Vision of a Healthy Village Program Results

Dodola, Ethiopia
Project 1

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

June 2022

[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

06 Key Indicators

07 Results: Health

07 Results: Water

09 Results: Sanitation

09 Results: Hygiene

10 Results: Community Institutions

12 Conclusion

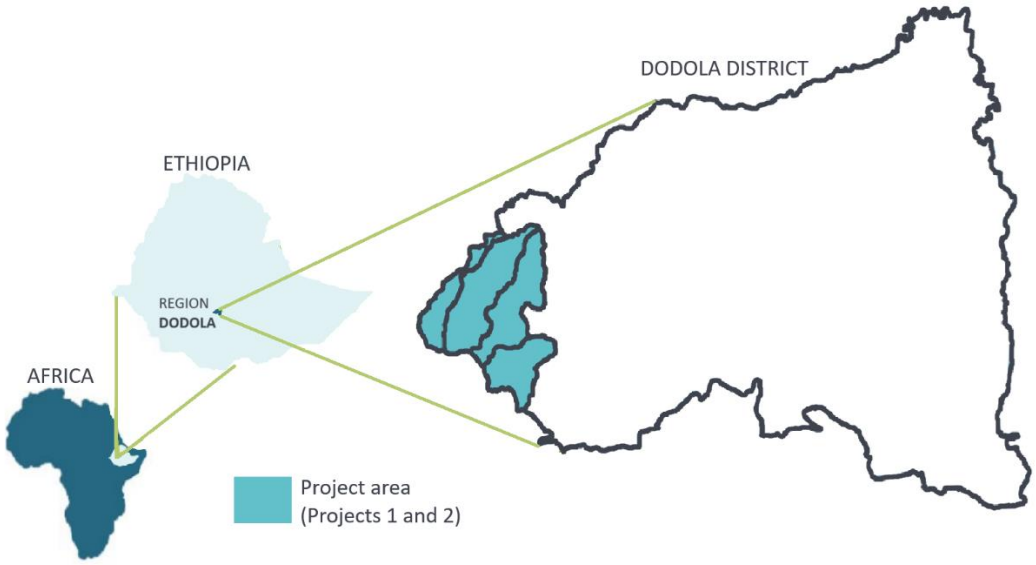
The Problem

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 60% of people lacking at least basic access to drinking water, 95% lacking at least basic access to sanitation, and 95% lacking basic access to handwashing facilities in 2020.[2]

Dodola, Ethiopia

The Dodola District is administratively divided into fifteen kebeles, with a population of 283,165 people. Lifewater's first project in this region operated in four rural kebeles (Dame Chalko, Gafarsa Kara Nageso, Amba Hole Kanku, and Morke) serving 19,925 people across 30 government villages with WASH programming.

Figure 1. Map of the project area



During the baseline study conducted in this region in May 2019 (before intensive project implementation had begun), Lifewater found that access to safe WASH facilities and WASH knowledge was limited:

- 13% 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 120 minutes to collect their water.
- 11% 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; 0.5% had a handwashing station with soap/ash and water near their latrine. Furthermore, one fifth of respondents (21%) 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: WHO/UNICEF Joint Programme for Water Supply, Sanitation and Hygiene (2020)
[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. The first project in the Dodola district of Ethiopia was implemented from April 2019 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 Dodola 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], 55 water points were completed and one ventilated improved pit latrine block 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, monthly community conversations with each community were undertaken, totaling 1,199 events, 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 Dodola Project 1 are displayed in Table 1.

Table 1. Dodola Project 1 outputs as of March 2024

Outputs	Number (Percent)
Healthy Homes[6]	2,876 (96%)
Open Defecation Free villages	72 (100%)
Trained water committees	62
New and rehabilitated water points completed	55
New and rehabilitated ventilated improved pit latrines (VIPLs) completed	1
Healthy Villages[7]	36 (50%)

Since the data for the project endline was collected (June 2022), additional outputs have been achieved, including the registration of an additional 28 Healthy Village and three Healthy Schools. Twenty-six additional water points and five additional latrine blocks have also been constructed.

