Vision of a Healthy Village Program Results

Nensebo, Ethiopia
Project 3

A study evaluating the impact of Water for Good's[1]
Vision of a Healthy Village program in Nensebo Project 3

September 2022

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

Contents

03 The Problem

04 Water for Good's Program

05 Study Methods

06 Key Indicators

07 Results: Health

08 Results: Water

09 Results: Sanitation

10 Results: Hygiene

11 Results: Community Institutions

14 Conclusion

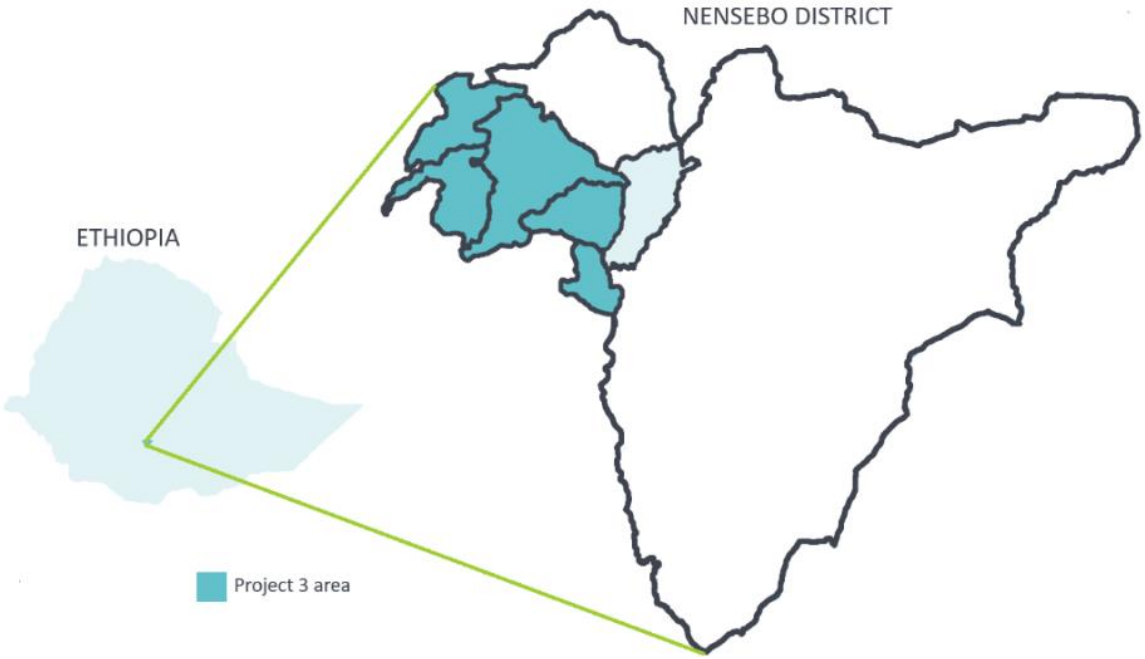
The Problem

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 96% lacking basic access to handwashing facilities in 2021.[2]

Nensebo, Ethiopia

The Nensebo District is administratively divided into eight kebeles. Water for Good's third project in this region operated in five rural kebeles (Gamachu, Geta, Harawa Kundhi, Huro Baro, and Tulu Gola) serving 12,115 people across 56 villages with WASH programming.

Figure 1. Map of the project area



During the baseline study conducted in this region in 2018 (before project implementation had begun), Water for Good found that access to safe WASH facilities and WASH knowledge was limited:

- 26% 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 95 minutes to collect their water.
- 32% 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; 0.0% had a handwashing station with soap/ash and water near their latrine. Furthermore, less then 5% 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 (2026). 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.

Water for Good's Program

Water for Good 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. Water for Good implemented its third project in the Nensebo district of Ethiopia from July 2018 through June 2022. 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 [district name] 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], 50 water points were completed and 14 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, 994 Community Conversation events were undertaken, in which the communities learned about 14 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 3 are displayed in Table 1.

