Vision of a Healthy Village Program Results

Nensebo, Ethiopia
Project 4

A study evaluating the impact of Lifewater International's[1] Vision of a Healthy Village program in Nensebo Project 4

May 2025

[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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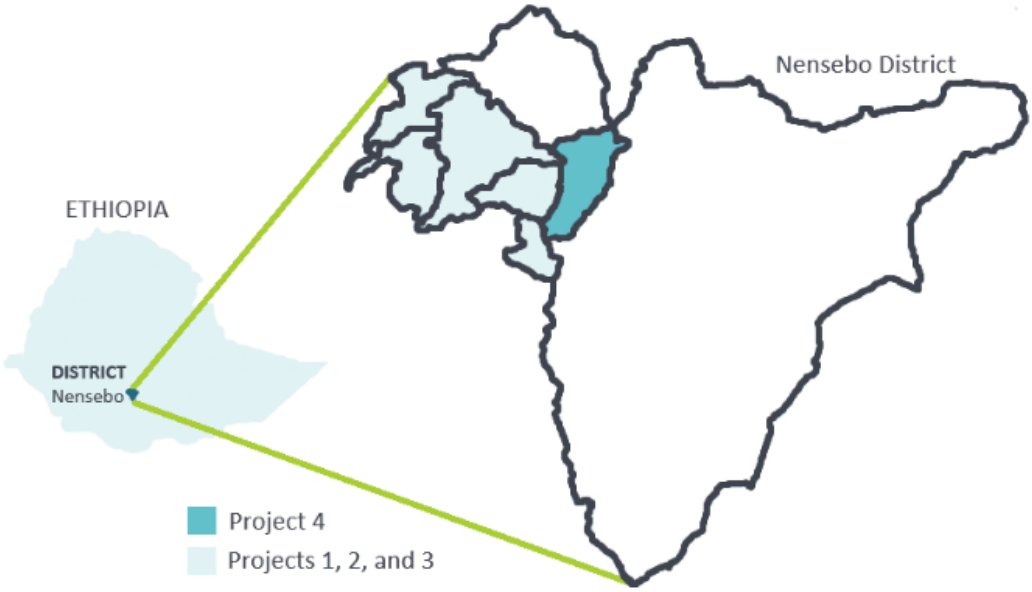
The Problem

Sub-Saharan Africa is estimated to have the lowest rates of water, sanitation, and hygiene (WASH) coverage globally. In rural Ethiopia, safe access to WASH is largely inadequate, with an estimated 58% of people lacking at least basic access to drinking water, 94% lacking at least basic access to sanitation, and 95% lacking basic access to handwashing facilities in 2022.[2]

Nensebo, Ethiopia

The Nensebo District is administratively divided into two kebeles with a total estimated population of 164,264. Lifewater's fourth project in this region operated in two rural kebeles (Geta and Mandoyu) serving 10,675 people across 54 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:

- 22% 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 61 minutes to collect their water in the dry season.
- 3.2% 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; no households (0.0%) had a handwashing station with soap/ash and water near their latrine or their kitchen (0.0%). Furthermore, 16% 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 identifies a district for long-term partnership and then begins working through the district, selecting several smaller administrative units (kebeles) for each three-year project cycle. Lifewater implemented its fourth project in the Nensebo district of Ethiopia from May 2022 through May 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 Nensebo 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], 44 water points were completed and one ventilated improved pit latrine was 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 Nensebo Project 4 are displayed in Table 1.

Table 1. Nensebo Project 4 outputs as of May 2025

Outputs	Number (Percent)
Healthy Homes[6]	1,510 (95%)
Open Defecation Free villages	53 (98%)
Trained water committees	70
New and rehabilitated water points completed	45
New and rehabilitated ventilated improved pit latrines (VIPLs) completed	1
Healthy Villages[7]	36 (67%)

[5] Data for the baseline study were collected in May of 2022; data for the endline were collected in May 2025. This project operated on a three-year schedule but finished early due to high achievement.

[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

Study Methods

For this study, the following data were utilized:

Household survey: Household Knowledge, Attitudes, and Practices (KAP) surveys were conducted in May 2022 and May 2025, combining both observation and interview data. At baseline, 386 households were surveyed via a probability proportional to size sampling method of the 54 villages in the project areas. At endline, 385 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.[8]

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%

School assessment data: Data on the four schools within the target area were collected in May 2025. 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 one health care facility within the target area were collected in May 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.

