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Combining sanitation and hand washing promotion: an example from Amhara, Ethiopia

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Given the importance of the MDGs, sanitation coverage is a focus of many programs. Hand washing is often not integrated into sanitation promotion even though hand washing with soap at certain junctures helps reduce morbidity and mortality associated with diarrheal disease and is easy to incorporate into sanitation programming. With support of the World Bank-AF's Water and Sanitation Program and USAID's Hygiene Improvement Project, the Amhara Regional Health and Education Bureaus in Ethiopia implemented a program promoting sanitation uptake together with the installation of a hand washing device at latrines, fully supplied with water and a cleansing agent, in accordance with the national hygiene and sanitation strategy. This document reviews the results. Although statistically significant drops in sanitation uptake were observed, hand washing device installation kept pace with existing (substandard) trends but did not surpass them. Hand washing promotion may need to rely on social mobilization approaches as much as sanitation does.

Background

Amhara is one of the nine regional states in Ethiopia. Population estimates range from 17 to almost 20 million, depending on the source. It has an area of about 153 kilometers square with a population density of about 93.5 /km^2.[1] The state has 151 urban and rural districts or *woredas*. The districts are further divided into 3,115 rural and 322 urban subdistricts or *kebeles*.[2] These subdistricts are further subdivided into villages or *gotts*, which are the lowest level in the rural structure.

The region has appreciable health infrastructures and human resources trained in health care. One such resource is the health extension workers (HEWs) who are trained subdistrict-level health workers. By mid-2010 about 6,000 HEWs were assigned in all subdistricts in the region. These resources are embedded in the maternal and child health program and serve as important hygiene and sanitation change agents in the rural communities of Amhara, dedicating their efforts to 16 packages or topics on the "family health card," seven of which focus specifically on environmental health, sanitation and hygiene.

The Learning by Doing Approach to At-Scale Implementation of the National Hygiene and Sanitation Strategy in Amhara, also referred to as Community-Led Total Behavior Change in Hygiene and Sanitation (CLTBCHS), is an official program of the Amhara Regional State Bureaus of Health and Education. It is supported by two institutions: 1) the Academy for Educational Development (AED) through the Hygiene Improvement Project with funds provided by the United States Agency for International Development (USAID), and 2) the World Bank's Water and Sanitation Program. CLTBCHS had two components: one targeting "total WASH (water, sanitation and hygiene) behavior change" in households through community and interpersonal level intervention and another focusing on schools to make them WASH-friendly.

At the household level, this program was conceptualized with two major objectives in mind:

[1] Amhara National Regional State Health Bureau Profile, October 2007
[2] Bureau of Finance and Economic Development Census, 2008

- Support the implementation of the National Hygiene and Sanitation Strategy through the "learning by doing" approach in Amhara, thus helping the regional health bureau achieve the goals of universal practice of hygiene and sanitation by 2012.
- Refine and document a model that may be adapted for immediate replication in other Ethiopian regions.

Approaches for improving WASH practices

CLTBCHS used an approach that combines community mobilization with principles and procedures outlined in community-led total sanitation (CLTS) discussed by Kar and Chambers (2008). This approach is based on participatory rural appraisal principles through which villages are mobilized to eliminate open defecation. Community members conduct their own appraisal and analysis of open defecation and are triggered to mobilize the needed actions to become open defecation free. This approach offers a shift from a focus on toilet construction for individual households to the creation of open defecation free villages.

In the specific case of CLTBCHS, community mobilization is complemented with a household negotiation approach that is integrated into the national maternal and child health outreach program. Health extension workers visited households as part of their routine family visits to help families follow through on their commitment to end open defecation and determine which sanitation option best suits their needs. To encourage installation of a sanitation facility, the HEWs offered problem solving support and a choice of feasible WASH options. The approach was dubbed MIKIKIR in Amharic, or negotiation of improved practices. Latrines were promoted not only for health benefits, but for other aspirational benefits like privacy, modesty for women and modernity. It was assumed that a move away from open defecation would meet family aspirations and as a result the new sanitation facility would be used and maintained over time. The negotiation approach also covered the other two practices promoted, hand washing with soap at critical junctures and household water treatment and safe storage.

