH illnesses and protect their dignity and safety (Figure 4).

Overall, the percentage of households with improved latrines increased from 25% at baseline to 99.3% at endline, and the percentage of households with improved latrines with dignity increased from 0.0% at baseline to 43% at endline (p-value <0.05).

Figure 4. Quality of observed latrines at baseline and endline

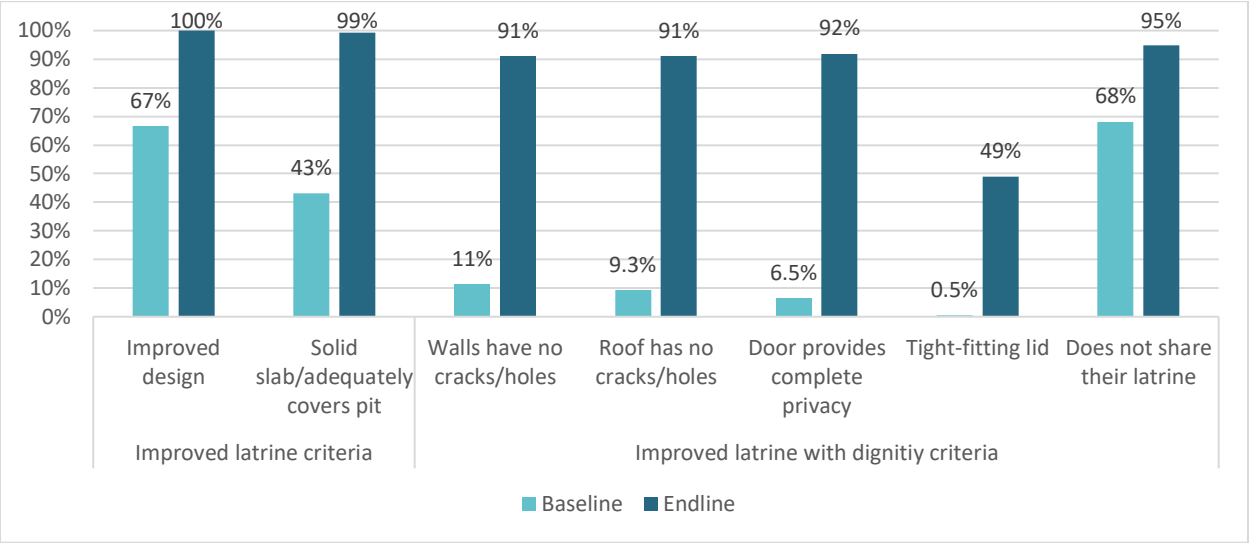
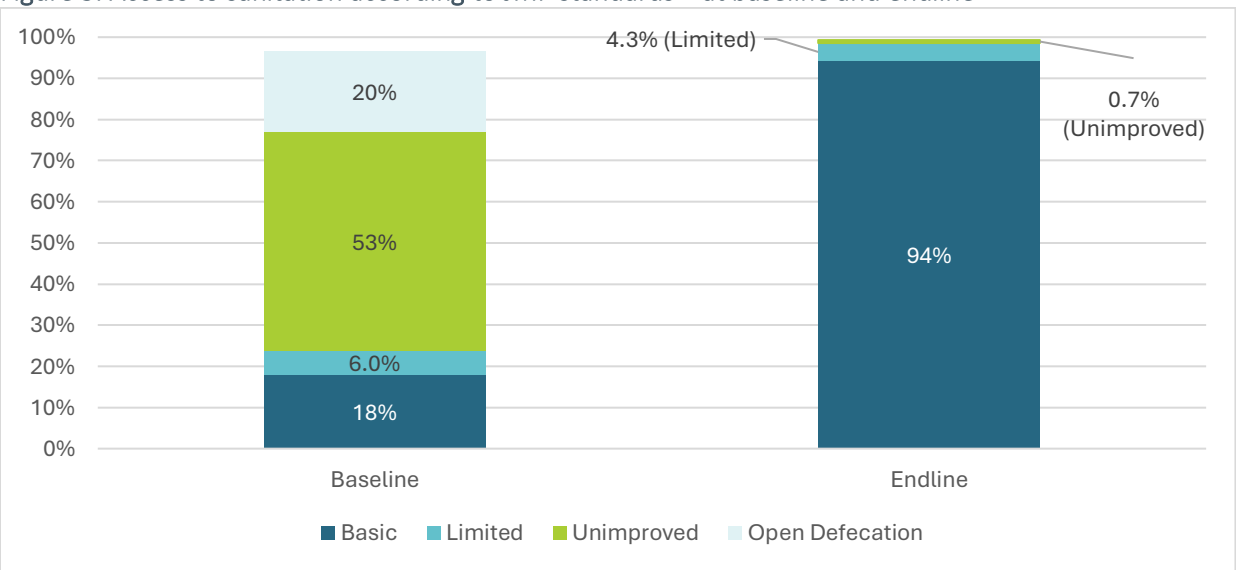


