Vision of a Healthy Village Program Results

Kokosa, Ethiopia
Project 4

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

July 2024

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

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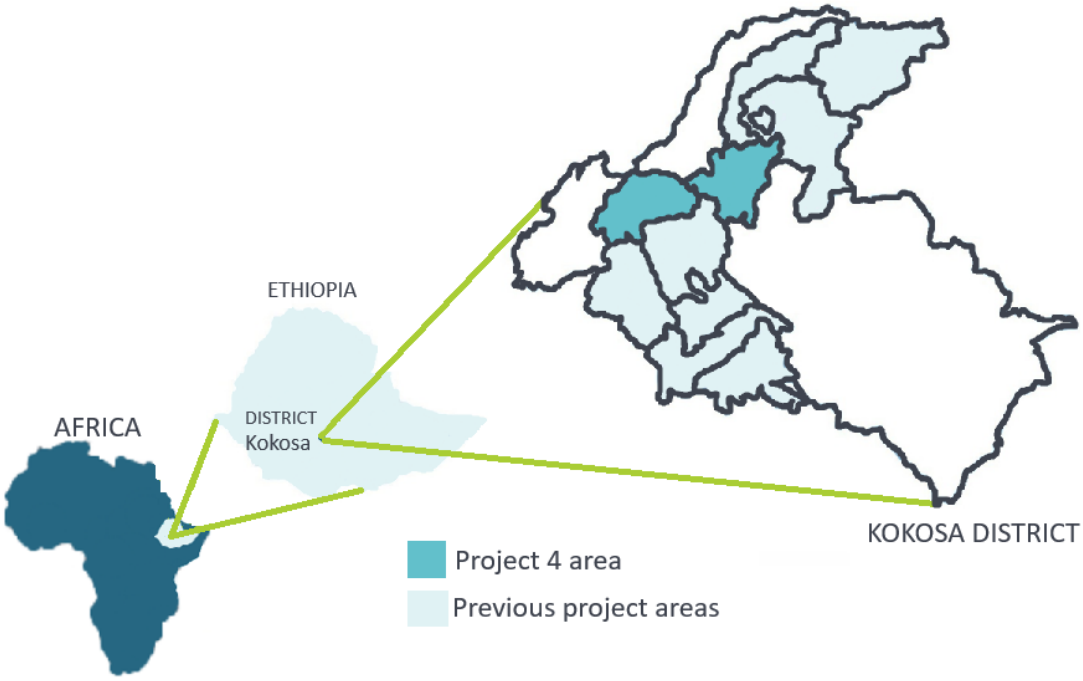
The Problem

Sub-Saharan Africa is estimated to have the lowest rates of water, sanitation, and hygiene (WASH) coverage globally. In rural Ethiopia, safe access to WASH is largely inadequate, with an estimated 59% 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 2021.[2]

Kokosa, Ethiopia

The Kokosa District is administratively divided into 25 kebeles with a total population of 220,930. Lifewater's fourth project in this region operated in two rural kebeles (Danshe and Dula) serving 15,890 people across 77 sub-villages with WASH programming.

Figure 1. Map of the project area



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

- 17% 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 85 minutes to collect their water.
- 37% 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; 10% had a handwashing station with soap/ash and water near their latrine, and 14% had one near their kitchen. Furthermore, 8.9% 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 (2021). Retrieved from: https://washdata.org/data/household#!/dashboard/6274
[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 Kokosa district of Ethiopia from July 2021 through June 2024. 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 Kokosa 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], 58 water points were completed and four ventilated improved pit latrine blocks were constructed.

In addition to the construction of water and sanitation infrastructure, the project emphasized intensive behavior change activities at the household-level. Community Conversation events were undertaken, in which the communities learned about 16 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 Kokosa Project 4 are displayed in Table 1.

Table 1. Kokosa Project 4 outputs as of July 2024

Outputs	Number (Percent)
Healthy Homes[6]	2,182 (96%)
Open Defecation Free villages	76 (99%)
Trained water committees	55
New and rehabilitated water points completed	58
New and rehabilitated ventilated improved pit latrines (VIPLs) completed	2
Healthy Villages[7]	53 (69%)

Since the data for the project endline was collected (June 2024), additional outputs have been achieved, including the registration of one Healthy School and the construction of two additional latrine blocks.