Hand washing was tightly linked to ending open defecation and an explicit component of the CLTBCHS program, reflected even in the name of the initiative. All community and household level activities advocated for the installation of a "tippy tap" hand washing station at the latrine site. The program developed job aids for HEWs and other outreach workers geared toward tippy tap construction and hand washing; provided extensive hands-on training to HEWs and other outreach workers on hand washing and tippy taps; and modified monitoring forms to include tracking of hand washing stations and supplies.

Part of this comprehensive approach included identifying and popularizing a set of key WASH practices that were feasible, effective and could be implemented on a large scale through the programs of participating partners referred to as "small doable actions."

Hygiene and sanitation improvement efforts also involved other outreach agents from participating partners as well as the involvement of agricultural extension workers, model farmers and teachers in WASH behavior change activities.

Below is a summary of findings from two household surveys conducted at the beginning and end of WSP/HIP's collaboration that were used to determine changes in sanitation coverage and hand washing. A methodology section is followed by major findings and conclusions.

Methodology

Research design

The study was based on a stratified sample that included three levels of intervention intensity at the baseline (high, intermediate and low) and two levels at the endline (high and low). The shift in intensity levels between measures responded partially to financial constraints faced as the program came to a close, but was also related to the Regional Amhara Health Bureau request that districts adopt CLTBCHS across the board in the latter phases of the program, many months after the baseline had been collected. Districts were classified by intensity level based on access to: 1) intensive expatriate and local technical support; 2) training; 3) capacity building; 4) per diem initiative funds to implement the program; and whether they served as sites to develop approaches, training and materials for replication in other districts. Table 1 shows how the criteria were used to classify districts into study groups. Baseline data were collected for the most part in May 2008 and endline data were collected in June 2010.

Table 1. Program inputs made available to different sampling strata

Program inputs	Strata by level of program intensity		
	High	Intermediate	Low
Expat assistance	Provided	Not provided	Not provided
Training	Provided	Unknown	Unknown
Local TA	Provided	Provided	Not provided
Funds to implement promotional activities	Provided	Provided	Not provided

Sample size

Sample size calculation for the household survey was based on expected sanitation coverage in Amhara. Based on available census data for rural Amhara, it was expected that the sanitation coverage in districts where the program was going to be implemented first, known as "ignition" districts, would be equal to 17 percent. It was assumed that the sample chosen should be able to reflect that same figure. A plus or minus 5 percent precision was tolerated. Homogeneity within the cluster was set at 0.4 and the design effect at 3.0.

The household survey was based on cluster sampling. The initial estimate required selecting 110 clusters with six households per cluster in each study group in order to have 660 households per group and a total 1,980 household respondents at the baseline. Data were finally collected from 2,000 cases in the baseline given that it included three study groups. The endline sample included 1,378 cases for a total of two study groups. The selection of subdistricts was proportionate to population size.

Sampling approach

A multiple stage random selection approach was generally used to select districts, subdistricts and villages. Yet all high intensity districts were represented in the sample at both measures. Eight intermediate intensity districts were visited during the baseline, and 11 low intensity districts were selected both in the baseline and endline. Households within gotts where selected using a "spin the bottle" procedure. This procedure required selecting a village center, spinning a bottle and going in the direction pointed by the tip of the bottle. Every third household on the street/path was visited until a quota was met. To be included in the household sample, families had to have a child under five.

Instruments

WSP/HIP drafted structured household questionnaires in English and translated them into Amharic, pretested, and adopted them to the local situation with collaboration from consultants and experts from WSP/Ethiopia and the Amhara Regional Health Bureau.

Limitations of the study

The selection of districts that became high intensity woredas was not done at random at program outset and was based on different programmatic (purposive) criteria.

At the baseline, certain aspects of program components had not been fully defined, and the baseline instrument reflected that initial level of clarity. The instrument used at the endline, however, was modified to reflect the new complexities of the activities implemented. As a result, not all variables measured could be tracked over time.

Findings

Results at the household level presented below are broken down only by measure: baseline and endline. No comparisons by intensity strata are offered as no statistical differences were found at the endline between the high and low intensity districts regarding exposure to program activities, regardless of the measure of exposure considered. Consequently, no differential level of intensity could be demonstrated. This finding most likely reflects the commitment of the Amhara Health Bureau to have a hygiene and sanitation program that would affect all districts in the region, regardless of the presence of additional international or domestic

NGO partners that could help increase reach and expand coverage**.** So in essence, there was not full penetration within any district to classify it as "high intensity" nor were there any true control districts.

