

40th WEDC International Conference, Loughborough, UK, 2017

LOCAL ACTION WITH INTERNATIONAL COOPERATION TO IMPROVE AND
SUSTAIN WATER, SANITATION AND HYGIENE SERVICES

**A socio-ecological analysis of barriers to sustained
adoption of rural sanitation in Ethiopia,
a qualitative study**

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PAPER 2676

The objective of the study was to explore barriers influencing the sustained adoption and use of sanitation facilities. A qualitative study was conducted in rural Ethiopia using in-depth interview and focus group discussion techniques. A social-ecological model and IBM-WASH framework were employed for the designing and analysis. Barriers for sustained adoption and use of sanitation facilities were categorized into 1) individual level (past latrine experience, lack of demand to improved latrine), 2) household level factors (unaffordability, lack of space and, absence of physically strong family member), 3) community level factors (lack of access to public latrine, lack of shared rules against open defecation, lack of financial access for the poor) and, 4) societal level factors (lack of strong local leadership, flooding, soil condition, lack of appropriate sanitation technology, lack of promotion and demand creation on improved latrine). Hence, there is a need to consider multi-level intervention to address the identified barriers.

Background

Despite the evidence that shows access to and the use of improved sanitation is positively associated with healthier households and communities (Clasen, Bostoen et al. 2010; SolÃ³n 2010; 2011), barriers affecting the adoption and sustainability of sanitation facilities remained unclear. Evidence show that sanitation strategies and programs in developing countries have been less successful because of failing to address the complex nature of individual, social and environmental barriers (Mosler 2012). Limited evidences available to inform sanitation policies and programs for the sustained adoption of sanitation (Hulland, Martin et al. 2015). Over a decade ago Ethiopia launched the rural Health Extension Program (HEP) that comprised of sixteen community based health promotion packages of which seven were dedicated to hygiene and sanitation. Health extension workers (HEWs) have been trained and deployed at kebele level (FMOH 2015). Community Led total Sanitation (CLTS), which is a persuasive behavior change approach to rural sanitation, that takes into account a participatory process (Chambers 2009), was started in Ethiopia by NGOs in 2007. Later in 2011 CLTS was adopted as the country national hygiene and sanitation promotion strategy with an added hygiene promotion (H) component (FMOH 2011). However, Ethiopia has achieved less compared to the efforts made to increase sanitation (Aiemjoy, Stoller et al. 2016). Even though Ethiopia was able to achieve decrease of open defecation from 82% in 2000 to 29% in 2015, an estimated 72% of Ethiopian population lacked access to improved latrine in 2015 (WHO/UNICEF 2015) and; only 33.5% dispose children's feces hygienically (FMOH 2011). As a result, Ethiopia held up a high global burden of diseases associated with poor sanitation (Hotez and Kamath 2009; Prüss-Ustün, Bartram et al. 2014). Infectious and communicable diseases accounted for about 60 to 80 % of the health problems in the country and; diarrhea attributes to the second cause of deaths among children below the age of 5 years (Mathers, Fat et al. 2008).

In the current study a socio ecological model and a modified IBM WASH model was used for the design and analysis of data to understand the complex set of interrelated factors to sustained adoption and consistent use of sanitation facilities. It is believed that the current study will contribute to designing evidence based programs and strategies for changing people's behavior in latrine adoption, to increase latrine use and moving in to the sanitation ladder.

