Vision of a Healthy Village Program Results

Bensa, Ethiopia
Projects 1 and 2

A study evaluating the impact of Lifewater International's[1] Vision of a Healthy Village program in Bensa Projects 1 and 2

March 2021

[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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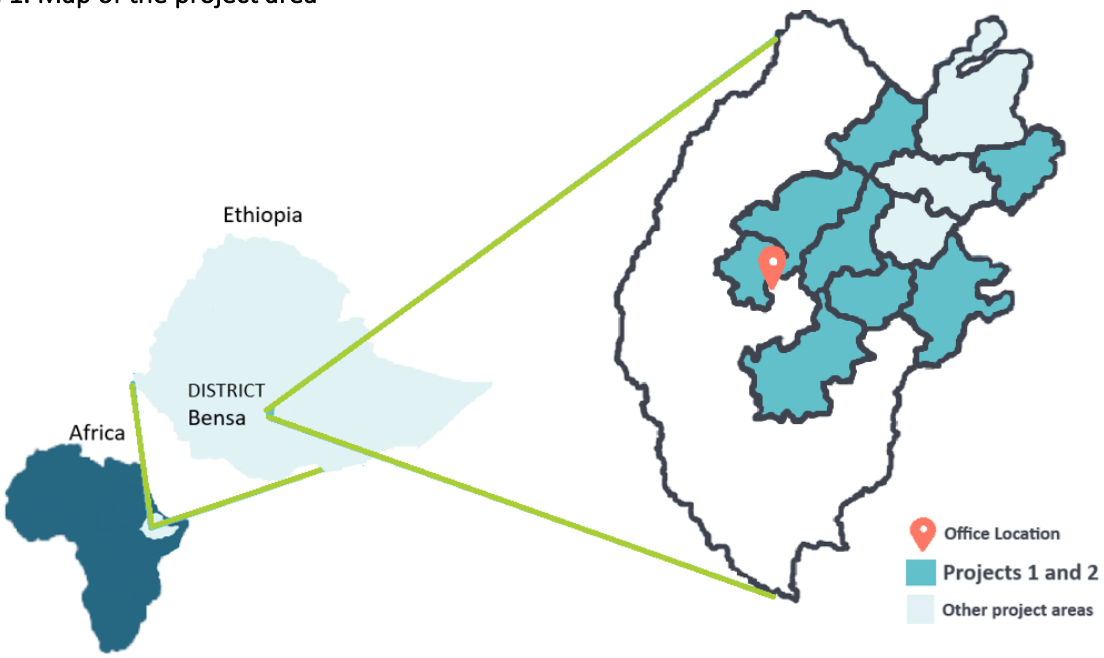
The Problem

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 67% 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 2016.[2]

Bensa, Ethiopia

The Bensa District is administratively divided into five kebeles with a total population of 227,815. Lifewater's first and second projects in this region operated in five rural kebeles (Bonbe, Keramo, Segera, Shanta Golba, and Shenta Wene serving 48,173 people across 25 government villages with WASH programming.

Figure 1. Map of the project area



During the baseline study conducted in this region in October 2016 (before project implementation had begun), Lifewater found that access to safe WASH facilities and WASH knowledge was limited:

- 46% 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 50 minutes to collect their water.
- 10% 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, a fifth 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 (2016). Retrieved from: https://washdata.org/data/household#!/dashboard/4927
[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 implemented its first project in the Bensa district of Ethiopia from October 2016 through March 2019 and its second project from April 2018 through March 2021. The projects focused on changing WASH behaviors (such as handwashing, water treatment, and latrine use) as well as constructing WASH infrastructure. The projects had the following high-level goal: *Reduce WASH-related diseases and improve the health and wellbeing of children and families in the Bensa 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], 112 water points were completed and 16 ventilated improved pit latrines were constructed.

In addition to the construction of water and sanitation infrastructure, the project emphasized intensive behavior change activities at the household-level. For this purpose, Community Conversation events were undertaken, in which the communities learned about 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 Bensa Projects 1 and 2 are displayed in Table 1.