[5] Data for the baseline study were collected in April 2019; data for the endline were collected in June 2022. 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

Study Methods

For this study, the following data were utilized:

Household surveys: Household Knowledge, Attitudes, and Practices (KAP) surveys were conducted in May 2019 (baseline) and June 2022 (endline), combining both observation and interview data. At baseline, 360 households were surveyed via a cluster sampling method of the 30 government villages[8] in the project area. At endline, 450 households were surveyed 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.

School assessment data: Data on the three schools within the target area were collected in July 2022. 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 was collected in July 2022, including information on the number of annual outpatient visits and cases of various WASH-related illnesses.

Qualitative data: Five focus group discussions (FGDs) and eight 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] Lifewater divided these 30 government villages into 72 smaller sub-villages for project planning and implementation purposes

[9] 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 Dodola Project 1

Theme	Indicators	Baseline	Endline	Statistically Significant?[10]
Health Indicators	% of households with at least one child under 5 that had diarrhea in past 7 days	31%	2.4%	Yes
	% of respondents reporting that child health has improved in the past year	73%	96%	Yes
	% of respondents reporting that their health has improved in the past year	66%	92%	Yes
Water Indicators	% of households using an improved primary drinking water source in the dry and rainy season[11]	13%	80%	Yes
	Median journey time to fetch water (travel to/from water source plus queue time) during dry season[12]	120 minutes	30 minutes	Yes
	% of households storing water safely (observed)[13,14]	10%	91%	Yes
Latrine Indicators	% of households with latrines that are improved[15] (observed)[16]	11%	99.6%	Yes
	% of households with latrines that are improved with dignity (slab, walls, roof, pit cover, and door) (observed)[17]	0.0%	50%	Yes
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)	21%	84%	Yes
	% of households with handwashing facility and materials (soap/ash and water or sanitizer) located close to latrine (within 10 paces) (observed)[18]	0.5%	72%	Yes
	% of households using a hygienic (raised) drying rack (observed)[19]	1.1%	86%	Yes
	% of households with a clean compound (no visible rubbish or feces) (observed)	1.1%	77%	Yes
Healthy Homes	% of households meeting all Healthy Home requirements[20]	0.0%	37%	Yes

[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] 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

[12] This includes all households for whom we had sufficient data to evaluate their water fetching time (n=352 at baseline; n=449 at endline)

[13] This includes all households for whom we had sufficient data to evaluate their water storage containers (n=197 at baseline; n=449 at endline)

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

[15] 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.

[16] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=285 at baseline; n=450 at endline)

[17] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=285 at baseline; n=450 at endline)

[18] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=158 at baseline; n=387 at endline)

[19] This includes all households for whom we had sufficient data to evaluate their area for drying dishes (n365 = at baseline; n=450 at endline)

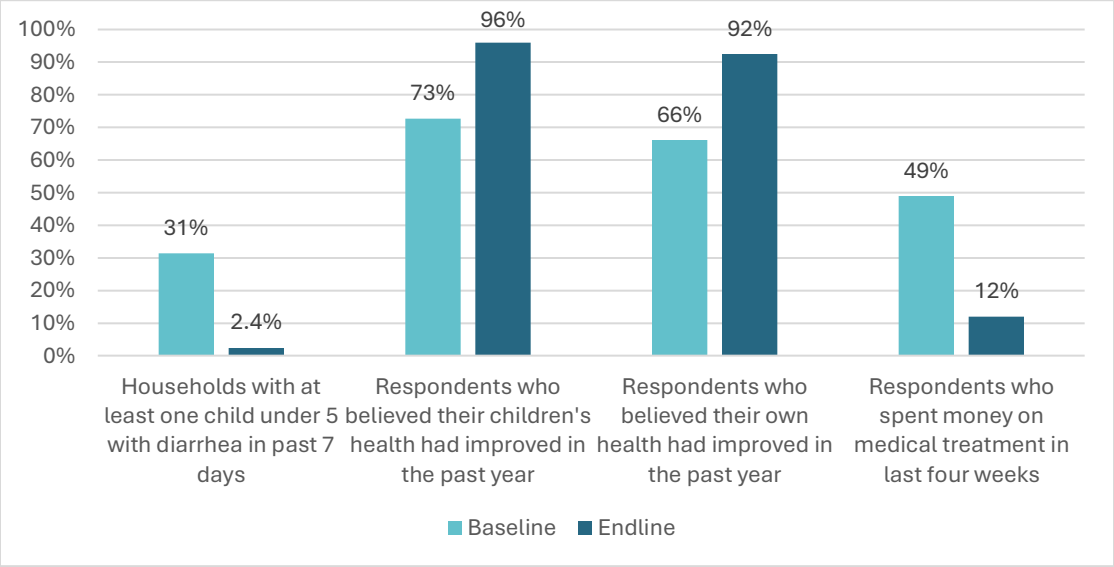
[20] This includes all households for whom we had sufficient data to evaluate Healthy Home criteria (n=126 at baseline; n=449 at endline)