Table 1. Nensebo Project 3 outputs as of September 2022

Outputs	Number (Percent)
Healthy Homes[6]	1,731 (96%)
Open Defecation Free villages	56 (100%)
Trained water committees	42
New and rehabilitated water points completed	50
New and rehabilitated ventilated improved pit latrines (VIPLs) completed	14
Healthy Villages[7]	33 (59%)

Since the data for the project endline was collected (September 2022), additional outputs have been achieved, including the registration of four Healthy Homes (97%), one Healthy School, and one trained water committee. Two additional water points and two additional school latrine blocks have been constructed.

[5] Data for the baseline study were collected in September of 2018; data for the endline were collected in August and September of 2022. This project operated on a four-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

Study Methods

For this study, the following data were utilized:

Household survey: Household Knowledge, Attitudes, and Practices (KAP) surveys were conducted in September 2018 and August and September 2022, combining both observation and interview data. At baseline, 332 households were surveyed via a cluster sampling method of the 1,807 villages in the project areas. At endline, 407 households were surveys using the same sampling method. In both studies, enumerators chose which households to randomly sample in each village using the EPI Sampling 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.

School Absenteeism and Dropout Data: School absenteeism and dropout data was collected from 9 of the 10 schools in the project area in 2024 as part of a later sustainability study.

Health Facility Case Data: WASH illness case data was collected from the seven schools in the project area in 2024 as a part of a later sustainability study.

Qualitative data: Eight focus group discussions (FGDs) and 15 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] WHO (2008). Retrieved from: https://www.who.int/publications/i/item/module-7-the-epi-coverage-survey

Key Indicators

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

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	6.1%	0.7%	<0.01
	% of respondents reporting that child health has improved in the past year	72%	98%	<0.01
	% of respondents reporting that their health has improved in the past year	67%	96%	<0.01
Water Indicators	% of households using an improved primary drinking water source in the dry and rainy season[10]	26%	83%	<0.01
	% of households drinking safe water (source and/or treatment)	26%	92%	<0.01
	Median journey time to fetch water (travel to/from water source plus queue time) during dry season[11]	95 minutes	25 minutes	<0.01
	% of households storing water safely (observed)[12, 13]	28%	95%	<0.01
Latrine Indicators	% of households with latrines that are improved[14] (observed)[15]	32%	92%	<0.01
	% of households with latrines that are improved with dignity (slab, walls, roof, pit cover, and door) (observed)[16]	3.8%	77%	<0.01
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)	4.2%	96%	<0.01
	% of households with handwashing facility and materials (soap/ash and water or sanitizer) located close to latrine (within 10 paces) (observed)[17]	0.0%	91%	<0.01
	% of households using a hygienic (raised) drying rack (observed)[18]	0.6%	92%	<0.01
	% of households with a bathing shelter (observed)[19]	1.2%	51%	<0.01
	% of households with a clean compound (no visible rubbish or feces) (observed)	37%	69%	<0.01
Healthy Homes	% of households meeting all Healthy Home requirements[20]	0.0%	52%	<0.01

[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.

[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=278 at baseline; n=397 at endline)

[12] This includes all households for whom we had sufficient data to evaluate their water storage containers (n=329 at baseline; n=406 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=209 at baseline; n=407 at endline)

[16] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=209 at baseline; n=407 at endline)

[17] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=17 at baseline; n=391 at endline)

[18] This includes all households for whom we had sufficient data to evaluate their area for drying dishes (n=332 at baseline; n=407 at endline)

[19] This includes all households for whom we had sufficient data to evaluate their bathing shelter (n=332 at baseline; n=407 at endline)

