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Application of the positive deviance model for Sustainable reduction of open defecation (OD) practice in rural, Ethiopia

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Abstract

Background: In Ethiopia, open defecation is a wide spread practice and this practice facilitates the transmission of infections. The main purpose of this study is to test the application of the Positive deviance (PD) approach on solving open defecation practice of the community. The approach uses solutions that already exist in the community to bring about sustainable behavioral and social change.

Objective: Primarily aimed to achieve better sanitation and Sustainable Open-Defecation Free (ODF) villages in DFSA targeted areas of Amahara and Oromia region.

Method: This study used Positive Deviance (PD) approach to understand and describe its application as a strategy to increase sustainable ODF villages in DFSA targeted areas of Amhara and Oromia regions. It used the three steps of the positive deviance methodology and utilized a purposive sampling method in selecting key informants, position and significance of individuals in society and involvement in other past health programs. Field data were collected through semi-structured in-depth audio-taped interviews, and observations checklists.

Analysis: Descriptive statistics was compiled, analyzed and described in the form of frequency tables and graphs and the qualitative data was analyzed by MAXQDA software to analyze transcribed text data.

Result: Altogether 220 households for the direct observation, 7 FGD and 12 KII were included in the study. The information collected were environmental and home sanitation using observation checklist. In areas with high prevalence of OD most of the households have latrine but almost all study participants do not dare to declare their practice to defecate in the open fields despite having access to their own latrine. Most of the PD and non PD households reported that there is age and gender difference on open defecation practice and reported that male adult individuals and under five children observed to defecate out of toilet. Negligence and ignorance remain the main factors associated with OD as reported by most study participants. Using PD model and emphasizing the community engagement to solve their problem by themselves was recommended.

Keywords: Positive deviance, open defecation, community involvement, diarrhea, latrine

Introduction

Adequate sanitation, good hygiene and safe water, are fundamental to health and social economic development ^[1]. Nearly 215 million people practicing open defecation, Sub-Saharan Africa shoulders the greatest sanitation challenges ^[2]. Poor sanitation, hygiene, and water accounts for 50% of the consequences of childhood and maternal underweight and death, because it strengthens the synergy between diarrheal diseases and under nutrition. This means that the exposure to one condition, increases vulnerability to the other ^[3, 4]. Access to safe sanitation services in Ethiopia is among the lowest in Sub-Saharan Africa with 56% nationally, and 84% in the urban. Overall, 38% of households have no toilet facility, 16% in urban areas and 45% in rural areas ^[2, 3]. It is critical to understand what factors effect on reducing open defecation practice in order to develop effective strategies to improving sanitation and reducing diarrhea morbidity and mortality caused by the lack of sanitation.

Open defecation global and Ethiopian scenario

Open Defecation (OD) is the practice of defecating in open spaces, rather than using the toilet to defecate. Eliminating open defecation is increasingly seen as a key health outcome, with links to reduced stunting, improved educational and positive health outcomes for children.

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In 2012, the importance of the elimination of open defecation was recognized within UNICEF and promoted to be a 'corporate priority' to improve sanitation coverage. In Sub Saharan Africa (SSA), over 35 countries are implementing some form of Community Approaches to Total Sanitation, ranging from Tanzania Approach to Total Sanitation in Tanzania to Community Led Total Sanitation and Hygiene in Ethiopia. These programs differ primarily in how Open Defecation Free status (ODF) is defined, the scope of outcomes (i.e. elimination of Open Defecation alone or plus hand washing, environmental cleanliness etc.) and also in terms of the process by which the program is implemented (5&6). The key elements that make up an ODF protocol, based on this review of country processes include:

1. A process for identifying communities and developing baselines
2. A clear and agreed upon definition of ODF plus indicators
3. A process for triggering communities
4. A mechanism for reporting ODF achievement
5. A process for verification of ODF status
6. A process for certification of ODF status/recognition of ODF achievement and
7. A plan for post-ODF monitoring/follow up

Main health problems, especially in developing countries like Ethiopia, are mainly associated with poor hygiene and sanitation practices. Proper disposal of household waste is also important factor to control preventable communicable diseases of public health importance [17]. Globally, over 2.5 billion people are still without access to improved sanitation. In 2010, 15% of the population still practice open defecation [18]. Bangladesh is one of the poorest countries in the world with a large number of people still living without improved sanitation [19].