Methods and materials

The current study was conducted in rural community of Becho woreda, Oromiya Regional State of Ethiopia, where the sustainability of latrine adoption has been a challenge (2015). Becho is located 80 km in the south west direction from Addis Ababa, the capital city of Ethiopia. Based on the 2007 national census, the woreda has a projected total population of 88,550 in 2016, and 80.4% are rural residents (2008). Since 2005, two health extension workers were assigned per kebele to provide health education on door to door basis (FMOH 2015). CLTSH has been implemented in the area since 2013. However, the progress of its implementation was very slow, with minimum success in achieving ODF. CLTSH triggering was conducted only in 36 villages (got), reaching 17 percent of the rural villages in the district. Only three villages declared ODF, and three of them slipped back to OD. A qualitative study was conducted employing focus group discussion and in-depth interview data collection techniques. Ten in-depth interviews were conducted with latrine adopters (n=3), latrine non-adopters (n=3), health extension workers (n=3) and district WASH coordinator (n=1); and eight focus group discussions were undertaken with a total of 75 participants of which 31 were women. All of the IDI and FGDs were held in Oromiffa, the local language of the study area and, it was tape-recorded with the consent of the all the study participants. Open-ended topic guides were used for the FGD and IDI. Each record of the IDI and FGD were transcribed into word in Oromiffa language as it was recorded. The transcribed documents were translated in a meaning-based approach from the Oromiffa into English. Content analysis and thematic coding was performed supported by NVivo 10.0 software. The thematic categories were further examined to determine whether it fitted to the concepts, propositions and theories under consideration (the SEM and IBM WASH framework). The ethical approval was obtained from the ethical Review board of Oromiya regional health bureau. Before starting the interview data collectors were provided detail information using the information sheet. A written informed consent of the respondents was taken. Confidentiality was ensured throughout the process.

Results

A total of 85 people participated in the study, of which 49 (57.6 %) were male. Age group of the participants showed that 19 (22.4%) were <20 years of age, 14 (16.5 %) were 20-29 years age, 21 (11.7 %) were 30-39 years age, 26 (24.7) were 40-49 age and 5 (5.89%) were >49 years while the mean age was 33.7. Overall, 36 (44.5 %) participants were latrine non -adopters, 45 (55.6 %) were adopters, 60 (70.5 %) were married, 8 (9.0%) were widowed /divorced, 17 (20.0%) were single, and all participants were from Christian religion and Oromo ethnic group.

Adoption and consistent use of latrine

As expressed by participants of FGD and IDI, open defecation practice decreased remarkably over the years. However, it is still being practiced by families of households that don't own a latrine, travelers and farmers who stay away from home. As it was revealed from the IDI and FGDs with participants, latrine use practice of the community members depended mainly on access, which was also influenced by the daily routines of individuals. Adult men practiced open defecation during their day time as they stay far away from home in the farm; adult women use latrine as they have access to latrine in their home; young boys and girls usually use a latrine as they spend their day in school or home where there is access to a latrine. Infants defecated on a cloth; their care givers washed the cloth, and threw the dirty water outside of their compound. Children aged one to six years defecated on the ground in the compound of the households, and their caregivers picked the feces with *akafa* (a spade), and disposed it in the latrine. Some participants reported throwing the children's stool outside the compound.

Individual psychosocial factors

Positive beliefs about latrine were expressed by both latrine adopters and non-adopters in almost all IDI and FGD. Health benefits in terms of disease prevention, and preventing expenditure on health care for a family member who is sick due to of sanitation related diseases were the most frequently expressed benefit of

latrine. Participants explained how the feces from open defecation contaminate their food through flies, which they learned it mostly from CLTSH triggering exercise. Unlike the high perception the risk of open defecation, the participants perceived minimum health threat of children's feces. There was a strong belief that child feces caused less severe disease like a flu and /or it affected only small children. The use of latrine was also favored as it helped them not seen by other people while defecating which was often regarded as a shaming and unsightly behavior in the community to them. Latrines were a means to maintain their privacy and a mark of high social status. Most men conveyed that protection of their wife's and daughter's safety and dignity was the motivation for deciding to build their own latrine. Concerns such as women might get raped, or might be attacked by animal when they go to bush during the night were other reasons motivating private latrine construction. Similarly, the male participants said latrines were important to ensure the safety of small children and unexpected accidents that could happen in the absence of their mothers. Latrine use was also values for making clean and creating a good look of their surroundings. Preventing bad smell from open defecation was one of the valued benefits of latrine. As IDI and FGD participants expressed, bad smell was perceived as causing infectious disease, with the strength of the bad stinky reflecting the severity of the disease. For instance, participants expressed that children's feces is less smelly, which causes less sever diseases like a common cold. In addition, bad smell was also perceived as creating a bad environment for their surroundings. Access to a latrine during the night was thought an important value of owning a latrine, especially for children, sick, or old people. Furthermore, some participants said they were persuaded by the local government officials and NGO workers to build latrine. However, two participants said they still liked an open defecation to a latrine, though they were not practicing it due to the lack of trees and bushes these days.