Table 1. Bensa Projects 1 and 2 outputs as of November 2020

Outputs	Project 1	Project 2
Healthy Homes[6]	4,322 (95%)	4,488 (98%)
Open Defecation Free villages	75 (100%)	99 (100%)
Trained water committees	0	20
New and rehabilitated water points completed	63	47
New and rehabilitated ventilated improved pit latrines (VIPLs) completed	10	8
Healthy Villages[7]	68 (91%)	46(46%)

Since the data for the project endline was collected (November 2020), additional outputs have been achieved. Project 1 has seen the registration of two Healthy Villages and two additional water points have been constructed. Project 2 has seen the registration of twenty-one Healthy Villages and twenty-one additional water points, and ten additional latrine blocks have been constructed.

[5] Data for the baseline study were collected in October of 2016; data for the endline were collected in November 2020. 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 conducted in November 2016 (baseline) and in November 2020 (endline), combining both observation and interview data. At baseline, 404 households were surveyed via a cluster sampling method of the 25 government villages[8] in the project area. At endline, 375 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: School enrollment data were not collected because schools were closed during the endline study due to the COVID-19 pandemic.

Health care facility assessment data: Data from the six health care facilities within the target area were collected between 2016 and 2020, including information on the number of annual outpatient visits and cases of various WASH-related illnesses.

Qualitative data: Five focus group discussions (FGDs) and 12 in-depth interviews (IDIs) were conducted at endline with key project stakeholders and community members. For each theme that emerged from the data, a detailed description was created.

[8] Lifewater divided these 25 villages into 171 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 Bensa Projects 1 and 2

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	22%	2.0%	Yes
	% of respondents reporting that child health has improved in the past year	73%	97%	Yes
	% of respondents reporting that their health has improved in the past year	66%	94%	Yes
Water Indicators	% of households using an improved primary drinking water source in the dry and rainy season[11]	46%	79%	Yes
	Median journey time to fetch water (travel to/from water source plus queue time) during dry season[12]	50 minutes	45 minutes	Yes
Latrine Indicators	% of households with latrines that are improved[13] (observed)[14]	10%	73%	Yes
	% of households with latrines that are improved with dignity (slab, walls, roof, pit cover, and door) (observed)[15]	0.0%	22%	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)	20%	71%	Yes
Healthy Homes	% of households with handwashing facility and materials (soap/ash and water or sanitizer) located close to latrine (within 10 paces) (observed)[16]	0.0%	22%	Yes
	% of households using a hygienic (raised) drying rack (observed)[17]	15%	47%	Yes
	% of households meeting all Healthy Home requirements[18]	0.0%	8.9%	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=51 at baseline; n=374 at endline)

[13] 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.

[14] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=86 at baseline; n=32 at endline)

[15] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=86 at baseline; n=32 at endline)

[16] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=166 at baseline; n=111 at endline)

[17] This includes all households for whom we had sufficient data to evaluate their area for drying dishes (n=345 at baseline; n=364 at endline)

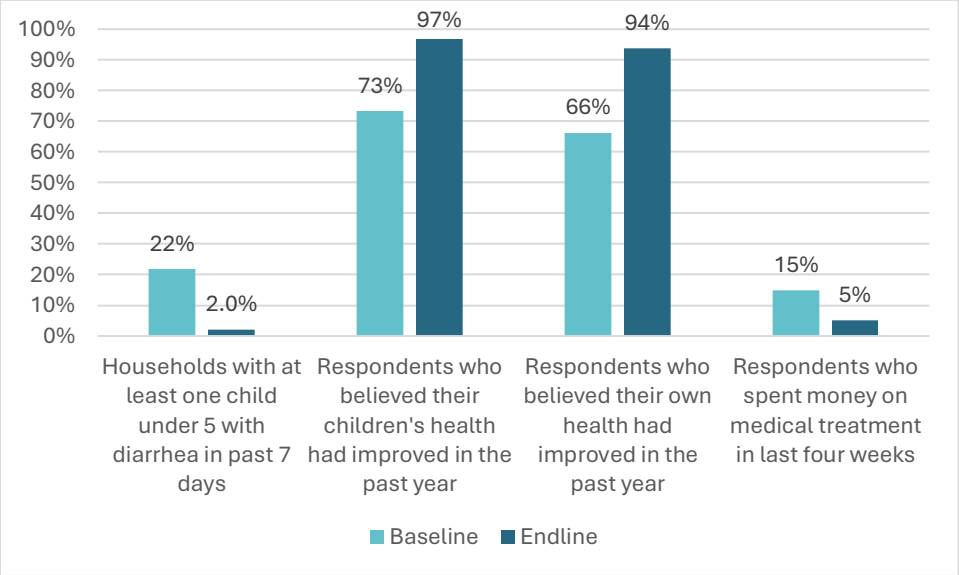
[18] This includes all households for whom we had sufficient data to evaluate Healthy Home criteria (n=128 at baseline; n=179 at endline)