The Ethiopian Hygiene and Sanitation Strategy aggressively calls for all households to have access to and use a sanitary latrine; as the country yet swing at lowest status where 84.5% of the population still uses substandard sanitation and hygiene facilities; even where toilets exist, many are not used and open defecation is common. Most of toilets of urban households are fixed point open defecation places [20]. Community-Led Total Sanitation (CLTS) is an integrated approach to achieving and sustaining open defecation free (ODF) status. CLTS processes can precede and lead on to, or occur simultaneously with, improvement of latrine design, the adoption and improvement of hygienic practices, solid waste management, waste water disposal, care, protection and maintenance of drinking water sources, and other environmental measures. In many cases, CLTS initiates a series of new collective local development actions by the ODF communities [21].

Currently, CLTS implementation is one of the approaches used to improve hygiene and sanitation status of the people, and its implementation in rural set up in many parts of Ethiopia. The focus of rural CLTS is to trigger the community and announcing of free open defecation. Its main objective is to focus on open defecation, open urination, open waste disposal and poor waste handling and sanitation practice.

The main factors for toilet utilization in Ethiopia

Different factors are associated with toilet utilization in

Ethiopia and elsewhere in the world. As reported by world health organization (WHO) one obvious factor that compels people to practice open defecation is lack of sanitation facilities and this increases the risk of transmission of diseases [22]. A study conducted in Amhara region, Ethiopia reported less than 50% latrine coverage in the study area and the latrine availability decreases as we go far from the centre to rural areas and becomes worse among households in inaccessible areas [23]. Similar study is reported by the study in Tigray, Ethiopia only 37.4% of the households utilize pit latrine consistently. The rest of the households defecate in open fields citing cultural beliefs (44%), foul smell (22.6%) and inconvenience of use (17.8%) as the major reasons for the non-use of latrines. Illiteracy in male heads of households, low monthly income and non-enrolment of households under any sanitation project by local administration were found to be the other factors for the non-use of latrines. Short distance from the households to the nearest health care institution and presence of latrines within the compounds of houses were positive factors associated with their use [26].

The EDHS 2016 shows that 12 percent of under five years children experienced diarrhea in the 2 weeks preceding the survey and one in three households in Ethiopia have no toilet facility (39% in rural areas and 7% in urban areas) [24]. To improve sanitation and hygiene throughout Ethiopia, the National Sanitation Strategy establishes the goal of 100% latrine coverage [25].

The nutrition impact of open field defecation practice

In SPIR targeted areas of Amhara and Oromia region open field defecation is common practice. Even though significant number of households have their own toilet, villages declared as open defecation free (ODF) are quiet rare and it is common phenomena to observe feces elsewhere in open fields. Considering the nutritional and health consequences of widespread open defecation, understanding why open defecation is so prevalent particularly in food insecure areas where poor health condition and under nutrition is high should be a priority public health issue. Literatures reported that poor sanitation causes poor health, especially; women, adolescent girls and infants suffer from the poor sanitation highly. In general human feces are the main sources of diarrheal, respiratory, Skin and Eye infections. In line with this fact previous study shows that one gram of human feces can contain 10 million viruses and 1 million of bacteria [27]; this can create adverse health condition to human beings.

Frequent illness affects the nutritional status of the venerable segment of the population, women and children locking them into a vicious cycle of recurring sickness and faltering growth in early age [28]. The first 1,000 days of a child's life are critical in fetal and child development because children are especially vulnerable to the adverse and chronic effects of intestinal diseases brought on in part by poor water and sanitation [29]. Poor sanitation, unsafe water and unhygienic practices cause millions of children in the developing world to suffer from diseases. Water- and sanitation-related disease, despite being preventable, remains one of the most significant child health problems worldwide. Among the commonest illnesses diarrhea is the most serious one, alone killing 1,600 children each day. More than half of diarrheal disease and deaths are attributed to unsafe drinking water, inadequate sanitation and poor

hygiene. Children in developing countries typically have four to five bouts of diarrhea a year. Frequent diarrheal episodes can physically and mentally stunt children, affecting them for the rest of their lives. By weakening children, diarrhea increases mortality rates from other opportunistic diseases, including ARI (acute respiratory infections). ARI and diarrhea together account for two-thirds of all child deaths worldwide [31]. There is a growing body of literature indicating an association between stunting and environmental enteropathy, a disorder defined by abnormal intestinal morphology, reduced intestinal barrier function, and increased inflammation without overt diarrhea [34]. Although its etiology is not fully defined, environmental enteropathy is thought to be caused by unsanitary environmental conditions leading to repeated exposures to enteric pathogens [35].

