Integration of water, sanitation and hygiene into HIV programs: Lessons from Malawi

ABSTRACT

Adequate clean water, improved sanitation infrastructure, and better hygiene may significantly improve health outcomes for people living with HIV (PLHIV) in resource-poor settings. However, few programs effectively integrate water, sanitation, and hygiene (WSH) into home-based care and other HIV services. Catholic Relief Services Malawi, with support from the World Health Organization and the United States Agency for International Development (USAID), implemented a pilot project to identify household-scale changes or actions that could improve WSH conditions for PLHIV. An evaluation showed substantial changes in six targeted behaviors and a reduction in the overall prevalence of diarrhea, suggesting that this is an effective approach to ameliorating WSH conditions for those affected by HIV.

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INTRODUCTION

Malawi ranks 162nd of 179 countries on the United Nations Development Program (UNDP) Human Development Index. Life expectancy is 47 years, and there is a 44.4% probability of not living past the age of 40 (UNDP , 2008). More than half of the population is considered poor (National Statistical Office [NSO]), and nearly a quarter cannot meet their daily nutritional requirements (Government of Malawi [GOM] and World Bank, 2006).

Poor access to water, inadequate sanitation facilities, and ineffective hygiene practices are problems in many Malawian homes. While 75% of Malawians obtain drinking water from an improved water source (such as a public tap), maintaining those sources is a challenge: breakdowns are frequent, spare parts hard to obtain, and repairs consequently slow and difficult to make (NSO and UNICEF, 2008). All too often, therefore, "clean" water is not, yet the majority of households (79%) report that they do not regularly treat their drinking water (NSO and UNICEF). Distance frequently makes collecting clean drinking water burdensome: nearly 45% of households require more than 30 minutes to reach the nearest improved source (NSO and UNICEF). Only 20% of Malawian households have improved sanitation facilities (such

as sewer system, septic tanks, or latrines), and 14% of rural households have no toilet facilities (NSO and UNICEF). The majority of households (67%) use pit latrines without slabs. Although 79% of households have a facility for hand washing outside the toilet, only 13% have water present (NSO and UNICEF). Overall, only 17% of households have access to improved water sources and sanitary means of disposing of human waste (NSO and UNICEF).

The Government of Malawi (GOM) recognizes the problems and challenges in water resource management and considers this one of the priorities of its national development agenda. The National Water Policy (NWP) of 2005 addresses resource management and development; water quality and pollution control; water utilization; disaster management; and institutional roles and linkages. The vision statement—"Water and Sanitation for All, Always"—embraces and reflects GOM's overall development objectives of poverty reduction and economic prosperity (NWP, 2005).

Malawi also has very high rates of HIV infection: in 2005 nearly a million people total, including 90,000 children under the age of 15 (OPC, 2007; UNAIDS, 2008). More than 100,000 people become infected every year, and approximately the same number die of the disease annually (National AIDS Commission [NAC], 2005). Just over 30% of pregnant, HIV-positive women in need of antiretroviral medication to reduce the risk of HIV transmission to their babies are receiving the necessary medications (UNAIDS and WHO, 2008). Of all those in need of antiretroviral therapy, only 35% have access to the necessary medications (UNAIDS and WHO, 2008).

A renewed commitment to water, sanitation, and hygiene (WSH) shows signs of contributing to a reduction in diarrhea and other related illnesses, as well as improvements in nutritional status and overall growth.

Such high, sustained HIV prevalence has a powerful negative effect on the lives of many children. There are more than one million orphans in Malawi, more than half of whom are estimated to have been orphaned as a result of AIDS-related deaths (GOM, 2005). These children have face numerous challenges. The Multiple Indicator Cluster Survey (2006) results demonstrated that orphaned children were more likely to be underweight, stunted, wasted, and have higher overall malnutrition levels. Similarly, orphaned children were more likely to engage in more risky sexual behavior than their peers (NSO and UNICEF, 2008).

In short, the situation in Malawi can seem bleak. However, progress is occurring in various pockets, which may add up to improvements at the development index level. Specifically, a renewed commitment to water, sanitation, and hygiene (WSH) shows signs of contributing to a reduction in diarrhea and other related illnesses, as well as improvements in nutritional status and overall growth. At the same time, there is evidence that HIV prevalence remains stable for the majority of the country and may be dropping in certain parts of the population (UNAIDS, 2008).