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.

Key improvements in health were observed between baseline and endline. The percentage of households who reported having at least one child under five with diarrhea in the past week decreased from 31% at baseline to 2.4% at endline (a 92% percent decrease). Additionally, the percentage of respondents who believed that their children's health or their own health had improved in the year prior to the survey increased from baseline to endline (Figure 2). The burden of medical visits also decreased from baseline to endline. Forty-nine percent of respondents at baseline indicated that their household had spent money on treatment and transport to medical facilities in the four weeks prior to the survey, as compared to 12% at endline.

Figure 2. Key health indicators at baseline and endline



During interviews, respondents attributed these health improvements at endline to their improved WASH practices. The adoption of practices such as drinking safe water, using a drying rack, using a latrine, keeping a clean environment, and regular handwashing transformed households and communities so that they no longer struggle under the formerly frequent burden of WASH-related diseases.

[21] 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"[22]. Basic access to water increased from baseline to endline, from 2.4% to 51% in the dry season and 2.4% to 48% in the rainy season (Table 3).

Table 3. Basic access in the dry and rainy seasons[23]

	Season	Source type	% of respondents	Median water fetching time	% with basic access
Baseline	Dry	All sources Improved Unimproved	100% (n=336) 15% (n=50) 84% (n=283)	120 minutes 128 minutes 120 minutes	2.4% (n=8)
	Rainy	All sources Improved Unimproved	100% (n=333) 14% (n=46) 84% (n=277)	115 minutes 120 minutes 110 minutes	2.4% (n=8)
Endline	Dry	All sources Improved Unimproved	100% (n=449) 80% (n=359) 20% (n=90)	30 minutes 26 minutes 70 minutes	51% (n=229)
	Rainy	All sources Improved Unimproved	100% (n=448) 80% (n=358) 20% (n=90)	31 minutes 28 minutes 74 minutes	48% (n=214)

A substantial number of planned water points (26 of the planned 81) 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. Since the time of endline, all construction activities have been completed, and all villages have received access to an improved water point.

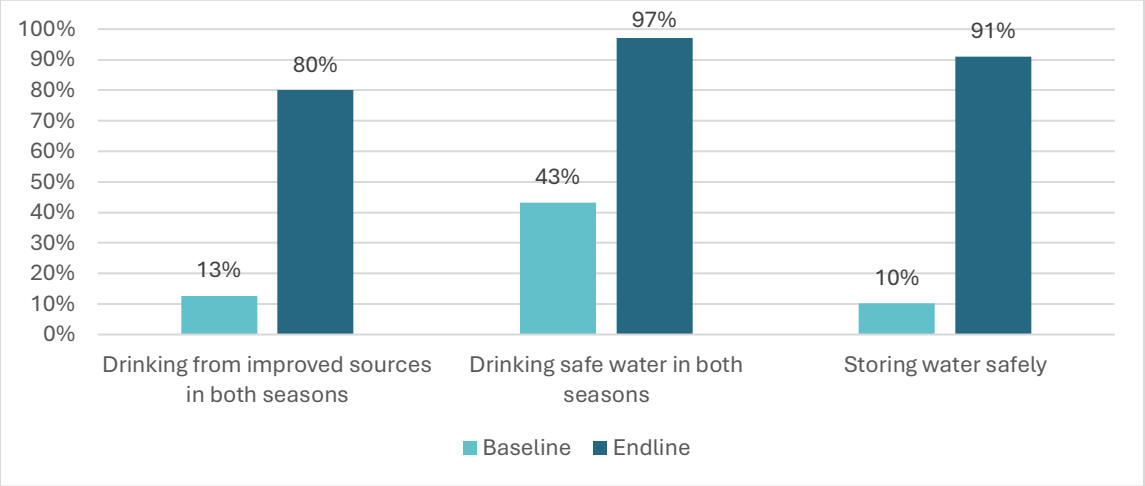
A household is considered to be drinking safe water if they fetch water from an improved source in both seasons, or if they do not use an improved source, they always treat their water with an acceptable water treatment method.[24] Overall, the percentage of households reporting that they were drinking safe water in both seasons (either from an improved source or through consistent treatment of drinking water) increased from 13% at baseline to 80% at endline. Additionally, overall satisfaction with the current water situation more than tripled from baseline to endline; 23% reported being satisfied at baseline, compared to 77% at endline.