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

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

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

Study Methods

For this study, the following data were utilized:

Household survey: Household Knowledge, Attitudes, and Practices (KAP) surveys were collected at baseline and endline, combining both observation and interview data. At baseline, 418 households were surveyed via a probability proportional to size method of the 71 government villages[8] in the project areas. At endline, 421 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.

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

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

Qualitative data: Twelve focus group discussions (FGDs) and five 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 71 government villages into 77 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 Kokosa Project 4

Theme	Indicators	Baseline	Endline	Statistical Significance[10]
Health Indicators	% of households with at least one child under 5 that had diarrhea in past 7 days	18%	1.1%	Yes
	% of respondents reporting that child health has improved in the past year	40%	96%	Yes
	% of respondents reporting that their health has improved in the past year	34%	95%	Yes
Water Indicators	% of households using an improved primary drinking water source in the dry and rainy season[11]	17%	77%	Yes
	% of households drinking safe water (source and/or treatment)	18%	89%	Yes
	Median journey time to fetch water (travel to/from water source plus queue time) during dry season[12]	85 minutes	14 minutes	Yes
	% of households storing water safely (observed)[13,14]	5.9%	97%	Yes
Latrine Indicators	% of households with latrines that are improved[15] (observed)[16]	37%	99%	Yes
	% of households with latrines that are improved with dignity (slab, walls, roof, pit cover, and door) (observed)[17]	0.0%	81%	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)	8.9%	85%	Yes
	% of households with handwashing facility and materials (soap/ash and water or sanitizer) located close to latrine (within 10 paces) (observed)[18]	10%	98%	Yes
	% of households with handwashing facility and materials (soap/ash and water or sanitizer) inside or near the kitchen (observed)[19]	14%	86%	Yes
	% of households using a hygienic (raised) drying rack (observed)[20]	1.9%	99%	Yes
	% of households with a bathing shelter (observed)[21]	0.5%	98%	Yes
	% of households with a clean compound (no visible rubbish or feces) (observed)	20%	86%	Yes
Healthy Homes	% of households meeting all Healthy Home requirements[22]	0.0%	53%	Yes

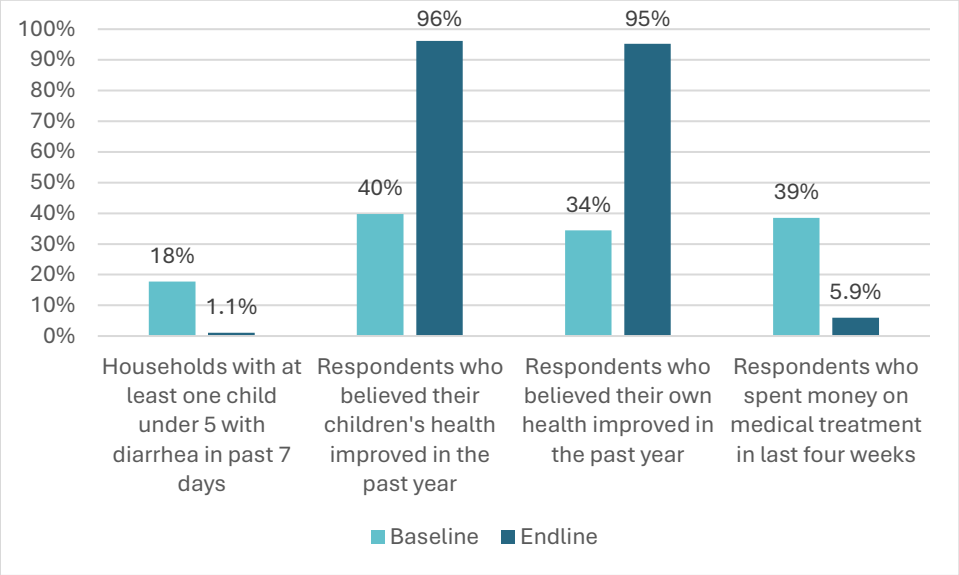
[10] A p-value tells you how likely it is that your results happened by random chance. If the p-value is below 0.05, it usually means there's strong enough evidence to suggest the result is not just due to chance. If the statistical significance for a key indicator is marked as "Yes", it has a p-value <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=416 at baseline; n=321 at endline)
[13] This includes all households for whom we had sufficient data to evaluate their water storage containers (n=393 at baseline; n=420 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=414 at baseline; n=421 at endline)
[17] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=414 at baseline; n=421 at endline)
[18] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=368 at baseline; n=415 at endline)
[19] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=368 at baseline; n=415 at endline)
[20] This includes all households for whom we had sufficient data to evaluate their area for drying dishes (n=363 at baseline; n=395 at endline)
[21] This includes all households for whom we had sufficient data to evaluate their bathing shelter (n=369 at baseline; n=395 at endline)
[22] This includes all households for whom we had sufficient data to evaluate Healthy Home criteria (n=304 at baseline; n=387 at endline)

Health

Diarrhea is the third leading cause of death for children under 5 globally, resulting in approximately 443,832 deaths per year.[23] 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 18% at baseline to 1.1% at endline. 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; 39% 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 5.9% 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 believe 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 struggle against WASH-related diseases.