A comparative study conducted to evaluate the effect of different nutrition sensitive interventions on linear growth of children in Ethiopia reported that the WASH intervention group was the only group to show a significant increase in mean height-for-age Z-score, with a 12.1% decrease in the prevalence of stunting, compared with the baseline group. This group also showed significant improvements in mothers' knowledge of causes of diarrhea and hygiene practices [30].

Significance of the study

It is known fact that in food in secured communities' poor access to clean water, lack of basic sanitary facilities and practices, contributes to a high occurrence of infection-related illnesses. This accounts the majority of the consequences of childhood and maternal under nutrition, because it strengthens the synergy between diarrheal diseases and under nutrition. The present study is intended to explore enabling factors as a solution to intervene the long standing challenge of open defecation practice to achieve significant sanitation improvements, and increased and sustains ODF areas. This research has positive implications for improved sanitation and increased ODF villages in Amhara region, Ethiopia. It also provides a foundation for future research into the sanitation arena by bridging the PD literature gap on sanitation. This study may also benefit the health and sanitation situations of particularly the poor communities contributing to positive community change by generating a better understanding of local sanitary and open defecation practices and determine whether PD should be considered as one approach by examining the sanitation achievements and experiences in households and villages with best practice. These research was closely aligned with Ethiopian government's CLTS plan to improve sanitation and hygiene throughout the country and the health extension implementation packages of hygiene and sanitation behavior: safe excreta disposal, waste removal, water quality control, food hygiene and personal hygiene. Hence it was aimed at exploring evidences to achieve better sanitation and sustainable Open-Defecation Free (ODF) villages by describing the practical application of positive deviance model and document the total process of the positive deviance approach.

Methods and Materials

The purpose of this study was to explore what stimulates and supports the community to engage in the positively deviant behavior of an individual change process to improve

open defecation practice. It focuses on PD methodology to provide options for promoting successful behaviors on proper toilet utilization and creating sustainable open defecation areas. The study was conducted from October-November 2018. We utilized a case study carrying out within boundaries a few cases and involving communities in which the phenomenon to be studied exists [14]. This study prefers a case study design with the intent to enhance the researcher's understanding of different meanings of individual and households ascribed to sanitation and health [15].

The positive deviance model consists of the following five basic steps:

1. Define the problem the current perceived causes and challenges and common practice;
2. Determine the presence of PD individuals or groups;
3. Discover the uncommon but successful behaviors and strategies;
4. Design activities to allow community members to practice the discovered behaviors;
5. Monitor and evaluate the resulting project or initiative which further fuels the change by documenting and sharing improvements as they occur and help the community [16]

Although the government ODF criteria in Ethiopia cover wider elements of an ODF Protocol, this study focused on latrine availability and utilization behavior when household members were at home and the general sanitation situation near to latrine, the compound, backyards and availability of functional hand washing facility as a primary outcome. We measured latrine usage via a combination of direct observation using checklist (i.e., latrine use at household-level) and self-reporting by respondents (i.e., latrine use at respondent and community level by key informant's and focus group discussion).

Data collection and analysis method

The present case study was conducted using a total of 7 FGD and 12 KII in PD and non PD individuals for each sex category involving totally 72 individuals. The number of FDGs and in-depth interview was determined by saturation of information. Each focus group discussion comprised 6–12 participants selected purposively and recruited from positive deviant's individuals, Non positive deviant individuals, Agricultural extension workers, individuals from health development army, primary school teachers, PSNP4 officers, health managers, community and religious leaders

Data were generated using an open-ended interview guide and a semi-structured questionnaire for discussions and interviews. All interviews and focus groups were tape-recorded, transcribed, and analysis was done using MAXQDA software which is a commercial software developed to systematically support enquires to do documentary research. The FDGs and in-depth interviews were facilitated by the principal investigator using the structured discussion and interview guides. The direct observation was conducted in 220 households to assess the existing toilet utilization, environmental sanitation and hygiene of the child and caretaker. The direct observation was done by trained data collectors using a checklist which was developed by reading literatures in line with the research objectives. Key informant interviews were

conducted before the FDG to help generate adequate information.