[8] 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 Nensebo Project 4

Theme	Indicators	Baseline	Endline	P-values[9]
Health Indicators	% of households with at least one child under 5 that had diarrhea in past 7 days	13%	5.5%	<0.05
	% of respondents reporting that child health has improved in the past year	42%	95%	<0.05
	% of respondents reporting that their health has improved in the past year	44%	94%	<0.05
Water Indicators	% of households using an improved primary drinking water source in the dry and rainy season[10]	22%	79%	<0.05
	% of households drinking safe water (source and/or treatment)	22%	86%	<0.05
	Median journey time to fetch water (travel to/from water source plus queue time) during dry season[11]	61 mins	14 mins	<0.05
	% of households storing water safely (observed)[12,13]	4.0%	97%	<0.05
Latrine Indicators	% of households with latrines that are improved[14] (observed)[15]	3.2%	96%	<0.05
	% of households with latrines that are improved with dignity (slab, walls, roof, pit cover, and door) (observed)[16]	0.26%	42%	<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)	16%	85%	<0.05
	% of households with handwashing facility and materials (soap/ash and water or sanitizer) located close to latrine (within 10 paces) (observed)[17]	0.0%	88%	<0.05
	% of households with handwashing facility and materials (soap/ash and water or sanitizer) inside or near the kitchen (observed)[18]	0.0%	77%	<0.05
	% of households using a hygienic (raised) drying rack (observed)[19]	0.26%	99.2%	<0.05
	% of households with a bathing shelter (observed)[20]	0.0%	80%	<0.05
	% of households with a clean compound (no visible rubbish or feces) (observed)	31%	82%	<0.05
Healthy Homes	Median Healthy Home Grade[21]	19%	95%	<0.05

[9] 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

[10] 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

[11] This includes all households for whom we had sufficient data to evaluate their water fetching time (n= 321 at baseline; n=370 at endline)

[12] This includes all households for whom we had sufficient data to evaluate their water storage containers (n=30 at baseline; n=370 at endline)

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

[14] 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.

[15] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=160 at baseline; n=383 at endline)

[16] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=160 at baseline; n=383 at endline)

[17] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=2 at baseline; n=366 at endline)

[18] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=2 at baseline; n=366 at endline)

[19] This includes all households for whom we had sufficient data to evaluate their area for drying dishes (n=1 at baseline; n=368 at endline)

[20] This includes all households for whom we had sufficient data to evaluate their bathing shelter (n=1 at baseline; n=374 at endline)

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

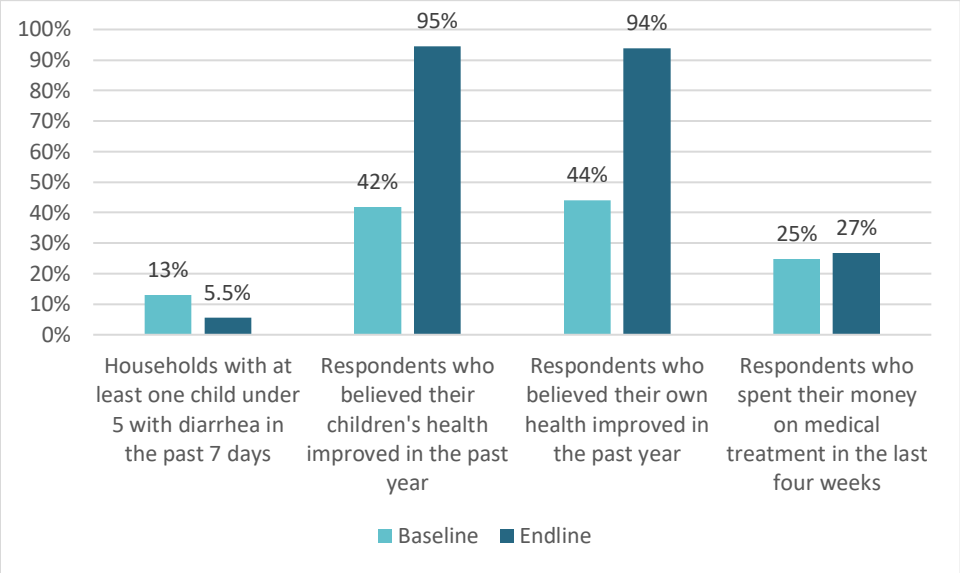
Health

Diarrhea is the third leading cause of death for children under 5 globally, resulting in approximately 443,832 deaths per year.[22] The majority of these deaths are attributed to inadequate WASH.