Health

Diarrhea is the third leading cause of death for children under 5 globally, resulting in approximately 443,832 deaths per year.[19] The majority of these deaths are attributed to inadequate WASH.

Key improvements in health were observed between baseline and endline. In this study, the percentage of households who had at least one child under five with diarrhea in the past week decreased from 22% at baseline to 2.0% at endline. The percentage of respondents reporting that their children's health had improved in the last year increased from 73% at baseline to 97% at endline. When the respondents were asked what the most common illnesses were affecting children under five in their household, the percentage reporting cold/flu decreased from 76% at baseline to 59% at endline, and the percentage reporting diarrhea decreased from 47% of at baseline and 34% at endline.

Figure 2. Key health indicators at baseline and endline



Since so few respondents reported knowing how many days of work they had missed due to illness or the medical expenditures their family had made at baseline (20% and 26% respectively), we are unable to report meaningfully about the baseline values for these indicators, nor the changes that resulted between baseline and endline. However, data from the endline suggests that communities are spending little on medical expenditures and Rarely missing days of work due to illness in the targeted areas. At endline, the median medical expenditures in the four weeks prior to the survey was 0 ETB, and the median days of work missed due to illness was 0 days.

In summary, awareness of how behaviors and environments contribute to WASH-related illness increased from baseline to endline. WASH-related illnesses have decreased from baseline to endline, likely due in part to increased WASH knowledges and improved WASH practices. In an interview, one respondent observed the following:

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

"I believe human kind and environment is much interconnected. If our environment is healthy/clean, then we will be healthy. If our environment is dirty, then we will be ill. Thus, human health is greatly interrelated with our health."