The positive deviance model and how we apply for our study

Positive deviance is an asset based behavior change approach which highlights and appreciates the positive behaviors of the community. It is based on the concept that in every community there are certain individuals whose uncommon positive behaviors enable them to find better solutions to problems than their neighbors who have access to the same resources. It is an approach of solving community problems that focuses on positive deviance within the community, rather than focusing on the community’s needs. The approach uses solutions that already exist in the community to bring about sustainable behavioral and social change. This concept considered that in every community or organization, there are a few individuals who have found uncommon practices and behaviors that enable them to achieve better solutions to problems than their neighbors who face the same challenges and barriers [8].

According to Marsh *et al.* [10], positive deviant behavior is defined as practicing advantageous but uncommon behaviors by people who are of the same socioeconomic background as peers who do not practice these behaviors [9]. These behaviors are successful, adapted to the local culture and are usually affordable as well as sustainable because at-risk people already practice them. In the present study first we elaborated case definitions and we identified four to six high risk people who have attained good outcomes the positive deviants (PD`s) by conducting community survey using observational checklist and community conversation. These individuals are then interviewed and observed with the purpose of unmasking the uncommon behaviors that could be responsible for the good outcome. The findings are analyzed to affirm that these behaviors are indeed uncommon but accessible for those at risk individuals in need. Activities in behavior change are developed in order to encourage the adoption of these new behaviors along with

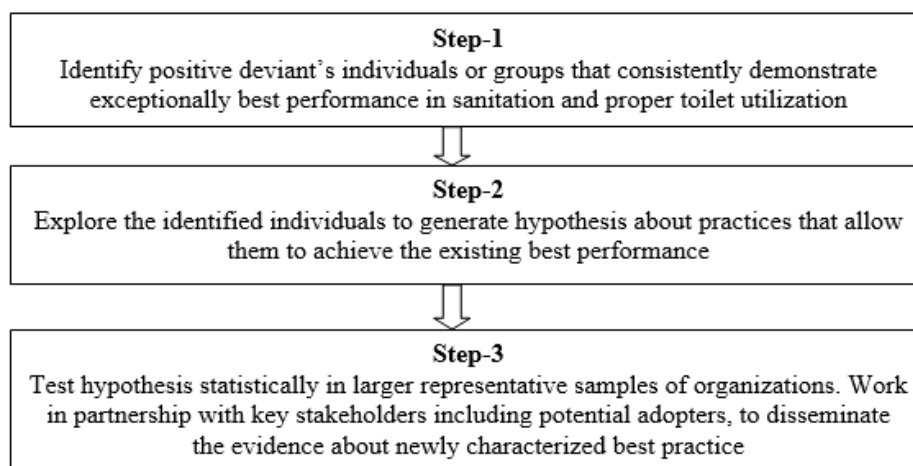
monitoring and evaluation activities using community volunteers [10]. Sanitation behavior is, in fact, the result of two decisions; the first one is a household-level decision about whether or not to construct and own a latrine. The second one is a person-level decision about whether or not to use a latrine, among people who have access to one. Any sanitation behavior consists of two aspects, one is to opt for a latrine in house and another is whether to use that latrine for sanitation apurpose or not. There are situations when a person or a house decides to build a latrine by knowing the importance and benefits of it. And there also some cases, where even though a house has well-built latrine inside the house but reluctant to use it [11]. Hence we have to find the underlying cause of poor utilization of toilet among households and explore any factor associated with.

The PD approach is one alternative to needs-based approaches to development that depend on scientific methods to identify methods for improved health. The danger in needs-based methods is that local populations will be unable to obtain or sustain what has been identified missing. PD offers an “assets-based” approach in that it takes advantage of “resilience” in communities [12].