Figure 5. Access to sanitation according to JMP standards[29] at baseline and endline



Enumerators also observed the animal and waste management at respondents' households. Overall, the percentage of households observed to have a clean compound (free of feces and rubbish) on the day of data collection increased from 19% at baseline to 87% at endline (p-value <0.05). Multiple participants during the qualitative interviews noted improvements in their compound cleanliness since before the Lifewater program. One community member stated:

[29] JMP (2016). Retrieved from: https://washdata.org/monitoring/sanitation

"I completely changed my lifestyle...Hardly do you see open defecation, families have tippy taps, our health changed and greatly improved. Thanks to Lifewater and the WASH facilitators, we are now responsible people, its beautiful to see homes clean, families happy with no open defecation."

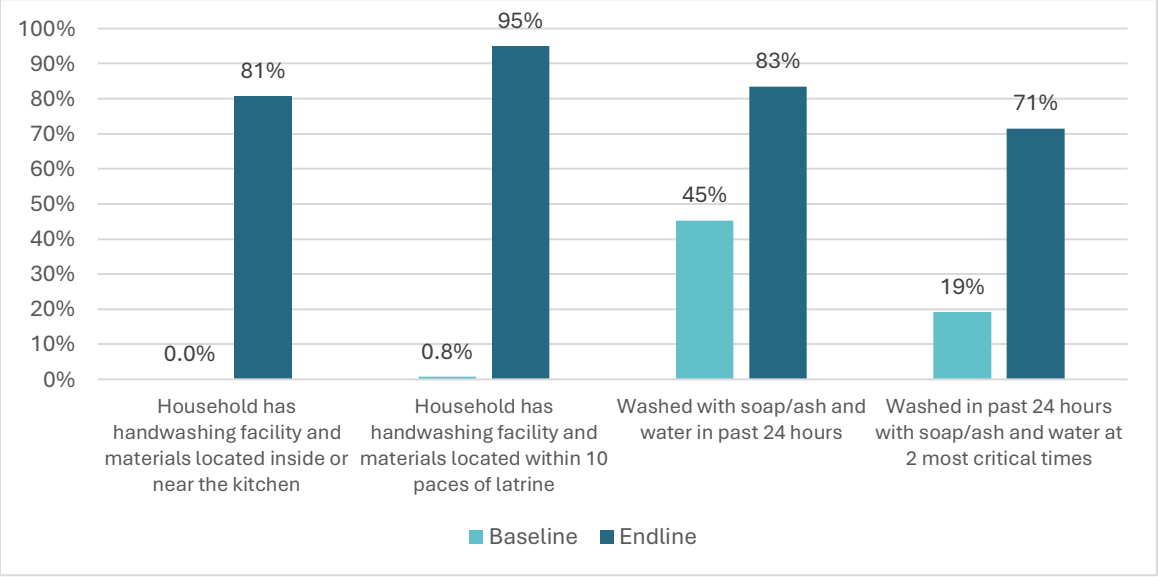
Hygiene

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 99.5% (p-value <0.05). Similarly, the percentage of households with handwashing facilities and materials inside or near the kitchen increased from 0.42% at baseline to 87% at endline. Additionally, the percentage of respondents who reported washing their hands after defecation/using the latrine increased from 39% to 100%, and the percentage who reported washing their hands before eating increased from 28% to 99.5%. Overall, the percentage of respondents who washed their hands with soap/ash and water at the two most critical times (before eating and after defecation) increased from 19% at baseline to 71% at endline (p-value <0.05). Figure 6 visualizes the increase in handwashing practices from baseline to endline.

Many respondents during qualitative interviews emphasized handwashing as a regular part of their WASH practices. Focus group discussions revealed that community members are motivated to wash their hands more frequently due to their increased awareness of disease pathways since the Lifewater WASH program. One community member stated:

"Rarely would people wash hands, but now even children talk about the importance of handwashing."