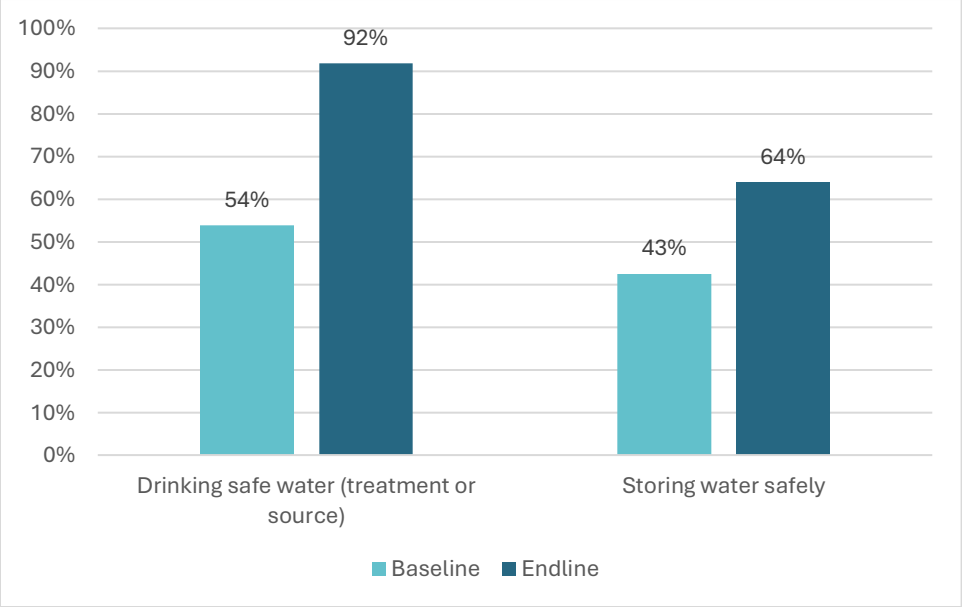
Water

Gaining access to safe water was one of the themes that emerged from the qualitative data. Participants in the interviews and focus group discussions felt their overall access to safe water improved, including the amount of time it takes to fetch water, the quantity of water fetched, and the quality of their water. Several participants explained that because Lifewater constructed a source in their village, they no longer had to purchase bottled water or pay for someone to fetch their water for them. One mother explained:

"I am very happy by safe water drilled well that provided by Lifewater. Really through this we have got peace for our soul, health for our body, and satisfaction for our spirit."

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.[20] 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 46% at baseline to 79% at endline (p-value<0.01).

Figure 3. Key water indicators at baseline and endline



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

Sanitation

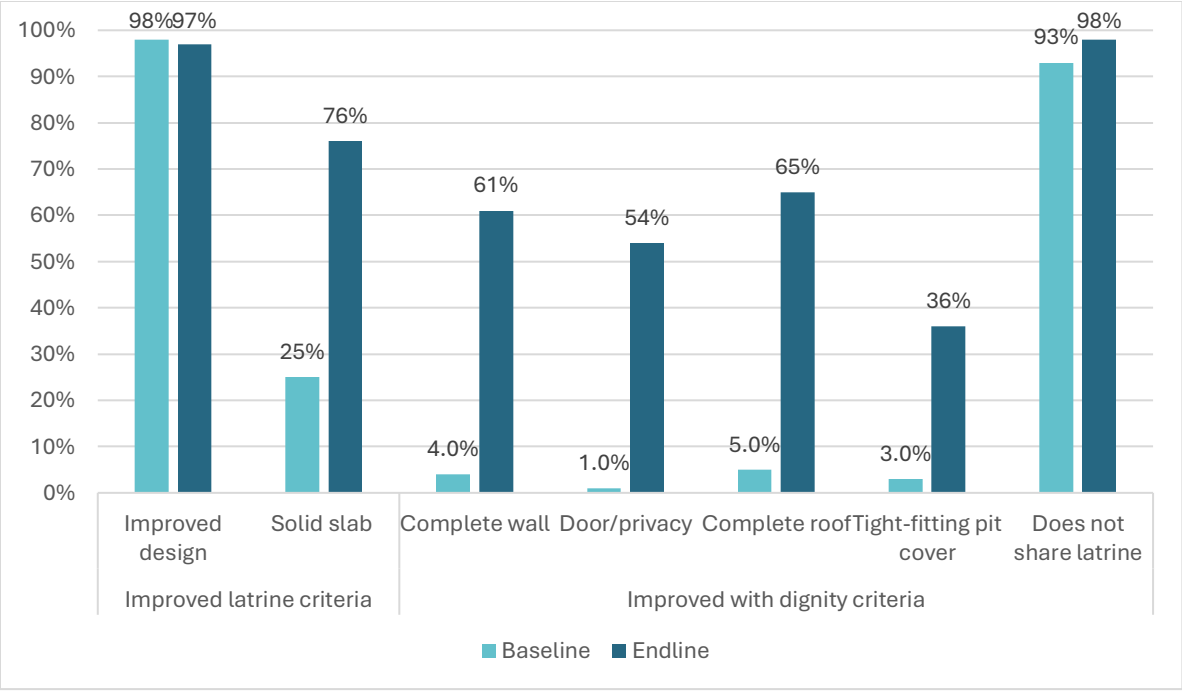
Lifewater trains households to invest in "improved latrines with dignity", which meet all the criteria to be considered an improved latrine[21] while also protecting the dignity of the users. Improved latrines with dignity have walls, a roof, and a door that provide complete privacy, as well as a tight-fitting pit cover that keeps flies and insects out.