WSH AND HIV

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Providing safe water to PLHIV and HIV-affected households can significantly reduce AIDS-related morbidity (Lule et al, 2004). Improved hygiene practices and better access to water and sanitation facilities helps diminish the occurrence of opportunistic infections (particularly diarrhea) among PLHIV (UNICEF, 2006). Chronic diarrhea in PLHIV tends to be most prevalent in overcrowded areas with poor sanitation (Katabira, 1999). Water supplies in overcrowded areas are often inadequate, and a shortage of clean water can translate into poor personal hygiene. Insufficient water for hand washing, in particular, increases the chances that caregivers and PLHIV will contract diarrheal disease (MWA, 2004).

The HIV epidemic has placed an additional stress on already overburdened healthcare systems. With not enough hospital staff, medication, or space, most PLHIV at advanced stages of illness are cared for at home, often with the help of home-based care (HBC) programs (Ncama, 2005). Many find this preferable to entering a hospital or hospice for long-term care. Effective home care can improve the quality of life for both ill people and their caregivers (WHO, 2002). But caring for a bedridden person involves bathing, emptying and cleaning bedpans, and lots of laundry—that is, it demands more and better water, sanitation, and hygiene.members.

A high prevalence of HIV may also negatively affect water resource management. Ashton and Ramasar (2001) identified several linkages. Inaccurate estimates of population growth hinder planning for future water supply systems. Changes in communities' socioeconomic profiles create difficulties in paying for water and sanitation infrastructure. Loss of skilled water resource staff to death or illness (their own or family members') mean increased recruitment and training costs, on one hand, and productivity declines on the other. And as the effectiveness of water treatment and sanitation declines, drinking water quality falls, leading to increased public health risks—a vicious circle forms.

PLANNING THE PILOT PROJECT

CRS designed the project to identify "small, do-able actions" that would influence WSH knowledge and behaviors.

From January to July 2006, CRS Malawi, in partnership with the Catholic Development Commission of Malawi (CADECOM), conducted an assessment in Mzimba and Nkhata Bay districts of water, sanitation, and hygiene in the context of home based care for PLHIV. The study was commissioned by the World Health Organization. The findings indicated that HBC clients who were regularly falling ill due to diarrhea had unmet water and sanitation needs. The assessment highlighted several key issues:

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1. High water fees in urban area and long distances to water sources in the rural areas created barriers to accessing water for households affected by HIV.
2. Sandy soils hampered toilet construction in rural areas, and cutting wood to build latrines or boil water contributed to deforestation, a major problem in the region.
3. Diarrhea was common.
4. Knowledge of how to keep water supplies clean was poor, and practices were even poorer.
5. The majority of households did not have soap available for hand washing.
6. While latrine access was high, many households did not have access to a nearby hand washing facility.
7. The majority of households had not received education or demonstrations on good hygiene.

Based on the initial assessment, CRS worked with WHO and USAID to create a pilot project focusing on specific interventions. CRS designed the project to identify "small, do-able actions" that would influence WSH knowledge and behaviors. Before the project began, a knowledge, attitudes and practices (KAP) baseline survey was undertaken by CRS Malawi and Dedza Catholic Health Commission (DCHC), with the objective of measuring access to WSH services and barriers to practicing recommended WSH behaviors. Data were collected using qualitative and quantitative methodologies, including a modified barrier-analysis study focusing on the six key behaviors that the project sought to promote. Households affected by HIV were identified through HBC records. HIV status was based on client self-report and was not verified by testing. However, home-based Voluntary Couseling and Testing (VCT) was a feature of the HBC program, and most clients knew and shared their HIV status. A standard random-sampling methodology was used to select participating households for the household questionnaire.

The baseline survey also included a barrier analysis using focus group discussions (FGD) to identify behavioral determinants associated with latrine use, hand washing, and water treatment and storage. Focus group discussions (FGD) were conducted with community-based childcare center (CBCC) caregivers, HBC caregivers, and the general community. Three FGDs were conducted in each zone with respondents recruited through HBC volunteer groups. The discussions were facilitated by one research team leader and one research assistant. Notes were transcribed after every discussion. Each FGD lasted approximately one hour. Participants were asked to reflect on eight behavioral determinants: perceived susceptibility, perceived severity, perceived action efficacy, perceived self-efficacy, cues for action, perceived social acceptability, perception of divine will, and positive and negative attributes of the behaviors. Based on the results of this analysis, CRS altered the project design to respond more effectively to the needs identified by the respondents.

Participants practiced negotiating behavior change with others using the small, do-able actions approach and formulated action plans to carry their work forward.