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 Lifewater was able to assess the rate of basic access for 99.5% (n=416) of respondents for the dry season at baseline, 99.5% (n=416) of respondents for the rainy season at baseline, 76% of respondents for the dry season at endline (n=321), and 97% (n=409) of respondents for the rainy season at endline. Basic access to water increased from baseline to endline, from 0.5% to 74% in the dry season and 5.3% to 76% in the rainy season (Table 3).

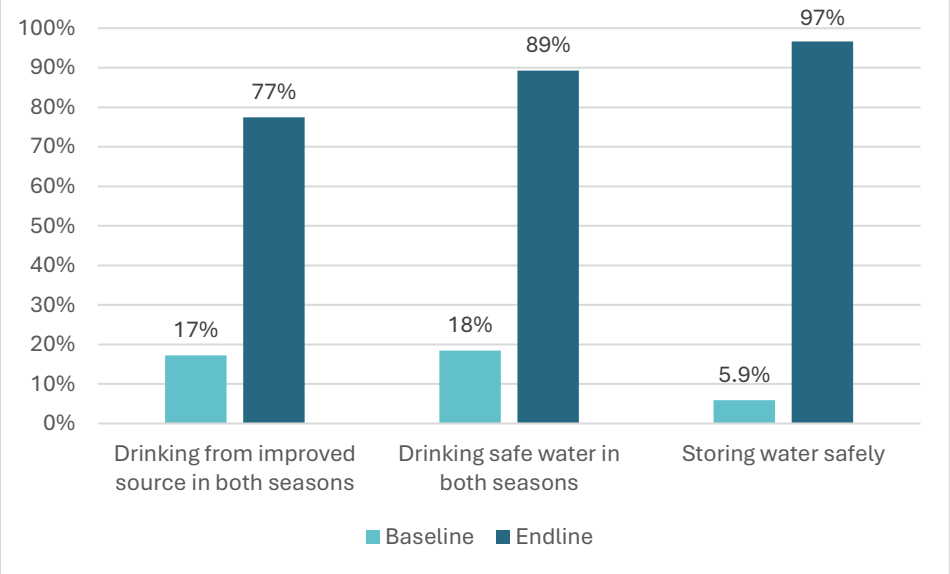
[23] WHO (2024). Retrieved from: https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease

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=416) 19% (n=78) 81% (n=338)	85 minutes 95 minutes 80 minutes	0.5% (n=2)
	Rainy	All sources Improved Unimproved	100% (n=416) 18% (n=76) 82% (n=340)	35 minutes 45 minutes 32 minutes	5.3% (n=45)
Endline	Dry	All sources Improved Unimproved	100% (n=321) 75% (n=241) 25% (n=80)	14 minutes 13 minutes 25 minutes	74% (n=238)
	Rainy	All sources Improved Unimproved	100% (n=409) 77% (n=315) 23% (n=94)	14 minutes 13 minutes 27 minutes	76% (n=310)

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 18% at baseline to 89% at endline. Additionally, overall satisfaction with the current water situation greatly improved from baseline to endline; 3.4% reported being satisfied at baseline, compared to 81% at endline.

Figure 3. Water key indicators at baseline and endline



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

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 provides complete privacy, and a tight-fitting pit cover that keeps flies and insects out.

Enumerators observed the households' latrines to assess their quality. Of those who allowed enumerators to see their latrines (78% at baseline, 99.5% at endline), most had dry pit latrines in both studies (99% 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 37% at baseline to 99% at endline, and the percentage of households with improved latrines with dignity increased from 0.0% at baseline to 81% at endline (p-value <0.05).