Key improvements in health were observed between baseline and endline in Nensebo Project 4. The percentage of households who reported having at least one child under five that had diarrhea in the past week decreased from 13% 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 42% at baseline to 95% at endline. Similarly, the percentage of respondents reporting their own health had improved increased from 44% at baseline to 94% at endline (p-value <0.05).

In both studies, many respondents had spent money on medical treatment in the four weeks prior to the survey (25% at baseline, 27% at endline). Of the respondents who spent money on medical treatment, the respondents at baseline spent a median of 2,070 ETB ($15.50 USD), compared to 1,800 ETB ($13.48 USD) at endline.

Figure 2. Key health indicators at baseline and endline



During the 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 transformed their households and communities so that they no longer have to struggle against WASH-related diseases.

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

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"[23]. Lifewater was able to assess the rate of basic access for 92% (n=355) of respondents for the dry season at baseline, 83% (n=322) of respondents for the rainy season at baseline, 97% of respondents for the dry season at endline (n=374), and 97% of respondents for the rainy season at endline (n=374). Basic access to water increased from baseline to endline, from 2.3% to 79% in the dry season and 6.2% to 79% in the rainy season (Table 3).

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=355) 24% (n=85) 76% (n=270)	64 minutes 63 minutes 60.5 minutes	2.3% (n=8)
	Rainy	All sources Improved Unimproved	100% (n=322) 26% (n=84) 74% (n=238)	57 minutes 47.5 minutes 56.5 minutes	6.2% (n=20)
Endline	Dry	All sources Improved Unimproved	100% (n=374) 80% (n=298) 20% (n=76)	14 minutes 13 minutes 27 minutes	79% (n=294)
	Rainy	All sources Improved Unimproved	100% (n=374) 80% (n=298) 20% (n=76)	15 minutes 14 minutes 22 minutes	79% (n=294)

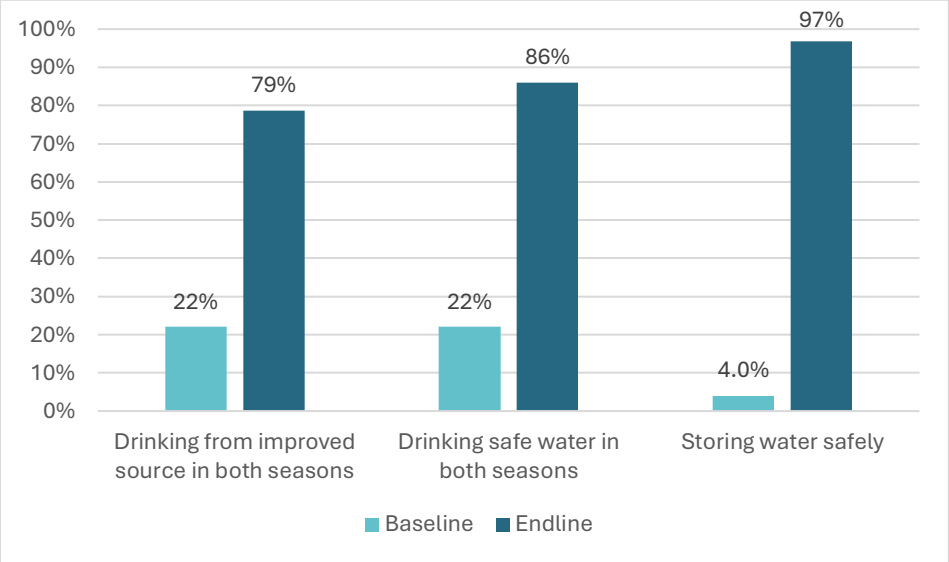
A household is considered to be drinking safe water if they fetch water from an improved source in both seasons, or if they do not use an improved source, they always treat their water with an acceptable water treatment method.[24] Overall, the percentage of households reporting that they were drinking safe water in both seasons (either from an improved source or through consistent treatment of water) increased from 22% at baseline to 86% at endline. Additionally, overall satisfaction with the current water situation greatly improved from baseline to endline; 13% reported being satisfied at baseline, compared to 82% at endline.