IMPLEMENTING THE PILOT PROJECT

With funding from USAID and WHO, CRS Malawi and DCHC designed and implemented the pilot project to advance the integration WSH and HIV field programming. The project featured utilization-focused interventions to promote six key behaviors: hand washing at the critical times; good hand washing technique; point-of-use water treatment; safe water storage; consistent latrine use; and safe disposal of feces. To supplement the limited resources available, CRS provided financial support for the utilization interventions as well as to address issues of access, particularly to improved water sources, sanitation facilities, and hand-washing facilities. The project particularly sought to increase the practice of the targeted six behaviors among HBC households and at CBCCs. While HBC households and CBCCs were also prioritized for access interventions, these were planned to involve the community at large, to avoid stigmatization and improve general WSH conditions. The project was implemented using the following approaches.

Community Volunteer Training

To improve knowledge and introduce the concept of small, do-able actions, HBC volunteers, CBCC caregivers, village water committees (VWC) members, and village health committees (VHC) members participated in three days of training on key WSH issues and practices in August 2008. The training was facilitated by the CRS Malawi program manager, Ntcheu District health officials, and DCHC staff, and reached

Photo by CRS Staff

156 community volunteers in the three zones. Training materials were sourced from the Ministry of Health and UNICEF and were adapted to address the particular needs to PLHIV and children at CBCCs. These trainings focused on equipping community members with knowledge of basic WSH concepts as well as practical experience with point-of-use water treatment and construction of tippy taps using locally available materials. Participants also practiced negotiating behavior change with others using the small, do-able actions approach and formulated action plans to carry their work forward.

Sanitary Platform (SanPlat) Training

To improve access to improved sanitation facilities, 90 community volunteers were trained on casting sanplat slabs. The project provided construction materials to village committees and involved local health surveillance assistants (Ministry of Health agents based in communities responsible for sanitation and health issues) to improve sustainability and ensure that technical assistance would be available at community level. Committees mobilized volunteers for labor-constrained households and CBCCs to facilitate slab casting. By April 2009, community volunteers had cast 106 sanplats for labor-constrained HBC households and 20 sanplats for CBCCs.

Photo by: CRS Staff

By April 2009, community volunteers had cast 106 sanplats for labor-constrained HBC households and 20 sanplats for CBCCs.

Community Sensitization and Promotion

In each of the three catchment areas, two types of sensitization meetings were conducted. The first was a communal meeting attended by the general public on a monthly basis. During these meetings, project staff worked with community youth or women's groups to perform skits and dances with various WSH key messages. The second type involved only key community volunteer groups from a zone: CBCC caregivers, HBC volunteers (HBCV), and village health committees (VHC). These meetings took place twice per quarter in order to assess project progress, present reports, and develop monthly workplans. Volunteers would report on household visits, distribution of point-of-use water treatment products, observed behavior change at client households, etc. HSAs from the Ministry of Health were also invited to attend and participate.

Additionally, the project distributed 1,500 posters illustrating hand washing techniques and 600 t-shirts bearing a water storage message in Chichewa. The t-shirts were given during unannounced supervision visits to households that had a functional hand-washing facility.

Ministry of Health Hygiene Education Band and Community Competitions

The Ministry of Health of Malawi has a music band which conducts free WSH education performances for communities. To facilitate behavior change in the project areas, the Hygiene Education Band performed nine times across the three zones, for approximately 15,000 people in all, delivering messages covering the six key behaviors. The project provided per diem and fuel to facilitate the events. To encourage people to turn out, the project also conducted community competitions on WSH behavior change, with the winners announced at the Hygiene Education Band performances. For example, a household that had a clean latrine, a hand-washing facility, a dish rack, a clean kitchen, and a refuse pit would be awarded water-storage buckets with lids and cups as a prize.

PHAST Training

In December 2008, a five day training on Participatory Hygiene and Sanitation Transformation (PHAST) training was facilitated by trainers from Concern Universal, an NGO also active in WSH programming in Ntcheu District. Training was provided for fifteen participants, including six DCHC staff and nine Ministry of Health staff. This activity was designed to build the capacity of partner and government personnel taking part in project activities. The training covered community stories, community health problems, hygiene practices, identification of target groups, the sanitation ladder the fecal/oral transmission route, blocking the spread of diarrheal diseases, and the relationship between WSH and HIV. The training also included a field visit to a community in Chakudza area to practice some of the concepts taught. The final day also included a review of project indicators and a discussion of how the PHAST methodology would be used to engage community members in monitoring and evaluation.