Figure 4. Quality of observed latrines at baseline and endline

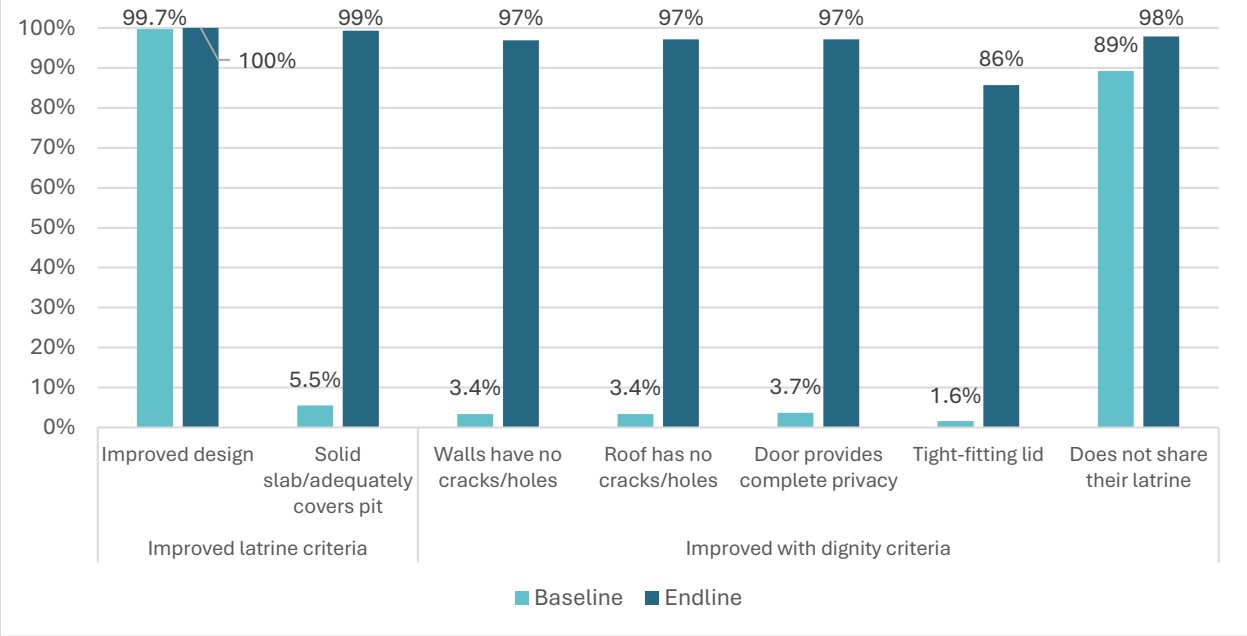
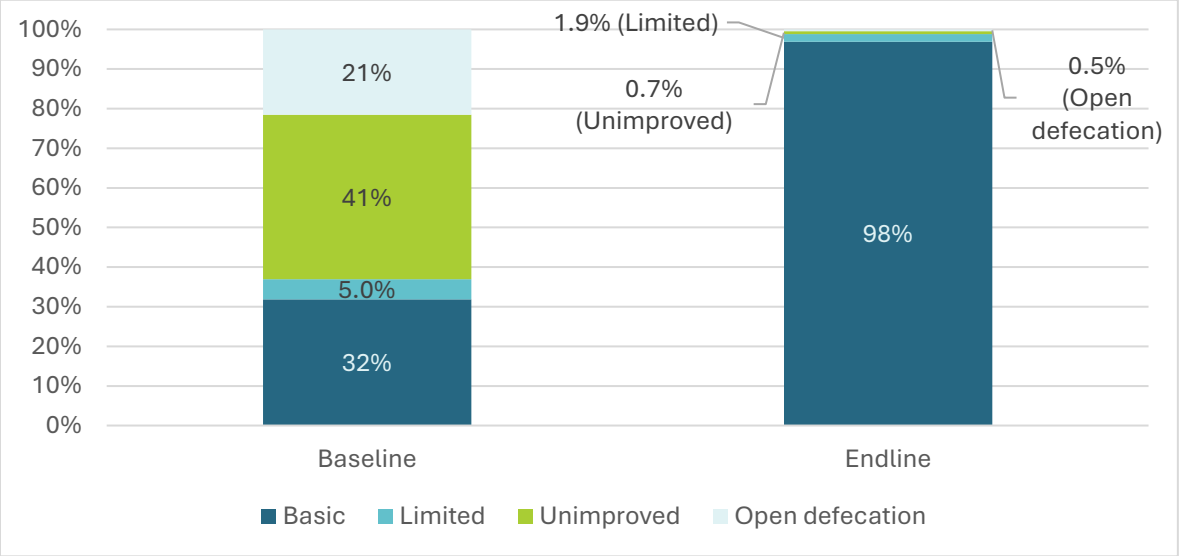


Figure 5. Access to sanitation according to JMP standards[25] at baseline and endline



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 20% at baseline to 86% 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.