Lifewater also trains households the importance of using safe water fetching and storage containers to reduce the risk of contamination. Containers are considered to be safe if they are covered, narrow-mouthed (4 cm or less), and clean. The percentage of households observed to have safe water storage containers on the day of data collection increased from 4.0% at baseline to 97% at endline.

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

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

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=160 at baseline, n=383 at endline**),** most had dry pit latrines in both studies (100% at baseline, 96% 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 3.2% at baseline to 96% at endline, and the percentage of households with improved latrines with dignity increased from 0.26% at baseline to 42% at endline (p-value <0.05)

Figure 4. Quality of observed latrines at baseline and endline

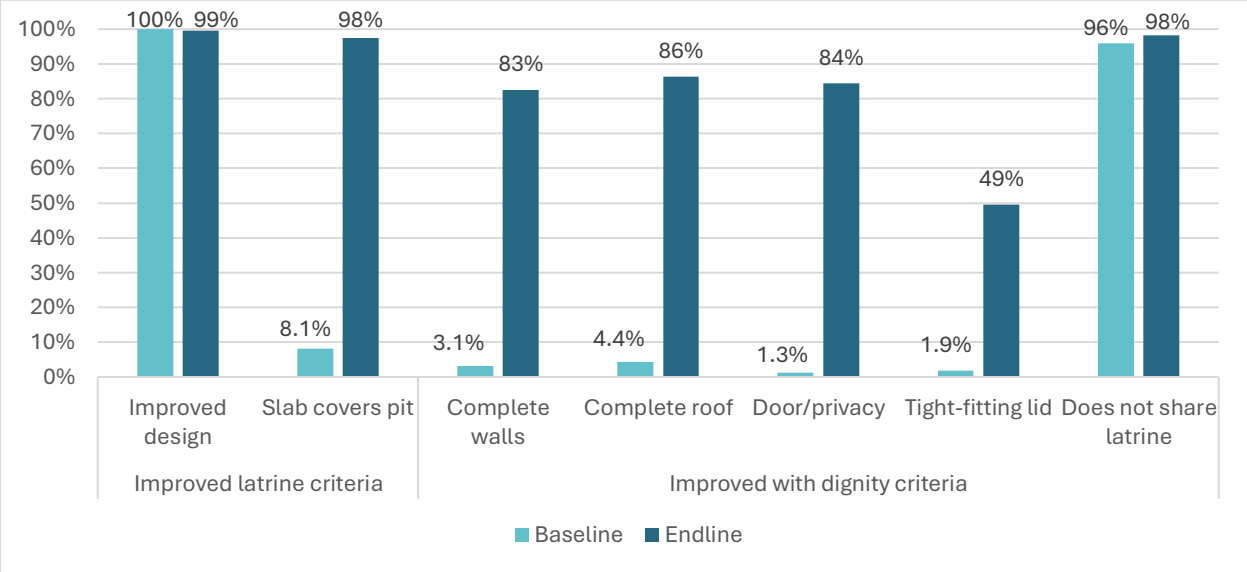
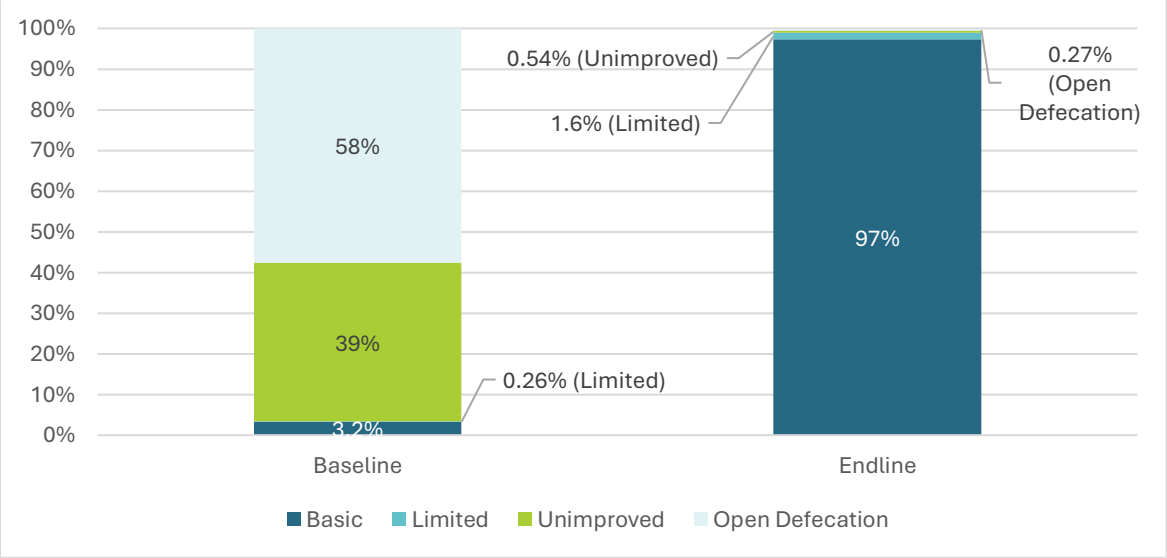