Photo by: CRS Staff

Participants learned about involvement of community members in project implementation; alternative latrine designs for HBC clients; and alternative latrine technologies, such as the arbor-loo.

Exposure Visit to Work for Rural Health

The project organized a learning visit for community volunteers (HBCV, CBCC caregivers, OVC committee members, VHC members, HSA), two village chiefs, and DCHC staff to Work for Rural Health's project site in Salima District. Nearly 20 individuals participated in the two-day learning event. Participants learned about involvement of community members in project implementation; alternative latrine designs for HBC clients; and alternative latrine technologies, such as the arbor-loo. The involvement of village chiefs was particularly helpful to show traditional leaders how to play a positive role in project implementation.

Distribution of Point-of-Use Water Treatment Products

In a collaborative effort with Population Services International (PSI) Malawi, WaterGuard (a point-of-use water treatment product widely marketed in the country) was distributed to HBC households and CBCCs. The HBCV and CBCC caregivers were the main distributors of the WaterGuard and held demonstration sessions to ensure proper use. The WaterGuard was requested from DCHC staff by the volunteers on an as-needed basis, and was monitored by DCHC extension workers. In addition, during the peak cholera season of November to February during community sensitization meetings, the project provided liquid chlorine to participating community members and conducted demonstrations sessions.

HIV WSH IEC Material Development

To facilitate behavior change, CRS Malawi and DCHC worked with PSI Malawi and I-LIFE (a USAID-supported project) to develop a training manual and flipchart on HIV and WSH issues. Draft materials were field tested during March 2009, and the materials were revised based on feedback from the community volunteers and households. The final tools were also reviewed by the Ministry of Health and WHO Malawi. The final product, "Sanitation and Hygiene for Healthy Living: A Training Module for HBC Volunteers, CBCC Caregivers and Village Health and Water Committees," was launched in June 2009 and will be used by the HBCV and CBCC caregivers when conducting hygiene education sessions in their communities.

Water Point Rehabilitation and Construction

As of April 2009, the project had drilled ten boreholes and rehabilitated six. Private contractors performed the work, under the supervision of the CRS program manager. Community members provided all the locally procurable materials for construction. The borehole sites were selected based on proximity to HBC households and CBCCs and were certified by the Ministry of Irrigation and Water Development (MoIWD). Each of the borehole sites is managed by a Water Point Committee of 12 people, including the traditional chief. Several committees organize monthly or quarterly contributions for borehole maintenance. Water quality testing was conducted by MoIWD Central Laboratory at all new sites, in accordance with GOM and WHO standards.

Stakeholders Meetings

The projected initiated stakeholder meetings with the District Assembly to increase awareness of project objectives and activities, as well as to discuss progress and challenges. Though this was conceived as a quarterly meeting, it has only been held once in January 2009, due largely to the difficulty of locating respective ministry representatives at the district level at the same time. Nonetheless, DCHC staff have participated in District Executive Committee meetings, which provide a forum for development partners in the district to share information about ongoing projects.

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Linkages

At the inception of the project, rather than establishing new committees specific to WSH and HIV, CRS and DCHC decided to focus on increasing the capacity of existing HBC and CBCC structures at the community level. These groups and volunteers already participated in an ongoing DCHC integrated food security and HIV project implemented in the same 30 villages. At present, the HBCV, CBCC caregivers, and VHC members are the lead personnel in the implementation of WSH activities. However, there is separation of responsibilities, as the HBC component is run by its volunteers and the CBCC caregivers work specifically within CBCCs. During trainings or any other activities related to WSH, these groups of volunteers participate, so that the caregivers are able to enhance hygiene at CBCCs and the volunteers promote hygiene at household level. Children from HBC households patronize CBCCs, and in a few instances HBCV serve children who attend CBCCs as clients.

National Task Force on WSH HBC

The task force was initiated by CRS and chaired by the Ministry of Water. Nine members actively attended and participated: CRS, Mzuzu CHC, Dedza CHC, Ministry of Water, Ministry of Health, WHO, Concern Universal, Work for Rural Health, Save the Children USA, and PSI. The task force promoted the implementation of an integrated approach to WSH HIV programs. Meetings through July 2008 were held on a quarterly basis at Ministry of Water headquarters. Situating the task force within an appropriate department and identifying a focal person within the MoIWD has been challenging. Though currently inactive, many task force members continue to communicate informally regarding implementation via e-mail.