In the tables below, only percentages are presented. The denominators used to calculate the percentages vary depending on the issue at hand, and they are included as part of column headings when appropriate.

Sanitation coverage

Findings related to sanitation coverage indicate a drop of 25 points in the practice of open defecation between the baseline and the endline, a 29% increase in the adoption of unimproved sanitation, and a 5% drop in the access to improved sanitation. The definition of unimproved and improved sanitation takes into account both the physical characteristics of the facilities and whether or not they are shared with other households. For the purpose of this classification, a sanitation facility considered as improved based on its physical characteristics, may have been classified as unimproved if it is shared by more than one household. Comparisons across measures are statistically significant (Chi2=332.7, p=.00).

Analysis elaborated elsewhere (Hernandez, 2010) also clearly tied community-level total behavior change intervention components—both household and community level—to presence of a latrine in the household. Households that took part in a "walk of shame" (a key activity in CLTS ignition), had an HEW or outreach worker visit the house to discuss sanitation, or felt that having a latrine was fundamental to their community (not just the household's) health and community's development were more than 11 times more likely to have a latrine than those who did not.

The percentage of households owning a latrine that shared their facility with other households was 17 percent at the baseline and almost 20 percent at the endline. These differences were not statistically significant (Chi2=3.0, p=.22). The mean number of households that reported sharing the facility decreased from 8.8 to 3.3 households from the baseline to the endline among households involved in that practice. This drop is statistically significant (t=12.1, p=.00).

Hand washing

Table 2 presents findings concerning the knowledge respondents have about when hands should be washed with soap to prevent diarrheal disease. The junctures are listed in order of frequency. In general, food handling junctures are more frequently mentioned that junctures when there is risk of contact with fecal matter. The order of frequency is practically identical in both measures. However, there are statistically significant increases in knowledge from the baseline to the endline for all junctures listed.

Table 2. Knowledge of Handwashing Crucial Junctures to Prevent Diarrheal Disease (Unprompted)

Junctures	Baseline (n=2000)	Endline (n=1378)	Chi2	p
Before eating	63	75	57.5	.00
Before cooking	46	58	48.8	.00
After defecation	19	59	571.2	.00
Before feeding a child	8	24	150.7	.00
After cleaning a child's bottom/changing a diaper	5	20	164.1	.00

Following suggestions from Ram (2010), Ram et. al. (2010) and Hernandez (2010), hand washing practices were measured through self reports and through a proxy that focused on the existence of hand washing stations/devices and the presence of supplies at these stations. Two hand washing stations/ devices were explored: those commonly used by the household and those that may exist at latrines.

Table 3 presents self reported hand washing practices by cleansing agent. Data indicate that it is generally more common to report having washed hands with soap than with ash. The use of soap is about five times more common than the use of ash at either the baseline or the endline. In addition, the self reported use of soap increased significantly from 51 percent to 56 percent from the baseline to the endline, whereas the self reported use of ash remained constant. The drop from 10 percent to 9 percent reported in the table is not statistically significant. The self reported use of any cleansing agent increased from 55 percent to 60 percent and that difference is statistically significant. This change is expected given the rise in the self reported use of soap.

Table 3. Self reported hand washing practices (Did you use soap/ash yesterday?)

Self reported practices	Baseline (n=2000)	Endline (n=1378)	Chi2	p
Used soap	51	56	6.7	.00
Used ash	10	9	1.4	.13
Used soap or ash	55	60	7.4	.00

Table 4 presents data of an exploration of the specific junctures when use of soap was self reported. Use of soap for food handling-related junctures is more frequent at any measure than the use of soap when fecal contact may occur. This is true despite the fact that the self reported use of soap remains generally rather low.

Table 4. Reasons for using soap the morning prior to the survey

Categories of opportunities	Self reported practices	Baseline (n=1018)	Endline (n=772)	Chi2	p
Fecal contact opportunities	After defecation	3	25	187.4	.00
	After cleaning a child's bottom	1	3	13.5	.00
Food handling opportunities	Before cooking	14	23	24.3	.00
	Before eating	8	9	1.0	.17
	Before feeding a child	1	5	31.8	.00
Any juncture		26	43	90.4	.00
At least two junctures		2	12	148.2	.00

A similar exploration to understand self reported hand washing practices at critical junctures when ash is used was conducted. In general, these findings also reflect the low self reported use of ash. Food handling junctures are more frequently mentioned that other junctures at the baseline, but there is an increase in the use of ash after defecation that is statistically significant. In 2008, 8% of the respondents reported that they had used ash during at least one juncture. In 2010, that percentage increased to 10%. These findings were not statistically significant (Chi2=.34; p= .35). No respondent at either measure mentioned that they had used ash for two or more critical junctures.