Figure 5. Access to sanitation according to JMP standards[25] at baseline and endline



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 31% at baseline to 82% at endline (p-value <0.05). Multiple participants during the qualitative interviews noted improvements in their compound cleanliness since before the Lifewater program, which was seen by some not only as a way to improve the attractiveness of their compound, but a way to improve health.

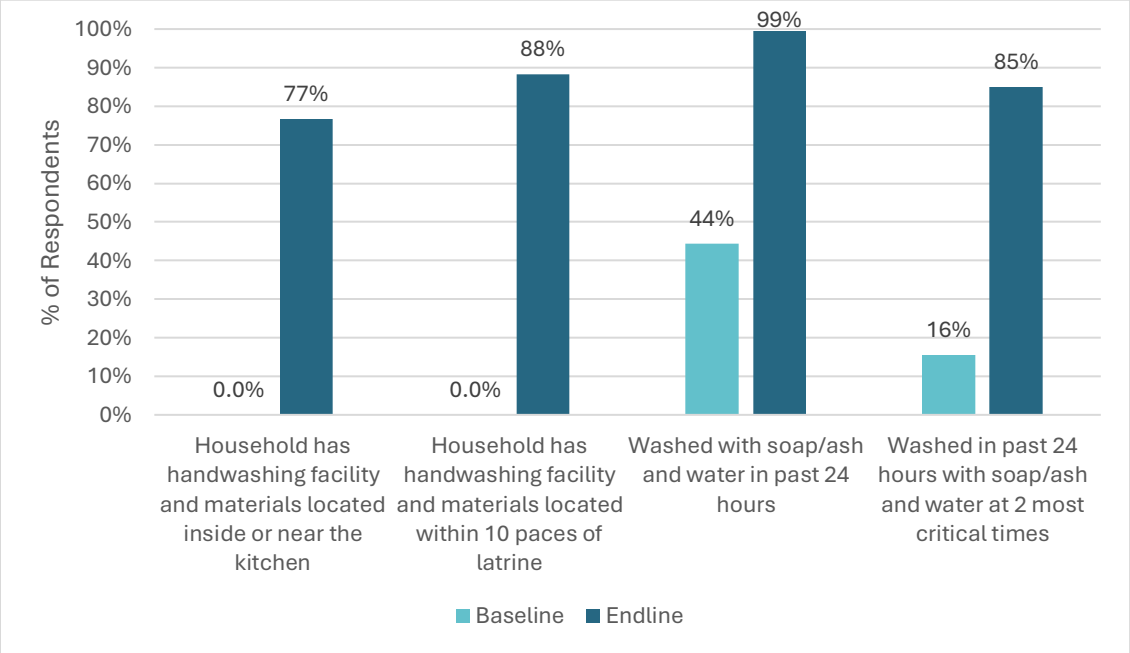
[25] JMP (2016). Retrieved from: https://washdata.org/monitoring/sanitation

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 0.0% to 88% (p-value <0.05). Similarly, the percentage of households with handwashing facilities and materials inside or near the kitchen increased from 0.0% at baseline to 77% at endline. The percentage of respondents who reported washing their hands after defecation/using the latrine increased from 38% to 83%, and the percentage who reported washing their hands before eating increased from 28% to 75%. 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 16% at baseline to 85% 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.