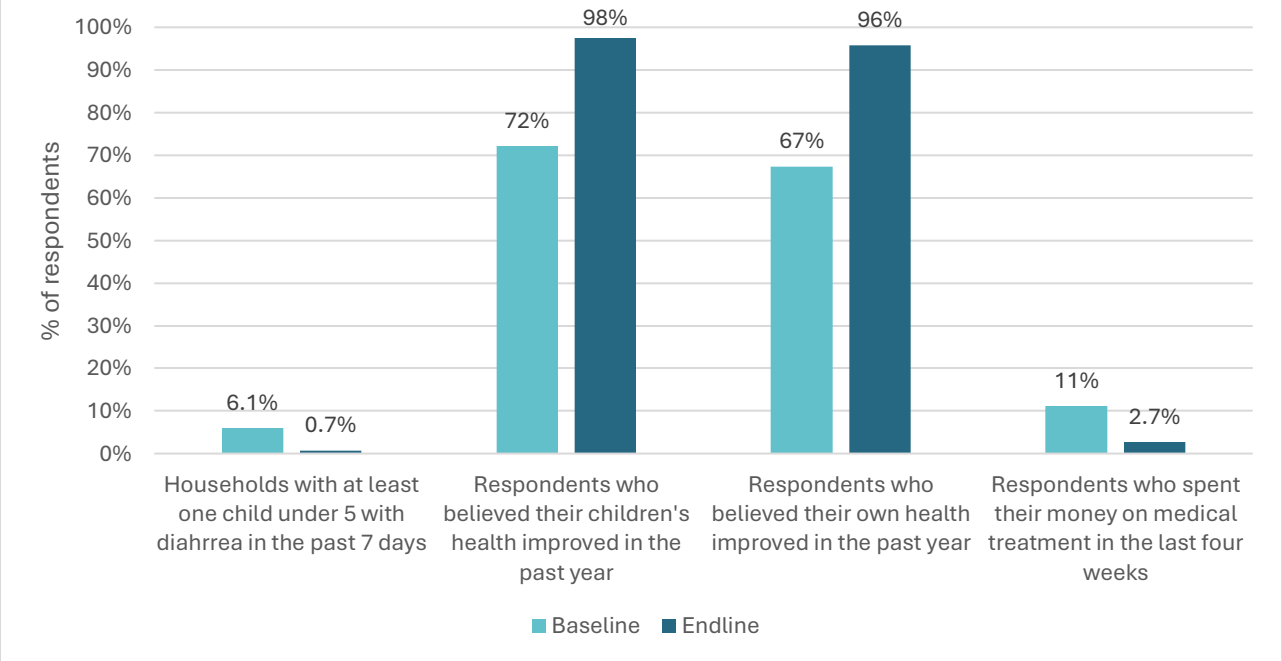
[20] This includes all households for whom we had sufficient data to evaluate Healthy Home criteria (n=15 at baseline; n=390 at endline)

Health

Diarrhea is the third leading cause of death for children under 5 globally, resulting in approximately 443,832 deaths per year.[21] The majority of these deaths are attributed to inadequate WASH.
In this study, the percentage of households who reported at least one child under five with diarrhea in the past week decreased from 6.1% at baseline to 0.7% at endline (p-value <0.01). The percentage of respondents reporting that their children's health had improved in the last year increased from 72% at baseline to 98% at endline (p-value <0.01). When the respondents were asked what the most common illnesses were affecting children under five in their household, the percentage reporting stomach pain decreased from 51% at baseline to 9.2% at endline, and the percentage reporting diarrhea decreased from 23% of at baseline and 0.4% at endline.

When respondents were asked how their own health had changed in the year prior to the survey at baseline, 67% said their health had improved, 17% said their health had stayed the same, and 15% said their health had declined. At endline, 96% said their health had improved since last year.
The burden of medical visits and fees also decreased from baseline to endline. The percentage of respondents reporting to have spent money on medical treatment decreased from 11% at baseline to 2.7% at endline. The median amount spent was 821 ETB ($7.11 USD) at baseline and 585 ETB ($5.06 USD) at endline. Additionally, the median number of workdays missed due to illness in the two weeks prior to the survey decreased from four days at baseline to two days at endline.