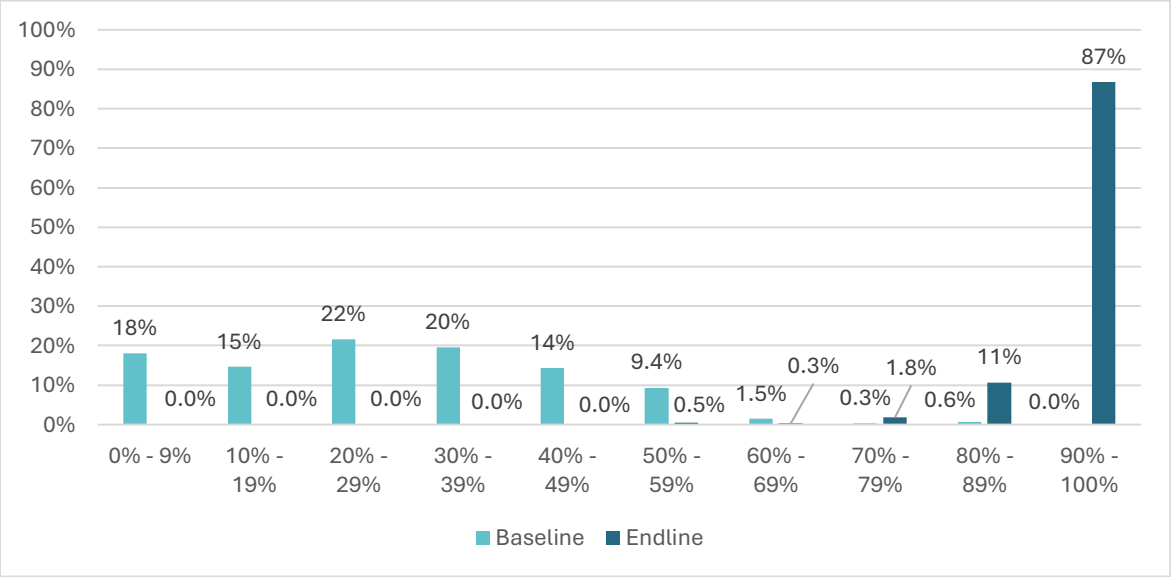
Figure 6. Self-reported handwashing behavior in the 24 hours prior to the survey



Healthy Homes

Households also received Healthy Home grades based on the survey to characterize their capacity to prevent WASH-related diseases through their household's WASH behaviors and conditions. Final grades are assigned from 0% (lowest) to 100% (highest, Healthy Home). Of the households who were graded in either study (81% at baseline, 99.5% at endline), the median scores were 28% at baseline and 99% at endline. This suggests that most households were not equipped to prevent the spread of WASH-related diseases at baseline, but at endline, the majority were. Figure 7 displays the frequency and distribution of Healthy Home Grades observed in this study.