Measuring Progress

An evaluation was conducted in March 2009 to assess behavior change among the beneficiaries (particularly the HBC clients), document successes of households practicing recommended hygiene and sanitation behaviors, and identify key lessons and successes to share.

The assessment collected data from several sources, including a household survey of HBC clients, a focus group discussion with HSAs, and key informant interviews with district and village health workers. To provide descriptive information on both the context and observed changes, structured questionnaires were developed by modifying the baseline questionnaire. These questionnaires were administered in individual interviews with HBC households. In addition to the six targeted behaviors, the questionnaires were also structured to assess the availability of hand-washing facilities, appearance/condition of latrines, diarrhea prevalence, and HBC volunteer visits (frequency of visits, services provided, and services preferred).

RESULTS

The number of HBC households surveyed at baseline (N=133) and evaluation (N=134) was nearly identical. At baseline, 48.1% of respondents were male; 51.9% were female. At final evaluation, the majority of respondents were female (79.1% female; 20.9% male). The average household size was 5.38 members (SD=1.89) at baseline compared to 4.49 members (SD=2.09) at final. At baseline and evaluation, the majority of the heads of households were married (monogamous; 48.8% and 50% respectively). Similar percentages reported being widowed at baseline and final (28.7% and 29.1% respectively). At baseline, 8.5% of respondents reported being divorced or separated, whereas at final evaluation 12.69% reported being divorced and 4.78% separated. Significantly more respondents reported never having been married at baseline (9.3%) compared to final evaluation (1.49%).

In both Namitengo and Chakudza there was a significant decrease in the percentage of respondents who reported drawing from an unprotected well and from surface water.

Safe Water

Photo by: CRS Staff

There was a slight increase in the percentage of respondents who reported having access to a protected water source at final evaluation (93%) compared to baseline (88.7%). No respondents in Gumbi reported using unprotected water sources at either data collection period. In both Namitengo and Chakudza there was a significant decrease in the percentage of respondents who reported drawing from an unprotected well and from surface water. At baseline, 67.7% of HBC respondents reported that the water they drew at their water point was safe, and 43.1% reported that they had treated their water within 24 hours before the survey. At final evaluation, the majority of respondents (56.7%) reported that they did not think that the water they drink is safe if taken directly from the source, and 84.3% reported that they had taken action to make their household water safer to drink in the 48 hours prior to the survey. There was a significant change from baseline to final evaluation in terms of what actions were most often cited as being used to make the water clean. At baseline, the majority of respondents who reported taking action to make their water safe reported boiling the water (53.07%), followed by adding WaterGuard (24.49%), solar disinfection (10.20%), chlorine tablets (4.08%), and filtering through cloth (8.16%). At evaluation, the most often-cited action to make the water clean was adding WaterGuard (69.4%), followed by adding chlorine distributed through health workers (11.2%) and boiling the water (3.7%). An overwhelming percentage of respondents (93.3%) reported receiving either WaterGuard or chlorine from DCHC in the three months prior to the survey. There was a significant increase in the percentage of households that reported covering the water storage

vessels from baseline (66.9%) to the evaluation (89.6%). At baseline, only 2.3% of households had a narrow-necked storage vessel compared to 12.7% of respondent households at final. There was also a significant increase in the percentage of households that reported using a two-cup system for getting water from the vessel from baseline (2.3%) to final (56%).

Hand Washing

There was a significant increase in the percentage of respondents who reported having hand washing facilities from baseline (21.1%) to evaluation (60.4%).