Figure 2. Key health indicators at baseline and endline



In the qualitative data, respondents reported increased WASH knowledge and improved WASH practices as a result of the VHV program. Respondents recognized how WASH-related illnesses spread (e.g., unwashed hands, flies to food, unsafe water) and how to prevent them through WASH practices

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

(e.g., handwashing at critical times, covering food, drinking safe water). Community members know how Concerning this change, an imam stated the following:

> *"My understanding about sanitation, hygiene, and safe water use was completely changed. [Water for Good] transformed our lifestyle. Now [we] have knowledge about safe water utilization and good practices. I also know the importance of Healthy Homes components that we are practicing in our villages."*

Water

Water for Good 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"[22]. Water for Good was able to assess the rate of basic access for 84% (n=279) of respondents for the dry season at baseline, 89% (n=295) of respondents for the rainy season at baseline, 98% of respondents for the dry season (n=398) and rainy season (n=397) at endline. Basic access to water increased from baseline to endline, from 2.2% to 61% in the dry season and 2.4% to 57% 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
Baseline	Dry	All sources	100% (n=295)	53 minutes	7.8% (n=23)
		Improved	30% (n=89)	65 minutes	
		Unimproved	70% (n=206)	45 minutes	
	Rainy	All sources	100% (n=265)	25 minutes	10% (n=27)
		Improved	25% (n=67)	37 minutes	
		Unimproved	75% (n=198)	23 minutes	
Endline	Dry	All sources	100% (n=371)	21 minutes	58% (n=215)
		Improved	76% (n=283)	19 minutes	
		Unimproved	24% (n=88)	27 minutes	
	Rainy	All sources	100% (n=324)	15 minutes	68% (n=221)
		Improved	80% (n=258)	16 minutes	
		Unimproved	20% (n=66)	17 minutes	

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.[23] At baseline, 26% of households were drinking safe water in the dry and rainy seasons (either from an improved source or through consistent treatment of water), compared to 92% at endline (p-value <0.01).

Enumerators observed the water storage and fetching containers at the respondents' households. Of the containers observed at baseline (n=329), 50% were covered, 98% were narrow mouthed, and 29% were clean or mostly clean. Of the containers observed at endline (n=406), 97% were covered, 99.5% were narrow mouthed, and 95% were clean or mostly clean. Overall, the percentage of households storing water safely increased from 28% at baseline to 95% at endline (p-value <0.01)

[22] WHO/UNICEF Joint Programme for Water Supply, Sanitation and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/drinking-water
[23] Effective water treatment methods include boiling, adding chlorine, using a biosand filter, using a ceramic filter, or solar disinfection.

During a focus group discussion, community members said the following:

> *"Our community members are satisfied with the current water source because when we compare with [our] previous [water source], it is different in the quality, quantity, and time it takes us to bring water. Previously, our children and wives go [to] far and hilly areas to collect water, sometimes they fell and [were hurt], and sometimes they quarreled with [each] other over the queue line. But currently, [there are] no such problems."*

Sanitation

Water for Good 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.

Overall, the percentage of households with improved latrines increased from 32% at baseline to 92% at endline (p-value <0.01), and the percentage of households with improved latrines with dignity increased from 3.8% at baseline to 77% at endline (p-value <0.01) (Figure 3). At endline, the most commonly missed improved latrine with dignity standard was having a pit cover. Additionally, the percentage of respondents who reported that their household's latrine was not shared with other households decreased from 99% at baseline to 94% at endline (Figure 4). At baseline, 16% of respondents reported being "very satisfied" with their current place of defecation, compared to 82% of respondents at endline who reported the same.