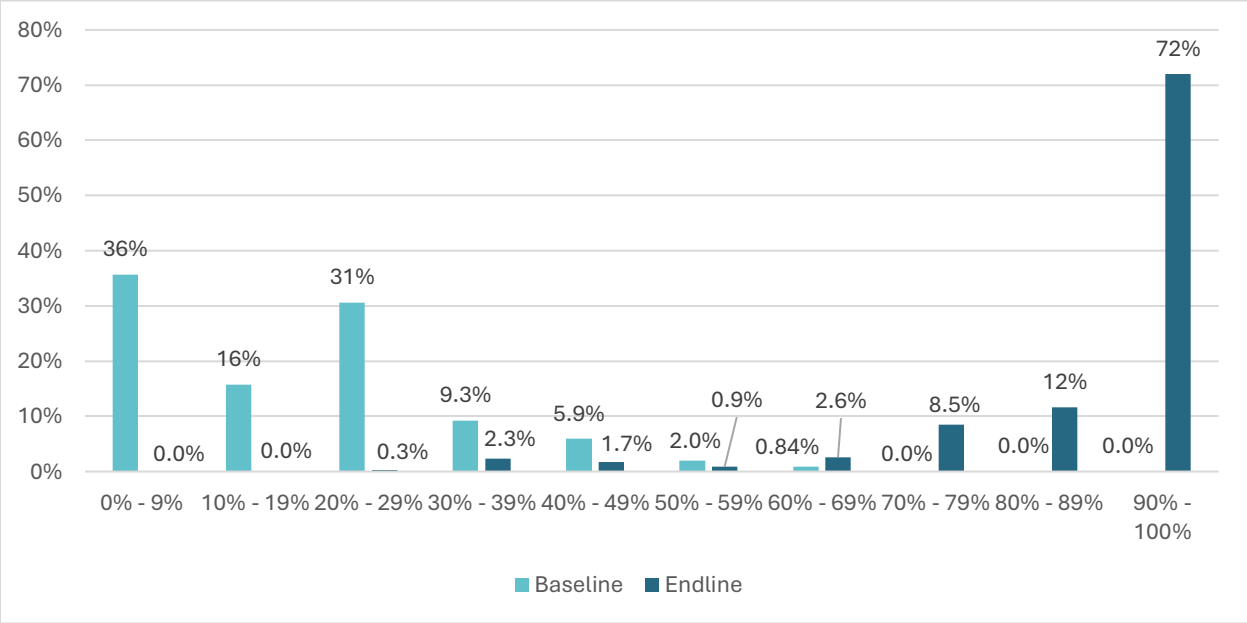
Figure 6. Self-reported handwashing behavior in the 24 hours prior to the survey



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 (92% at baseline, 89% at endline), the median scores were 19% at baseline and 95% 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

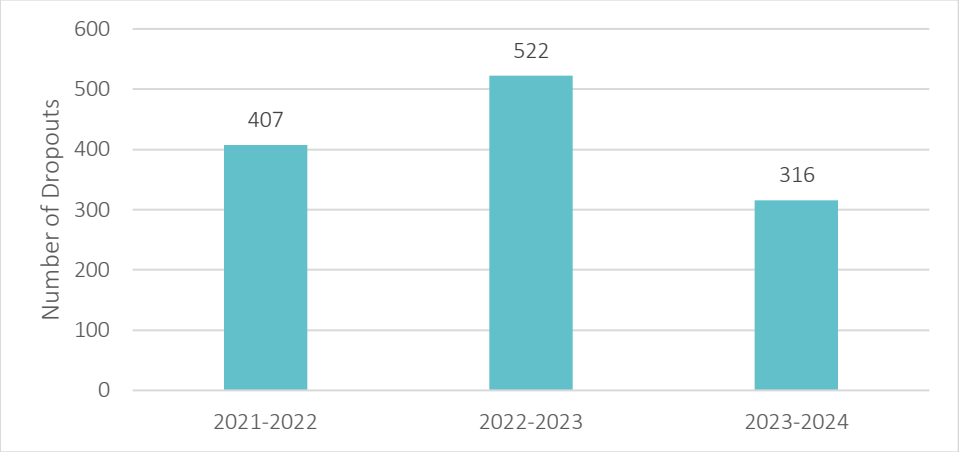


Community Institutions

Schools

Four schools were included in Nensebo Project 4. Data collected from the project schools in 2024 indicate that student dropout rates decreased in two of the schools (Solena and Mewa primary schools), although total enrollment decreased for Mewa Primary School. Student dropout rates increased in two of the schools (Andera and Meraro Primary Schools). The reason for this is unknown.