Photo by: CRS Staff

At baseline, 98.5% of respondents reported that they had washed their hands within the previous 24 hours. At evaluation, all respondents reported that they had washed their hands within the previous 24 hours. There was a significant increase in the percentage of respondents who reported that washing hands before eating was important from baseline (81.20%; n=108) to evaluation (92.54%; n=124). At baseline 51.13% of respondents reported that it was important to wash hands before preparing food or cooking, compared to 61.94% at final evaluation. Similarly, respondent knowledge regarding washing hands after defecation increased with 68.42% of respondents reported that washing hands after defecating was critical at baseline compared to 87.31% at evaluation. At baseline, 63.16% of respondents reported washing their hands before eating in the previous 24 hours compared to 73.88% at evaluation. At baseline, although 68.42% of respondents reported that washing hands after defecating was critical, only 45.11% reported having done so in the previous 24 hours. This behavior nearly doubled by the evaluation period with 87% of respondents reporting that it was important to wash their hands after defecating, and 83.58% reported having done so in the previous 24 hours. At baseline, 61.7% of respondents reported having soap available for hand washing, compared to 78% at evaluation. There was a significant increase from baseline (35.9%) to evaluation (43.3%) in respondents who reported using soap to wash their hands. Significantly more respondents also reported using ash in the evaluation (16.4%) compared to baseline (3.1%). There was a significant increase in the percentage of respondents who reported having hand washing facilities from baseline (21.1%) to evaluation (60.4%). There was a significant increase in the percentage of respondents who reported facilities next to a sanitation facility (5.3% at baseline compared to 45.5% at evaluation) and facilities next to the kitchen (from 3.8% at baseline to 11.2% at evaluation). At baseline, of the 21.1% who reported having a dedicated hand washing facility, only 52.5% of these were observed to actually have such a facility in place, and only 33.8% had water, although 72.3% had soap, ash, or sand. However, at evaluation, 96% were observed to have a hand washing device (e.g., tap, basin, clay pot, bucket, sink or tippy tap) at the dedicated location, and slightly more than two-thirds (76%) had water in the dedicated spot, while only 52% had soap, ash, or sand in the dedicated hand washing location.

Latrines

Slightly fewer respondents reported having access to a latrine at evaluation (80.6%) than at baseline (83.5%). The mean number of people sharing a latrine at baseline was 6.27, while at

evaluation, more than half of the respondents (56.7%) reported that they used a latrine that six or fewer total people use. At baseline, 62.3% of respondents reported that they were the only household using their latrine compared to 54.5% at evaluation. Of those who reported having access to a latrine at baseline, respondents reported a log plate latrine (56.19%), sanplat latrine (20%), or a dome slab (23.81%). Significantly more respondents reported latrines with slabs at evaluation (50%), with the remaining 50% of those with access to a latrine reporting an open pit latrine. A visual screening of the latrines demonstrated that 72.4%% were clean at baseline, while 19% had fecal matter present inside the facility, and 8.6% could not be observed at the time of the survey. At evaluation, a similar visual screening of the latrines demonstrated that 86% were clean, while 14% had fecal matter present inside the facility. There was a significant increase in the percentage of clients with access to a latrine who had hand washing facilities by the latrine from baseline (12.7%) to evaluation (83%). However, at final evaluation, only 43.5% of these were observed to have soap, ash or sand at the hand washing facility by the latrine.

Diarrhea

There was an increase in the percentage of respondents who reported that diarrhea was very dangerous from baseline (64.4%) to evaluation (73%). At baseline, 3% of respondents reported that diarrhea was not dangerous whole no respondents responded similarly at evaluation. There were significantly fewer respondents who reported that someone in their household had suffered from diarrhea in the two weeks prior to the survey at evaluation (15%) compared to baseline (26.32%). At baseline, of those household members who had experienced diarrhea, 5.7% reported bloody diarrhea. At evaluation, only one of the diarrheal cases reported bloody diarrhea. There was a significant increase in the percentage of those with diarrhea that reported visiting a health center in response to the diarrhea from baseline (20%) to evaluation (42.86%).

For the 12 CBCCs surveyed, there was a 60% increase in observed hand-washing facilities, a 17% increase in the number of facilities with latrines, and a 34% reduction in the number of latrines with visible fecal matter.

CONCLUSION


Photo by: CRS Staff

The evaluation of the pilot project showed substantial changes in the six targeted behaviors. Among HBC clients, in the area of water treatment and storage there was a 45% increase in water treatment (though the period of measurement before survey differed), a 23% increase in use of covered water storage containers, and a 53% increase in using the two-cup system to draw water. In the area of hand washing there was a 50% increase in observed hand washing facilities, and a significant increase in the use of soap for hand washing. In the area of latrine use and feces disposal, there was an 11% increase in clean latrines and a 5% increase in latrines free from visible fecal matter. There was an 11% reduction in diarrhea during the two weeks prior to survey. For the 12 CBCCs surveyed, there was a 60% increase in observed hand-washing facilities, a 17% increase in the number of facilities with latrines, and a 34% reduction in the number of latrines with visible fecal matter.

These substantial behavior changes suggest that the project intervention strategies were effective. The addition of access interventions, particularly the construction and rehabilitation of water points, casting of latrine slabs, and distribution of point-of-use water treatment products helped create an enabling environment for behavior change. Mobilization of community volunteers to negotiate small, do-able actions, complemented by creative community sensitization activities is an effective strategy for promoting WSH behaviors in HIV affected communities without creating undue stigma.

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ADDITIONAL INFORMATION

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