Figure 3. Observed sanitation facilities at baseline and endline

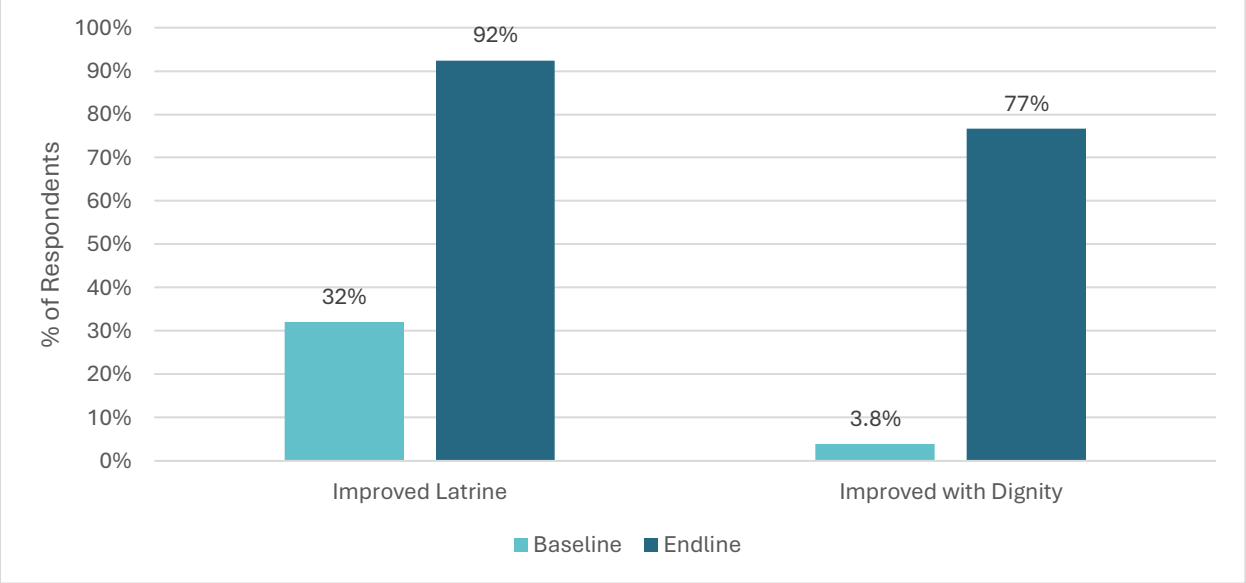
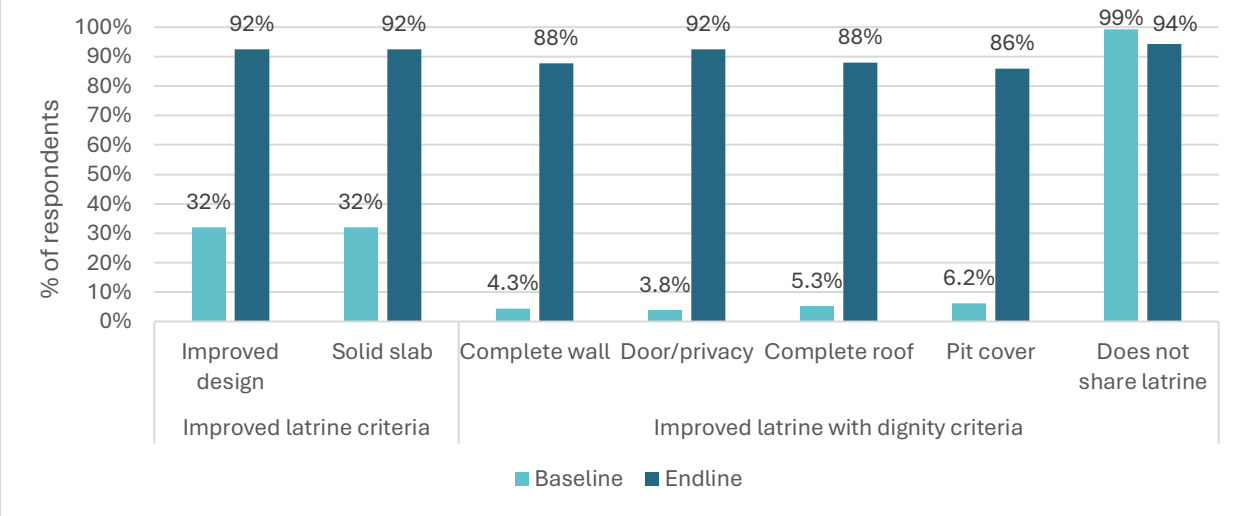