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

[23] Basic access could be determined for a respondent if they knew how long it typically takes them to fetch water. Lifewater was able to assess the rate of basic access for 92% (n=336) of respondents for the dry season at baseline, 91% (n=333) of respondents for the rainy season at baseline, 99.8% of respondents for the dry season at endline (n=449), and 99.6% of respondents for the rainy season at endline (n=448).

[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

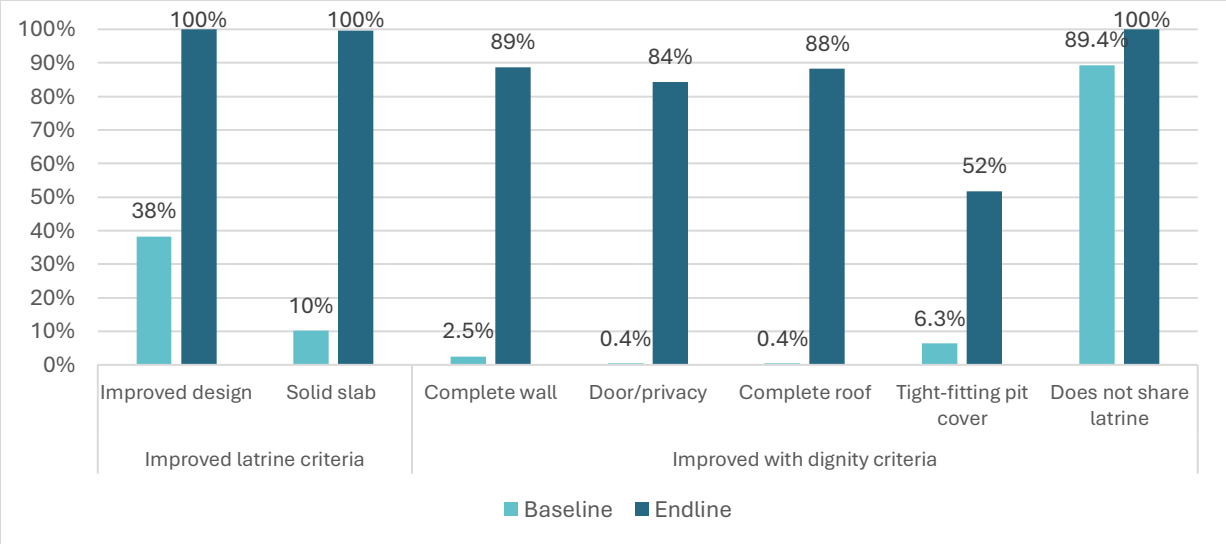


Sanitation

Lifewater trains households to invest in "improved latrines with dignity", which meet all the criteria to be considered an improved latrine 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 provide complete privacy, and a tight-fitting pit cover that keeps flies and insects out. One participant in the qualitative interviews at endline reported that with the implementation of the WASH program, community members no longer use open defecation and as a result, the environment is clean.