A community member living in a Non-Healthy Home recognized the benefits of having an improved latrine with dignity, saying:

> "[Having a] *Healthy home helps to cut disease pathways, creates a clean environment, and improves health status of the household. Especially having an improved latrine with dignity. [This helps us] avoids shame and increases our confidence in our lifestyle."*

Overall, the percentage of households with improved latrines increased from 10% at baseline to 73% at endline, and the percentage of households with improved latrines with dignity increased from 0.0% at baseline to 22% at endline (p-value <0.01). The most commonly missed improved latrine with dignity standard was having a tight-fitting pit cover, which caused many latrines to fall short of the latrine with dignity criteria at endline.

Figure 4. Quality of observed latrines at baseline and endline



[21] The Joint Monitoring Programme (2016) defines improved latrines as those "designed to hygienically separate excreta from human contact", including pit latrines with solid slabs, above ground vaults, and pour/flush latrines to closed tanks.

Hygiene

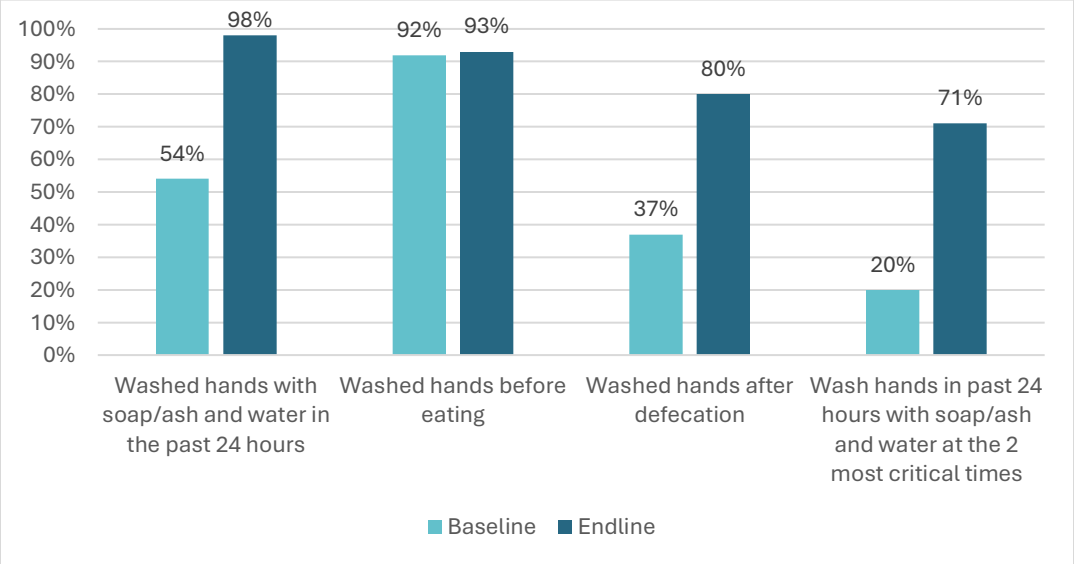
Handwashing facilities and self-reported handwashing behaviors were investigated in each study. The prevalence of handwashing stations near the latrine with the appropriate materials (soap/ash and water) increased from baseline to endline, from 0.0% to 22% (p-value <0.01).

Interview data 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. A member of a local social group reported:

> *"Our family's satisfaction is greatly increased by keeping personal hygiene like washing hands with soap at every moment of food touching and after touching any dirt."*

The percentage of respondents who reported washing their hands after defecation/using the latrine increased from 37% to 80%, and the percentage who reported washing their hands before eating increased slightly from 92% to 93%. Overall, the percentage of respondents who washed their hands with soap/ash and water at the two most critical times increased from 20% at baseline to 71% at endline (p-value <0.01).

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 78% at baseline to 35% at endline, and the percentage observed to have rubbish on their compound decreased from 85% at baseline to 24% at endline. Overall, the percentage of households observed to have clean compounds increased from 5.9% at baseline to 63% at endline (p-value <0.05).