Table 5 focuses on a measure of hand washing practices that is more objective and relies on the availability of hand washing supplies at a hand washing station/device commonly used by family members detected through observation. Data in Table 5 indicate that there was a significant drop in the presence of both soap and water at commonly used hand washing stations/devices from the baseline to the endline, even though the presence of both supplies at such locations remains relatively low. This drop is explained by the drop in the availability of soap at these locations at the time of the survey. Data in Table 5 also indicate,

however, the significant increase in the presence of water between measures. Water was observed in 14 percent of the households at the baseline and in 22 percent of the households in the endline at commonly used hand washing stations/devices.

Table 5. Hand washing supplies at commonly used hand washing station/device

Indicators	Baseline (n=2000)	Endline (n=1378)	Chi2	p
Water and soap observed	8	6	3.1	.05
Water observed	14	22	25.4	.00
Cleansing agent observed	15	23	145.8	.00

Study participants generally permitted enumerators to see sanitation facilities. Ninety-seven percent did so at the baseline and 99 percent did the same at the endline.

Table 6 presents data concerning the presence of a hand washing station at latrines inside or within 10 paces from the latrine (1 pace= 2.5 feet or about 0.75 meters). For the most part, latrine owners permitted surveyors to visit the latrine. Observations indicated that the presence of hand washing stations/devices at latrines remained constant between the baseline and the endline. Because the absolute number of latrines increased, the data indicate that the absolute number of hand washing stations/devices at the latrines increased as well. The same is not true for the relative number of those stations/devices. As result, findings suggest that hand washing stations/devices at latrines kept pace with the growing number of latrines.

Table 6. Hand washing at latrine

Indicators	Baseline (n=2000)	Endline (n=1378)	Chi2	p
Enumerator allowed to see sanitation facility	97	99	4.2	.03
Presence of hand washing device/station at sanitation facility observed	17	16	.20	.35

Table 7 presents data concerning the availability of hand washing supplies at the hand washing station/device at the latrine. Although many of these devices had water, not many had a cleansing agent. As a result, the presence of both hand washing supplies at such locations remained low and, statistically speaking, constant.

Table 7. Hand washing supplies at latrine

Indicators	Baseline (n=2000)	Endline (n=1378)	Chi2	p
Both supplies observed	**15**	**12**	**.69**	**.26**
Water observed	**60**	**56**	**.39**	**.30**
Cleansing agent observed	**18**	**17**	**.12**	**.94**

Conclusions

The drop in open defecation directly tied to the CLTBCHS approach is notable and substantial. The link between specific program components and sanitation uptake is part of a separate communication currently in draft. However, because most of the gains observed are in unimproved latrines not meeting national or international standards, the issues of quality infrastructure and the inability to meet minimum standards per the Ethiopian sanitation protocol must be raised. Future programs relying on the approach described in this paper must be complemented with alternatives that address both the supply and demand factors.

Sanitation promotion and hand washing promotion may be integrated. However, this experience shows that the gains in sanitation uptake may be higher than the gains in hand washing, particularly when the comparison is made using proxy indicators for hand washing practices like those used in this research (e.g., the presence of hand washing stations and the presence of needed hand washing supplies at these stations). The notable gains in knowledge about critical times for hand washing and even self reports of hand washing indicate changes in knowledge and perhaps in the perceived social norms around hand washing (that respondents now felt that interviewers "wanted" them to be practicing hand washing). How these changes in antecedent factors might affect future hand washing is unclear, and proposals are pending to track this over time. The gains in sanitation uptake may be partially due to the use of an approach that combines community mobilization with individual household follow up. WSP/HIP's hand washing promotion efforts relied more heavily on follow up and negotiation visits to individual households. Social mobilization and other approaches such as demonstration hand washing stations in prominent places, social marketing of hand washing stations and soap and other activities that promote hand washing practices must be identified and put to the test, just as much as community-led total sanitation principles may have been put to the test in the program discussed in this paper.

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