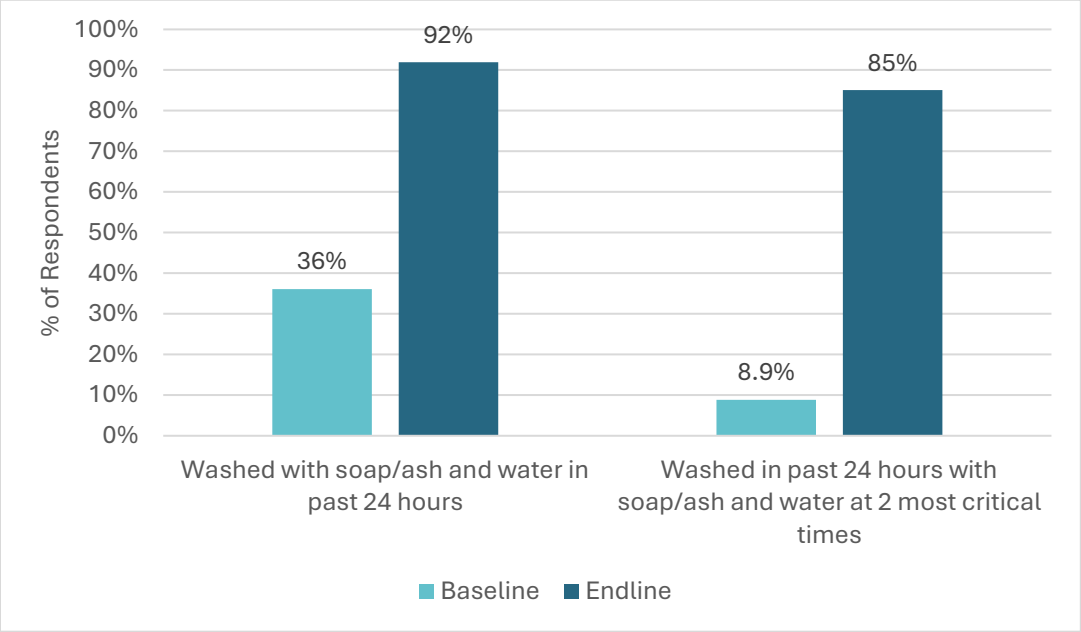
Hygiene

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 10% to 98% (p-value <0.05). Additionally, the percentage of respondents who reported washing their hands after defecation/using the latrine increased from 22% to 99%, and the percentage who reported washing their hands before eating increased from 80% to 91%. 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 8.9% 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.

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

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

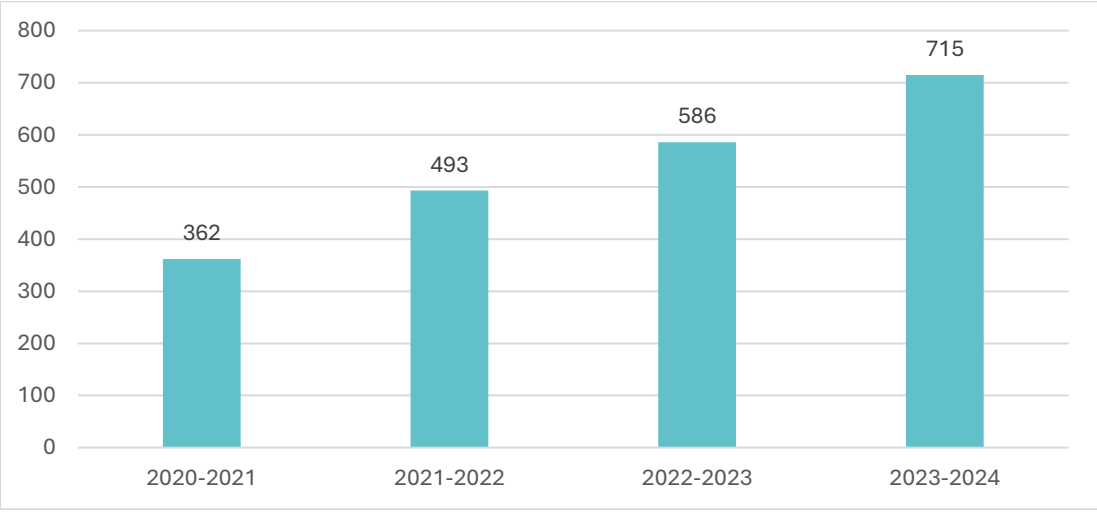


Community Institutions

Schools

Four schools were included in Kokosa Project 4. Data collected from these schools revealed that student dropout rates decreased in one of the schools, although total enrollment decreased. Student dropout rates increased in three of the schools, while the total student enrollment increased. The reason for this is unknown.