Community Institutions

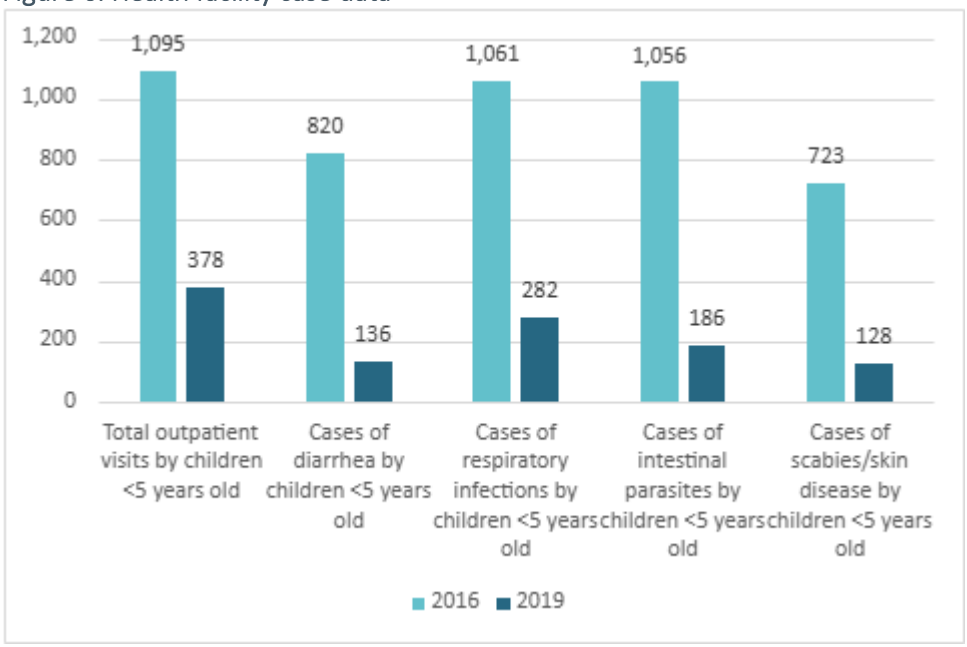
Health Facilities

Health extension workers noted that the burden of WASH-related diseases observed at health facilities has decreased since the Lifewater program. Some noted that there have been improvements in the community's environment and, as a result, people are healthy and no longer ill from WASH-related diseases. One health extension worker reported:

> *"In the past two or three years, the number of patients who visit health posts decreased significantly. I appreciate the program and activities executed in the community. Major behavioural change [has been observed] in the community in using latrine and practicing different sanitation activities."*

Annual case data collected from the six health posts in the project area produced positive results regarding the changes in the WASH disease burden in this area. Care-seeking behaviors may have been affected by the COVID-19 pandemic. Total outpatient visits by children less than five decreased 65%, cases of diarrhea by children less than five decreased 83%, respiratory infections by children less than five decreased 73%, intestinal parasites in children less than five decreased 82%, and cases of scabies/skin disease in children less than five decreased 82%.

Figure 6. Health facility case data



Conclusion

Water, sanitation, and hygiene conditions improved in the Bensa Project 1 and 2 areas 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 4,540 households in the Project 1 area, 96% were registered as Healthy Homes, and 100% of the villages were verified as Open Defecation Free. Of the 4,566 households in the Project 2 area, 99% were registered as Healthy Homes, and 100% of the villages were verified as Open Defecation Free.

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; improved source usage increased from 46% to 79%, and the median journey time to collect water decreased from 50 minutes to 45 minutes.

Considerable improvements were observed in latrine quality, with the percentage of households with improved latrines with dignity increasing from 0.0% to 22%. Essential hygiene infrastructure was more prevalent at endline, when 22% had fully equipped handwashing stations near their latrine (compared to 0.0% at baseline), and 47% had raised drying racks (compared to 15% 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 74% at endline. Reported handwashing behavior after using the latrine increased from 37% at baseline to 80% at endline.

Reported WASH illness prevalence decreased as well. Diarrhea cases in children under the age of five decreased from 22% at baseline to 2.0% at endline, and the percentage of respondents who believed their health had improved in the previous year increased from 66% at baseline to 94% at endline.

These findings will be used to inform future project implementation.