Overall, the percentage of households with improved latrines increased from 11% at baseline to 99.6% at endline, and the percentage of households with improved latrines with dignity increased from 0.0% at baseline to 50% at endline (p-value <0.01) (Figure 4).

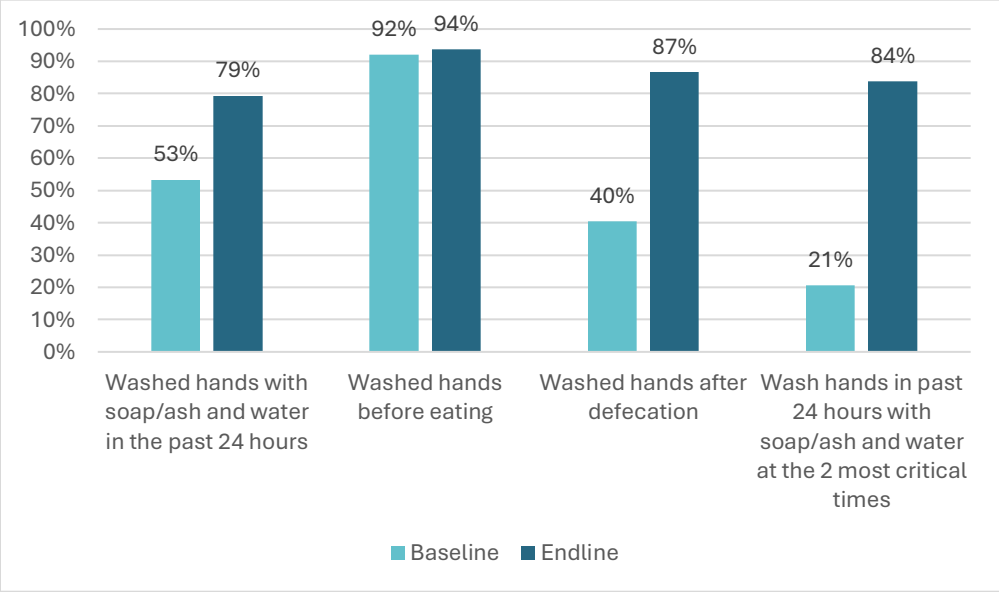
Figure 4. Quality of observed latrines at baseline and endline



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 0.5% to 72% (p-value <0.01). Additionally, the percentage of respondents who reported washing their hands after defecation/using the latrine increased from 40% to 87%, and the percentage who reported washing their hands before eating increased slightly from 92% to 94%. 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 21% at baseline to 84% at endline (p-value <0.01). Furthermore, many respondents during qualitative interviews emphasized handwashing as a regular part of their WASH practices.

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 76% at baseline to 11% at endline, and the percentage observed to have rubbish on their compound decreased from 88% to 20%. Overall, the percentage of households observed to have clean compounds increased from 1.1% at baseline to 77% at endline (p-value <0.01).

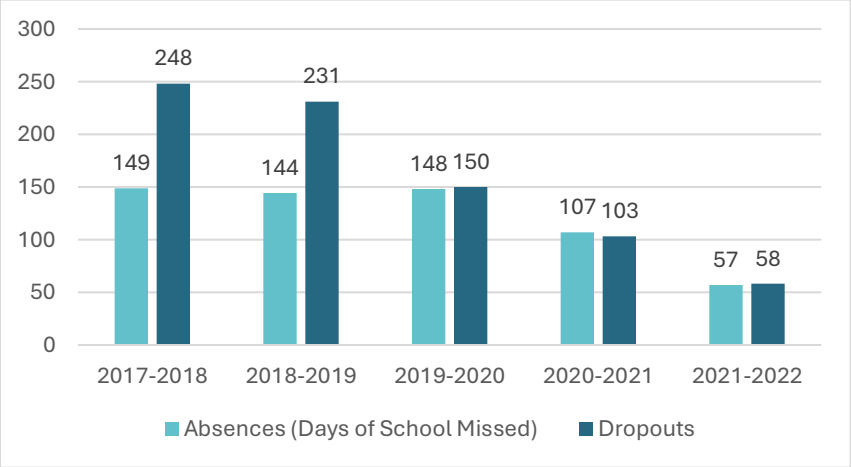
Community Institutions

Schools

Two schools were included in Dodola Project 1, including Morke Primary School and Tulu Boditi Primary School. Data collected from these schools revealed that both absenteeism and student dropouts decreased over the course of the project. During the qualitative interviews, participants reported that the WASH conditions at schools have overall improved, and that absenteeism has reduced, due in part to the increased menstrual hygiene management support that girls receive at schools. Key WASH improvements