Figure 4. Quality of observed latrines at baseline and endline



Hygiene

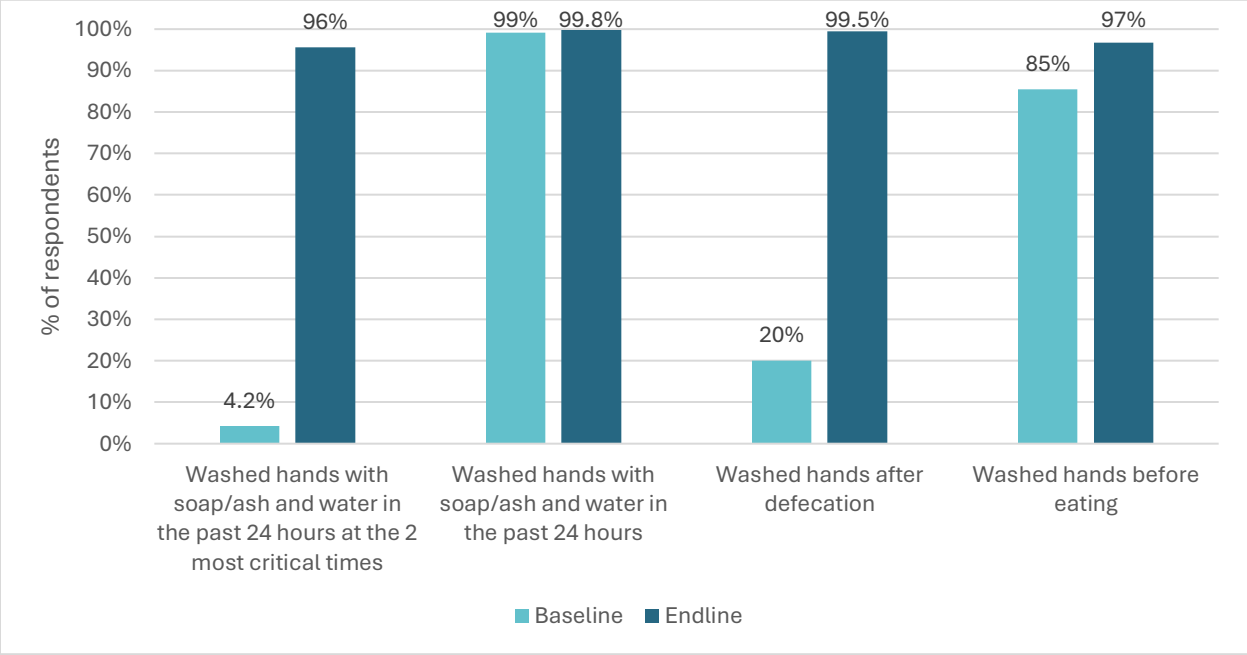
Handwashing facilities and self-reported handwashing behaviors were investigated in each study. At baseline, 17 respondents allowed enumerators to view their handwashing facilities (5.1%) and at endline most respondents (n=391) allowed the same. The prevalence of handwashing stations near the latrine with the appropriate materials (soap/ash and water) increased from baseline to endline, from 0.0% to 91% (p-value <0.01).

Many respondents in the qualitative interviews describe difficulties protecting their handwashing devices from thieves and animal damage. Several reported that handwashing facilities were stolen and sold in their communities, since they were easily moveable. Additionally, animals often ate their soap. One community member of a Healthy Home reported:

> *"From my experience handwashing devices can be easily stolen [and] soap can be eaten by animals or birds"*

Handwashing behavior also improved. The percentage of respondents who reported washing their hands after defecation/using the latrine increased from 20% to 99.5%, and the percentage who reported washing their hands before eating increased from 85% to 97%. Overall, the percentage of respondents who reported washing their hands with soap/ash and water at the two most critical times increased from 4.2% at baseline to 96% at endline (p value <0.01) (Figure 5).