Figure 7. Dropout data at Nensebo Project 4 schools

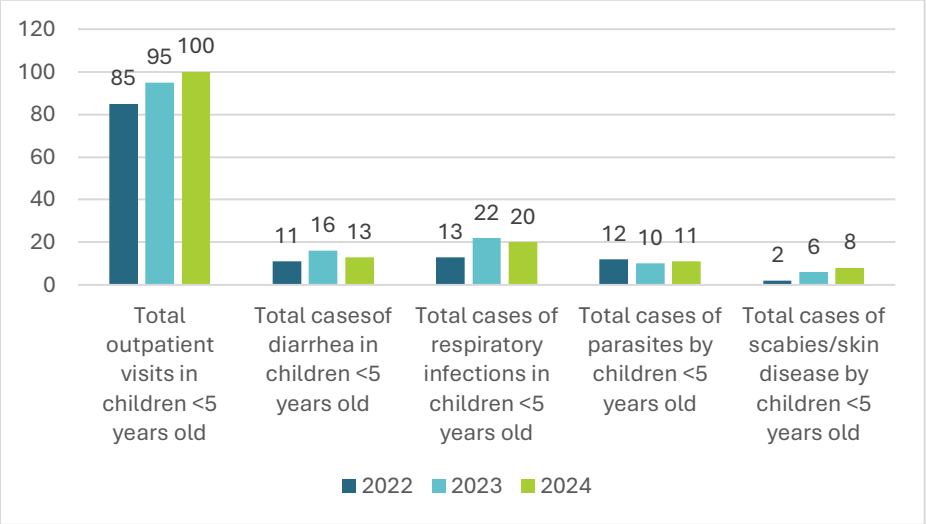


The findings from the qualitative interviews conflict with the school data. Participants reported that the WASH conditions at schools have improved overall, and that before the Lifewater program, students would miss many days of school due to WASH-related illnesses. Notable improvements at project schools were reported, including the introduction of safe drinking water and improved latrines on the school compounds, the starting of school WASH clubs, and improvements in student attendance. Menstrual hygiene management awareness and resources were also reported to have improved for girls at schools.

Health Facilities

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

Figure 3. Health facility case data



During the qualitative interviews, participants noted that community health has improved since the Lifewater project. Many respondents reported reduced medical expenditure as a result of the project. A community member stated:

> "We do not have any expenditure that is related to health. Our money is saved, when it was previously spent for clinics and hospitals."

The extra money was reported to be used mainly for saving or for purchasing materials related to education. For example, one respondent said:

> "I can use the money if there are not any problems in my family for buying new clothes and exercise book at new year for entrance to school."

Conclusion

Water, sanitation, and hygiene conditions improved in the Nensebo Project 4 area between baseline and endline. 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 1,593 households in the project area, 95% were registered as Healthy Homes, and 98% of the villages were verified as Open Defecation Free over the course of the project.

More households are using improved sources, and they are spending less time collecting it. The use of improved water sources increased from 22% to 79%, and the median roundtrip journey time to collect water decreased from 61 minutes to 14 minutes in the dry season. Considerable improvements were also observed in latrine quality and hygiene facilities, with the percentage of households with improved latrines with dignity increasing from 0.26% to 42%. Essential hygiene infrastructure was more prevalent at endline, as 90% had fully equipped handwashing stations near their latrine at endline (compared to 0.0% at baseline), and 99.2% had raised drying racks (compared to 0.26% at baseline).

Households also demonstrated improved awareness of WASH practices and disease transmission. The percentage of respondents who recognized using a latrine as a key diarrhea prevention method increased from 15% at baseline to 94% at endline. Reported handwashing behavior after using the latrine increased from 26% at baseline to 95% at endline.

Reported WASH illness prevalence also decreased between the studies. Diarrhea cases in children under the age of five decreased from 13% at baseline to 5.5% at endline, and the percentage of respondents who believed their health had improved in the previous year increased from 44% at baseline to 94% at endline. Households were demonstrated to have an increased ability to prevent waterborne illnesses through their practices and infrastructure, as the median Healthy Home grade increased from 19% at baseline to 95% at endline.

These findings will be used to inform future project implementation