identified included the implementation of student WASH clubs, the construction of safe and appropriate sanitation facilities for male and female students, the sensitization of teachers on student menstrual hygiene management, and teacher WASH trainings. These factors have empowered teachers and students to reduce the transmission of WASH-related illnesses at their school and educate the wider community.

Figure 6. Absenteeism and dropouts at Dodola Project 1 schools

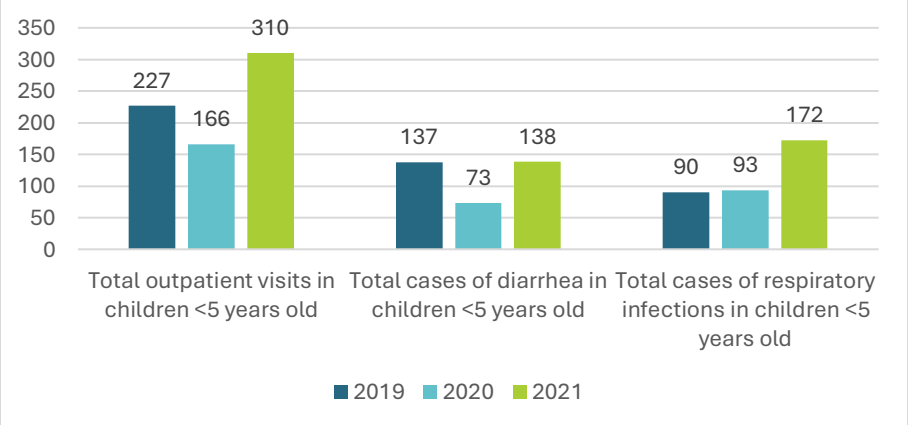


Health Facilities

During the qualitative interviews, health extension workers noted that the burden of WASH-related has decreased since the Lifewater program. They noted that Lifewater's intervention has created community awareness and strengthened habits of handwashing and using the latrine. Some were also concerned about the sustainability of the infrastructure and how quickly a water point could be rehabilitated should it become nonfunctional.

Annual case data collected from the health post in the project area produced inconsistent results regarding the changes in the WASH disease burden in this area. While cases of diarrhea and respiratory infections decreased overall over the years of the project, consistent changes were not observed in the total number of patient visits, diarrhea cases, or respiratory infections.

Figure 7. Health facility case data



Conclusion

Water, sanitation, and hygiene conditions improved in the Dodola Project 1 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 2,987 households in the project area, 96% were registered as Healthy Homes, and 100% of the villages were verified as Open Defecation Free at the time of the endline study.

Due to improved water, sanitation, and hygiene conditions, households at endline were generally more equipped to reduce the transmission of WASH-related diseases than at baseline. More households are using improved sources, and they are spending less time collecting it. The use of improved water sources increased from 13% to 80%, and the median journey time to collect water decreased from 120 minutes to 30 minutes. Considerable improvements were also observed in latrine quality and hygiene facilities, with the percentage of households with improved latrines with dignity increasing from 0.0% to 50%. Essential hygiene infrastructure was more prevalent at endline, as 72% had fully equipped handwashing stations near their latrine (compared to 0.5% at baseline), and 77% had raised drying racks (compared to 1.1% 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 50% at baseline to 84% at endline. Reported handwashing behavior after using the latrine increased from 40% at baseline to 87% at endline.

Reported WASH illness prevalence also decreased between the studies. Diarrhea cases in children under the age of five decreased from 31% at baseline to 2.4% at endline, and the percentage of respondents who believed their health had improved in the previous year increased from 66% at baseline to 92% at endline.

These findings will be used to inform future project implementation.