Figure 7. Distribution of Healthy Home Grades from Baseline to Endline

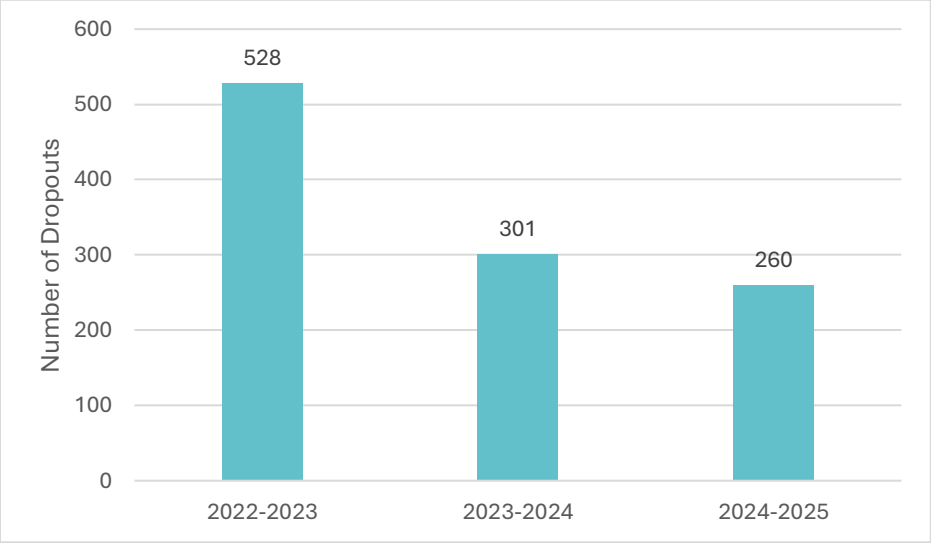


Community Institutions

Schools

Five schools were included in Mayuge Project 3. Data collected form the project schools in 2025 indicate that student dropout rates decreased in four of the schools, although total enrollment decreased for Mitimito Primary School. Student dropout rates increased in one of the schools (Busimo Primary School). The reason for this is unknown. 2021-2022 data was not collected due to the COVID-19 pandemic.

Figure 7. Dropouts at Mayuge Project 3 schools



During the qualitative interviews, children were reported to attend school more often/regularly. This increased attendance was linked to the Lifewater project and the improved school facilities it brought. Girls specifically were reported to have improved attendance, when they used to miss several days per month. Notable improvements at project schools were reported, including the introduction of safe drinking water and improved latrines on the school compounds as well as the starting of school WASH clubs. Menstrual hygiene management awareness and resources were also reported to have improved for girls at schools.

Health Facilities

Participants noted that community health has improved since the Lifewater project. Many respondents reported reduced medical expenditure as a result of the project One mother stated:

> "With the provision of safe and clean water by Lifewater International, money previously spent on medical expenses are now helpful in money for other ways. We are able to educated our children (pay school fees, buy uniforms, books, etc.). We now invest in small businesses as earlier mentioned. We are now able to buy tolls and farm seeds to increase our income. We now do a lot of home improvement, we save to buy solar panels for lighting, cement for floors, and able to maintain WASH facilities. We also save for future needs."

Annual case data collected from the health posts in the project area revealed overall improvements in WASH illness cases in the project area. Total cases of diarrhea and respiratory illness in all age groups and children under five decreased from before and after the project, although slight increases in diarrhea were observed between 2023 and 2024. Total cases of respiratory illnesses in all age groups decreased from 2021 to 2023 but spiked in 2024, demonstrating a nearly three-fold increase compared to the previous year. The reason for this is unknown.