Figure 6. Dropout data at Kokosa Project 4 schools



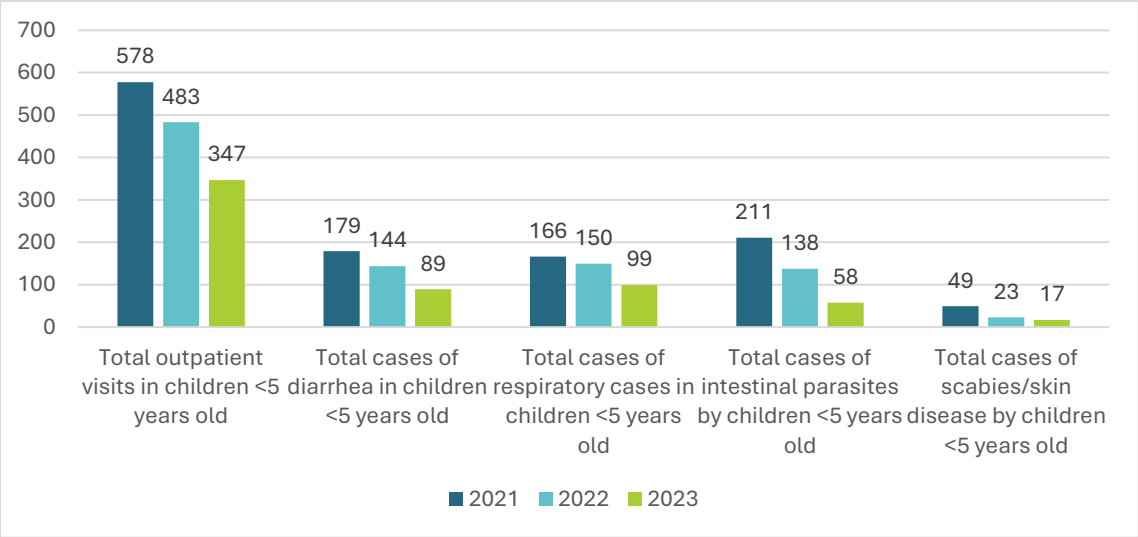
The findings from the qualitative interviews conflict with the school data. Participants reported that the WASH conditions at schools have overall improved, and that before the Lifewater program, students would miss many days of school due to WASH-related illnesses. Notable improvements at project schools 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, although challenges in obtaining freely available menstrual materials continues to be a challenge for 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, although some were concerned about the sustainability of the infrastructure and how quickly a water point could be rehabilitated if it were to become nonfunctional.

Annual case data collected from the two health posts in the project area revealed that cases of WASH-related illnesses such as diarrhea, respiratory infections, parasites, and scabies have decreased since the beginning of the Lifewater program.

Figure 7. Health facility case data



Conclusion

Water, sanitation, and hygiene conditions improved in the Kokosa 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 2,270 households in the project area, 96% were registered as Healthy Homes, and 99% of the villages were verified as Open Defecation Free at the time of the endline study.

More households are using improved sources, and they are spending less time collecting it. The use of improved water sourcesincreased from 17% to 77%, and the median roundtrip journey time to collect water decreased from 85 minutes to 14 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 81%. Essential hygiene infrastructure was more prevalent at endline, as 98% had fully equipped handwashing stations near their latrine (compared to 10% at baseline), and 99% had raised drying racks (compared to 1.9% 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 45% at baseline to 99% at endline. Reported handwashing behavior after using the latrine increased from 22% at baseline to 99% at endline.

Reported WASH illness prevalence also decreased between the studies. Diarrhea cases in children under the age of five decreased from 18% at baseline to 1.1% at endline, and the percentage of respondents who believed their health had improved in the previous year increased from 34% at baseline to 95% at endline.

These findings will be used to inform future project implementation.