Individual technology related and contextual factors

As reported by the FGDs and IDIs participants, latrine non-adopter households' decisions to maintain or replace their latrine was negatively influenced by their experience and exposure to the past latrine. Latrine adopter households also expressed dissatisfaction with the existing pit latrines due to its poor strength, and its inability to resist flood runoff and the cracking/ shattering soil condition in the *woreda*. Participants reported that the soils broke and easily washed away whenever they tried to clean the latrines. A range of criteria for good quality latrine was expressed by participants such as durability, strength and depth while durability of the latrine was emphasized by most participants. Latrine that had a strength to resist flood runoff and pressure, made of cement and stone, had more depth, and that had a hand washing facility were expressed as good qualities. In one of the villages, latrines with taller height were preferred to make it convenient to taller people. However, participants reported that quality latrines with good strength hardly existed in their community due to the unaffordability of construction materials. Despite the positive beliefs and positive attitude towards latrine in general, the FGDs and IDIs showed there was no adequate awareness of the health benefits of improved latrine, and almost all community members in Becho used non-improved latrines.

Household level factors

The possibility of sustaining latrine ownership was influenced by the ability of households to construct a new latrine. The lack of physically strong family member or being unable to pay for labor was cited as barriers for the sustained adoption by FGD and IDI participants. Latrine adopter households reported that most of latrine non-adopter households are from lower income, older age or female headed households. Latrine adopters suggested that support for the poor households is crucial in order for them to build their own latrines. Similarly, latrine non-adopter households also perceived that they have less capacity compared with latrine adopter households as they disclosed during FGDs. Limited availability of space in the compound after frequent replacement of collapsed latrine was identified as a barrier for sustainable latrine adoption as it was reported by respondents during FGD and IDI.

Community level factors

Unavailability of public latrine at the community level influenced people who stay out of their home to practice open defecation. In some village communal latrines were building by the community members; but it remained unused due to its distance from the center and its inaccessible location. The gender related cultural norms strongly influenced women to use latrine consistently. The magnitude of shame for practicing open defecation is higher for a woman than a man. Some women participants expressed that they feel over

pressured to the extreme and feel ashamed specifically when practicing open defecation. Women participants expressed that in the societal norm women are expected to wash hands after latrine use. There is a cultural belief that the "Injera" baked by a woman who does not wash hand after latrine use can easily develop molds. Open defecation practice has been somehow accepted by the societal norm especially for men. Even though CLTSH triggering was conducted in all of the study villages, all of them failed to achieve ODF. Overlap of community structure and unclear mandates was mentioned as a challenge for CLTSH post triggering implementation by the community. The wider community failed to set a collective norm against open defecation after the CLTSH triggering considering that they already have rules among one-to-five groups. Unaffordability and the economic conditions in the village were reported as the major barriers for the adoption of improved latrine. It was inferred from the FGD participants that the average cost of low quality traditional pit latrine was 300-400 birr, which was still perceived as non-affordable by some poor community members compared with an estimated 6000 to 7000 birr for improved latrine.

Societal level factors

Climate and soil formation emerged as the major challenge for sustained latrine adoption. As expressed by the community members, the soil formation is spongy, holds too much water during wet season and it cracks whenever it dries during the dry season making latrines collapse. The lack of appropriate technologies that are suitable for the soil and climatic conditions are found to be the major technology related barriers. The community members build latrines with local materials such as grass and straws that are unable to cope with the ever changing soil and climatic conditions. Participants expressed their discontent saying that poor quality pit latrines easily collapsed during the rainy season. Various adaptation strategies to overcome latrine collapse were reported by the community members. Most latrine adopters reported that building latrines under big trees helped them a lot because roots of big trees keep the walls of the dug pits from caving in and prevented latrine from collapse. Digging the soil in "V" shape was also mentioned as one of the techniques that helped latrines to stay longer. Casing of the soil by inserting used tires was also reported as a good technique that prevents latrine collapse but it was perceived as unaffordable by most community members. Building latrines at the top of a sloppy ground in their compound was mentioned as it prevented the flooding of latrines. Reusing the water filled latrines when it dries up was reported as another coping strategy. Some participants mentioned adding salt in to the water-filled latrine helped it to dry up quickly. Lack of demand creation on improved sanitation was revealed from the discussion with participants. Improved latrine was expressed as latrine that has superstructure, and hand washing facility regardless of qualities for preventing human excreta from the environment. The lack of a strong local leadership was revealed from the interview with sanitation workers. Inadequate budgeting, leaving the issues of sanitation only for the health sector were illustrated during the IDI. Participants of key informant interview from government staffs working on sanitation indicated that less priority has been given to sanitation during program planning, monitoring and reviews at all levels of the health system including at the district, zone and regional levels. Within the health system the communications on sanitation program was very limited, mostly it was only for reporting purpose.