Figure 5. 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 57% at baseline to 9.8% at endline, and the percentage observed to have rubbish on their compound decreased from 58% to 31%. Overall, the percentage of households observed to have clean compounds increased from 37% at baseline to 69% at endline (p-value <0.01)

Community Institutions

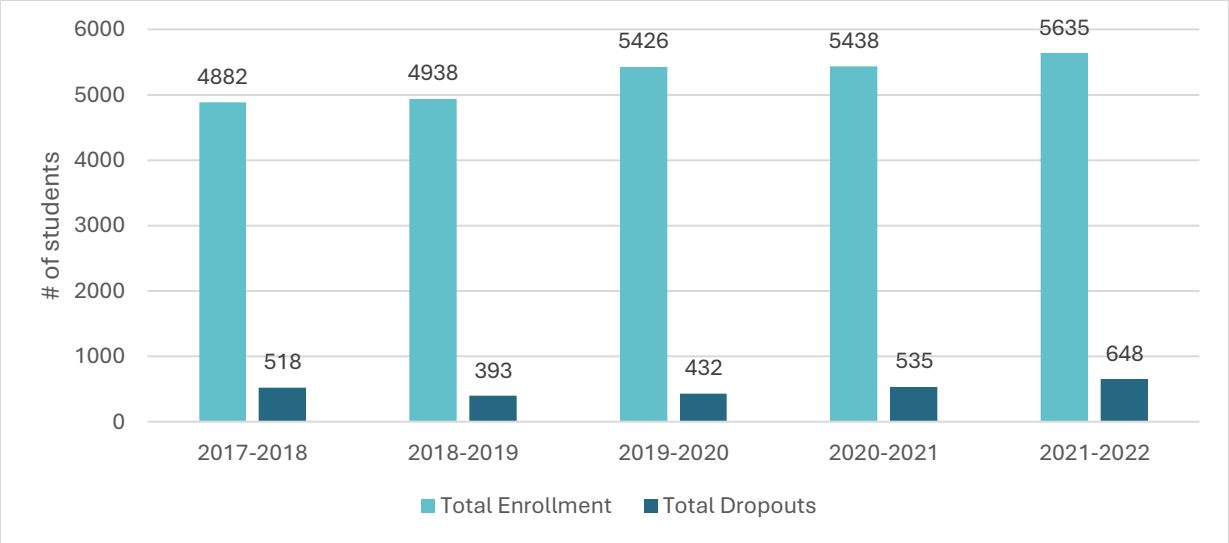
Schools

Water for Good worked in ten schools in the Nensebo project 3 area, from July 2018 to June 2022. At endline, qualitative interviews were conducted to better understand the impact of the Healthy Schools program on students and teachers. Teachers and community members reported that fewer children missed school due to illness, water collection responsibilities, or inadequate menstrual hygiene management (MHM) support. The construction of improved latrines and reliable water supplies created a cleaner and safer learning environment, with teachers describing the school compounds as more conducive to teaching and learning. Female students highlighted the increased dignity, privacy, and safety provided by improved sanitation facilities. As a result, respondents reported notable improvements in girls' attendance and participation in classroom activities. On individual stated the following during a focus group discussion:

> *"The sanitation and hygiene conditions of our village members improved after [Water for Good's program] was implemented in our community. Our children attend school regularly, they don't miss school days searching for water and since their health has improved, they don't miss class due to illness."*

Enumerators obtained sufficient data to analyze absenteeism and dropout from 90% of the schools. From 2018 to 2022, total enrollment increased. Overall, total dropout rates remained at 11% but saw lower rates in the years between baseline and endline studies (Figure 6).