Hence the present case study was aimed to explore and share the best practice on toilet utilization, hygiene and sanitation behavior from PD individual and households who have access to exactly the same resources but demonstrate a unique or uncommon sanitation behaviors and strategies that enable them stay with better sanitation and health.

Conceptual framework

The present study was a positive deviance approach proposed by Jerry and Monique Sternin [8]. It is an approach that learns from and uses individual success stories to adopt and change the sanitation practice of the community sustainably. PD follows the principles that communities are experts in solving in using local resources as assets to solve their problems. Therefore, the successful application of the approach requires the existence of a concrete, widely endorsed and accessible performance measures/variations in the study area.



Source: Bradley *et al.* (2009) [13]

Fig 1: Conceptual frame work in the positive deviance approach

In our study we apply the Positive deviance approach evolving through the first three major steps as shown in the diagram below to discover required behavior and practice of the community as measured by improved sanitation and

increased ODF villages.

The positive deviance process

The present study is a two phase case study in which the

first phase is the step of piloting the PD process while the second one is summary and recommendation on practical application of a positive deviance model for implementation.

Phase 1: The PD Process (piloting phase)

The pilot PD process takes 12 days to implement all steps

Step 1: Community orientation

In this step we invite 15-20 community members from each village and explain PD concept with explanations, and stories about open defecation practice in the community and how we can solve these problem by focusing on positive deviance within the community by using solutions that already exist in the community to bring about sustainable behavioral change on proper utilization of toilet. Explaining that this is a good opportunity to identify key community partners like the HDA, agricultural sector workers, influential community members etc. Then we promise to assemble again in 1 week for a feedback session.

Step 2: Situation analysis

In these step we conduct direct observation in the community using checklist parameters developed by reading literatures, conduct focus group discussions (FGDs) using structured discussion guides with: Health/Agricultural extension workers, Community members and leaders, Teachers. This enables to establish normative behaviors of community around proper utilization of toilet and identify potential positive deviant individual using positive deviance inquiry using the checklist and confirmed by the community members through FGDs.

Step 3: Positive deviance inquiry

This step enables the community to discover uncommon successful behaviors and strategies of the PD role models on proper toilet utilization and better sanitation behavior. Hence we conduct in-depth interviews with potential PD role models (male/female) and identify successful PD behaviors and strategies. The PD's were chosen according to a specific set of criteria of which guides formative research through the positive deviance inquiry (PDI), through active participation of the community, reflection. We identified households who scored $\geq 85\%$ by the direct observation as positive deviants after confirmed by the community members.

Traditionally, the objective of the positive deviance inquiry has been to identify the specific practices that, in spite of harsh conditions (e.g., poverty), allowed one group (i.e., the positive deviants) to have better outcomes than the majority. In this context, PDs were those households who managed to practice better sanitation and the non- PDs were those households who are living in the same village with PD having equal socioeconomic status but failed to practice better sanitation practice as measured by proper utilization of toilet, cleanliness of their compound and observed personal hygiene of the child and the care taker during the observation period. This meant that non-PDs not only exposed themselves but the entire community to preventable sanitary diseases and compared to non-PD households, PDs engaged in better traditional sanitary/health practices.

Step 4: Participatory analysis

We wrote all the identified PD behaviors on papers (flip charts) and invite key stakeholders (health extension

workers, kebele managers, community leaders) to examine carefully and critically the PD findings and select only those behaviors that are accessible to all and hence we Prioritize the PD role model behaviors(PD inquiries).

The positive deviance inquiries

- Households who have?
 - a. Their own latrine?
 - b. Enclosed in a wall?
 - c. Covered (bowl)?
 - d. Clean and free from feces?
 - e. No signs of use (odor, soiled floor, cleaning materials)?
 - f. Availability of water, soap/ash for washing hands near the toilet?
- The compound and back yards:
 - a. Free from human and animal faces and waste?
 - b. Presence of separate shelters for animals?
- Observed hygiene of the child and care taker:
 - a. The parents/caretakers hands bodies and clothes visibly clean
 - b. The hands and faces of children's visibly clean
 - c. The playground for the child clean and free from waste

Study area

Using the three steps out of the five steps of positive deviance model the present study was piloted in three SPIR-DFSA targeted kebeles sampled from Mekit, Lasta and Sirraro woredas of Amhara and Oromia regions from Oct 2018 – Nov 2018.