Figure 3. Health facility case data

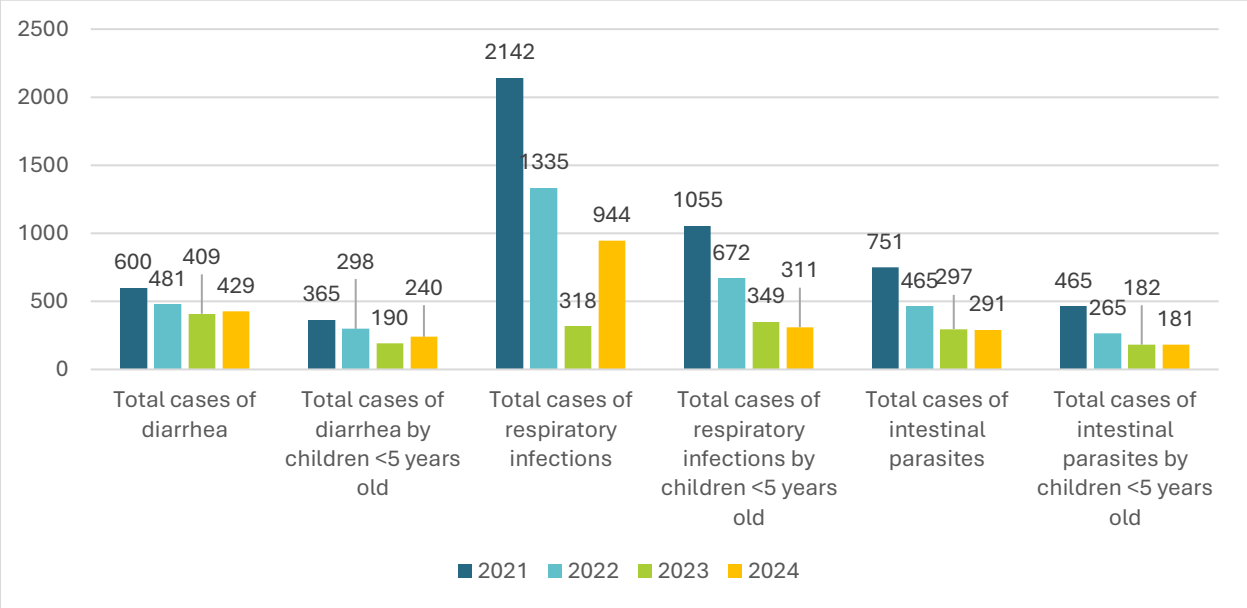
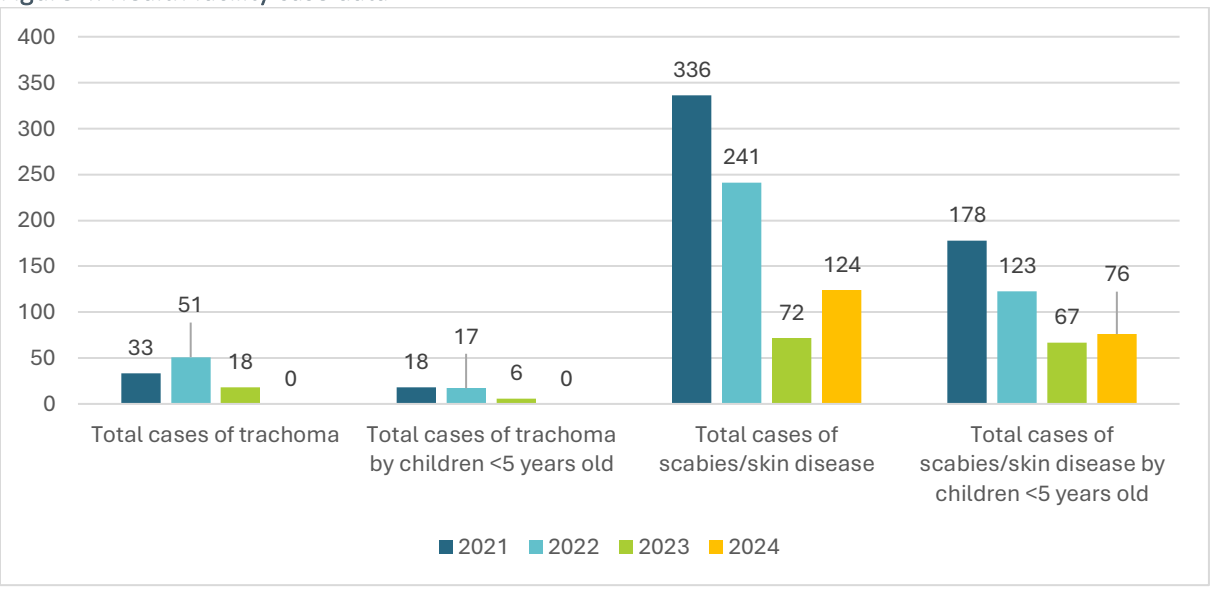


Figure 4. Health facility case data



Conclusion

This study demonstrated measurable improvements in household health, WASH access, and WASH behaviors from before and after the Vision of a Healthy Village intervention. Compared to baseline, households at endline demonstrated increased knowledge and ability to prevent the spread of WASH-related illnesses in their communities. As a result, many households have experienced economic savings in terms of saved time and money related to their previously poor WASH conditions.

Notably, caregiver-reported seven-day child diarrhea prevalence decreased from 48% at baseline to 5.5% at endline. These results are supported by the secondary data reported by local health facilities, at which the annual cases of diarrhea treated in children under five decreased by 34% from 2021 to 2024. This improvement has the potential to positively impact children in the project area's growth and cognitive development, as frequent diarrhea infections are linked to stunting and reduced cognitive capacity. Additionally, reduced illness and reduced water fetching time requirements for children has the potential to increase their time in school and improve their overall educational potential.

In addition to improvements at the household level, community institutions also demonstrated improvements in supportive WASH conditions and practices. All schools in the project now have sex-segregated ventilated improved pit latrines with permanent handwashing stations and MHM changing rooms, and four out of the five schools have been provided with access to safe water. The remaining school's water point construction is ongoing. Both health facilities have received improved latrines, and one health facility has an improved water source on the compound. All institutions received training on the operations and maintenance of their WASH facilities and have a plan for financing future maintenance of their facilities. Many local churches improved their WASH services at their places of worship, although room for improvement remains, especially concerning the provision of handwashing materials for their patrons.

These findings will be used to inform future program implementation.