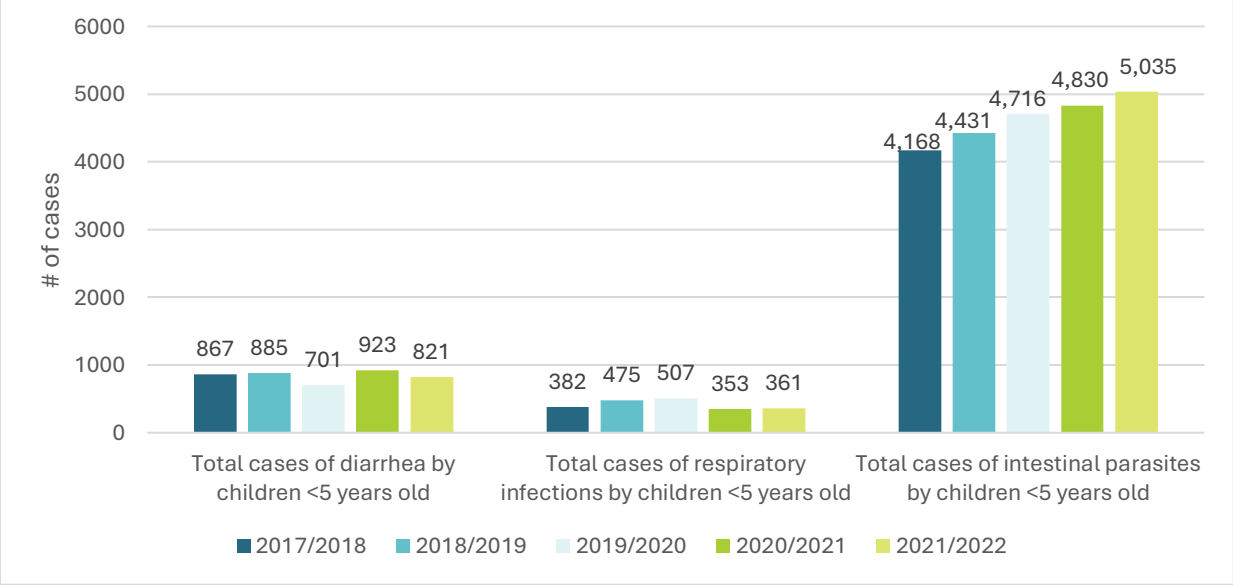
Figure 6. Primary school enrollment and dropouts



Health Facilities

Annual case data collected from the seven health posts in the project area produced mixed results regarding the changes in the WASH disease burden in the Nensebo area. While cases of intestinal parasites among children under 5 increased over the years of the project, consistent changes were not observed in the total number of outpatient visits, diarrhea cases, or respiratory infections among children under five (Figure 7).

Figure 7. Health facility case data



These results were echoed in qualtitative interviews, where respondents reported decreased visits to health facilities. Notably, a health extension worker observed that the decreased burden upon health facilities from WASH-related diseases had increased the ability to provide other health services:

"As health extension workers, now the number of diarrheal cases and WASH-related illness has significantly reduced, we engage ourselves in providing family health services like children EPI, maternal follow-ups and nutrition."

Conclusion

Water, sanitation, and hygiene conditions improved in the Nensebo Project 3 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 1,807 households in the project area, 98% were registered as Healthy Homes, and 100% of villages were verified Open Defecation Free.

Latrine quality greatly improved from baseline to endline. Over three-quarters (77%) of the households observed at endline had latrines improved with dignity, compared to 3.8% at baseline. More respondents reported being satisfied or very satisfied with their current place of defecation at endline (99.8%) compared to baseline (63%).

Safe water access improved from baseline to endline. The number of respondents drinking from an improved water source in the dry and rainy seasons increased from 26% at baseline to 83% at endline, and the median water fetching time during the dry season decreased from 95 minutes at baseline to 25 minutes at endline. Households in the Nensebo project 3 have increased access to safe water and they have the knowledge and habits to keep their water safe after collecting it; the percentage of respondents who were storing their water safely increased from 28% at baseline to 95% at endline.

Reported WASH-related diseases decreased from baseline to endline. The number of households with at least one child under five with diarrhea in the week (7 days) prior to the surveys decreased from 6.1% at baseline to 0.7% at endline. Households reported improvements in the health of their families, with 98% reporting their children's health had improved in the past year, and 96% reporting their own health had improved in the last year.