Discussion

The results of the study has showed that high level of knowledge and preference of latrine attained in the study area. However, open defecation has been frequently practiced. Failing to set a clear rule, or implement the established rules and regulations against open defecation by the community members affected the adoption of new norm against open defecation after CLTSH implementation in the study area. This finding is also supported by the Theory of Social Norm Behavior (TSNB) that states people are more likely to conform to socially set norm when they perceive that social sanctions exist for noncompliance (Bendor and Swistak 2001). Despite the availability of a clear national strategy to scale up CLTSH all over rural Ethiopia (FMOH 2011; FMOH 2013), the lack of a strong local leadership negatively impacted its effectiveness. This implies the need to focus on capacity building at the local level and the development of strong leadership. At the societal level, frequent collapse of latrines during rainy seasons due to its poor quality and soil condition were identified as the key contextual and technology related barriers for sustained adoption of any kind of latrine. Related with this, frequent latrine reconstruction cost, unavailability of space, lack of physically strong person in the family who has the capacity (labor) for digging the soil and, inability to pay for labor cost have discouraged households from replacing their destroyed pit latrines, and predisposed them to go for pen defecation. People who have been replacing latrines after it get collapsed were perceived as relatively

better off economically. The finding is consistent with that of other African and Asian countries which reported unaffordability as the major barrier for the sustained adoption of improved sanitation. Despite the national sanitation strategy which stated "no subsidies for household latrines" (FMOH 2011), the issue of equity of access to improved latrines for poor people was illustrated in the current study. The findings of the study implied that some flexibility for latrine subsidy needed to be considered as evidence indicated that public subsidy worked in other countries although it failed whenever it did not take into consideration the household preferences, behavior and poor targeting (Evans, Van der Voorden et al. 2009). The Ethiopian national policy and sanitation strategy fails to consider the promotion of appropriate latrine technology based on the contextual situations including the environments and technology. While the use of locally available materials has been recommended for the sustained adoption of any technology, the current study showed that latrines failed to be sustained because of the use of low quality locally available materials. Consistent to this finding, a study in Zimbabwe reported that latrines constructed using locally available resources were less preferred because of their low durability (Whaley and Webster 2011). In Ethiopia where the lack of access to improved sanitation accounted for more than 60% of disease burden in the country (Prüss-Ustün, Bartram et al. 2014), the cost effectiveness of preventing diarrheal and other sanitation related diseases versus different investment modalities of providing access to improved sanitation is one of the priority research area that we recommend for future studies.

The study also revealed that factors at different level influenced each other. For instance, the lack of appropriate latrine technology, which is a technology related factor, affected the sustainability of latrine; ability factors including household income, which was also influenced by the national sanitation strategy that restricts provision or subsidy to households, affected the adoption of appropriate latrine technology. These factors are interdependent on each other and all of them are also likely to affect the sustained adoption of latrine. Obviously, therefore, all these indicate the need to systematically consider addressing multi-level factors concurrently.

Conclusion

The socio-ecological model and IBM WASH provide a useful framework for a better understanding of multi-level and multi-dimensional barriers to sustained latrine adoption. Sanitation program planners and decision makers need to consider multi-level interventions to address the identified barriers.

Acknowledgements

The author/s would like to extend thanks to Ethiopian Institute of Water Resource and USAID Ethiopia for the financial assistance they provided to the study. This study wouldn't be practical without volunteer participation of study participants and data collectors. We also like to acknowledge the support of Becho district health office during data collection.

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