Selection criteria of the study area

These woredas and kebeles are selected because of the following reasons:

- All woredas are prevalent areas with open defecation practice as reported by the HDA of respected woredas
- Higher proportions of SPIR targeted households in selected woredas
- Presence of village volunteers
- Geographical accessibility

Result and Discussion

Altogether 220 households are included for the direct observation. Totally 72 individuals both male and female were included in conducting 7 FGD and 12 KII in the study as shown in the table below.

Table 1: An overview and distribution of the participants in the focus groups and interview

Focus group/Interview	Men	Women
F.G. 1	0	8
F.G. 2	6	2
F.G. 3	4	3
F.G. 4	0	9
F.G. 5	1	9
F.G. 6	5	4
F.G. 7	0	10
Interview (KII)	5	7
Total	21	51

Main findings of the direct observation

In our study, household-level access to a latrine was not associated with lower open defecation prevalence. The

direct observation result revealed that majority of households (62%) have their own or shared toilet out of which 60% of latrines are enclosed with a wall, only 12%, have drop hole cover and 18% of toilets have hand washing

facility, out of which 8% was found functional at the time of observation. Poor toilet utilization was also evident at schools and health institutions of the study area. There is no village declared as ODF in piloted areas (Table. 2. below)

Table 2: Observed descriptive characteristics of toilet availability, sanitation and hygiene situation of study participants (n = 220) in Amhara and Oromia region, 2018

Variables		Frequency	Percent
Latrine availability	1. Yes	136	62
	2. No	84	38
Latrine enclosed with a wall	1. Yes	132	60
	2. No	88	40
Latrine drop hole covered	1. Yes	26	12
	2. No	194	88
Latrine clean and free from faces	1. Yes	70	31.7
	2. No	150	68.3
Latrine that show signs of use (Odor, soiled floor, cleaning materials, cracks on the floor)	1. Yes	112	51
	2. No	108	49
Availability of hand washing facility near the toilet	1. Yes	50	22.5
	2. No	170	77.5
Availability water for washing hands	1. Yes	40	18.3
	2. No	180	81.7
Availability of soap/ash for washing hands	1. Yes	19	8.3
	2. No	201	91.7
Compound and yard clean and free of human and animal feces	1. Yes	70	31.7
	2. No	150	68.3
Parents/caretakers hands and bodies visibly clean	1. Yes	114	51.7
	2. No	106	48.3
Children’s hands and faces visibly clean	1. Yes	106	48.3
	2. No	114	51.7

After we conduct interviews and discussions we select successful PD practices from PD individuals and households that lead them to a unique behavior to stay in better health and sanitation as compared to the non PD households. We select totally seven successful behavior of the PD by prioritizing the easiest for scaling up to be shared by the community members (build on the positive behaviors). (Table 3 below).

Table 3: Successful positive deviant behaviors and factors identified in Amhara and Oromia region, 2018

S. No.	Behaviors
1	Having their own latrine
2	Latrine enclosed with a wall
3	Latrine drop hole covered
4	Latrine clean and free from faces
5	Availability of functional hand washing facility near the toilet
6	Compound and yard clean and free of human and animal feces
7	Hand of child caretakers visibly clean

Result and discussions of key informant interview and focus group discussion

The interviews and focus group discussions was aimed at identifying the best model individuals and households with a unique behavior on proper toilet utilization in the study area. And then finding solution on the practical application of positive deviance model that enables to solve the problem of open defecation practice and pointing out barriers not to utilize toilet properly. The present study revealed a set of factors associated with open defecation practice in the community. Among this age existence of children under five years age, male gender and lack of communal latrine are among the factors that are reported to favor open defecation

practice and of course negligence is a single related factor with open defecation raised by majority of study participants.

Most of the PD and non PD households reported that there is age and gender difference on open defecation practice. One female key informant said “most of the time adults individuals of male gender and under five children observed to defecate out of toilet and previously even my husband was among the one who are negligent enough to participate on constructing and utilizing toilet and hence I accused him to local administrative office and they treated him as a criminal and imprisoned him for a day after that day he becomes active participant in sanitary issues at home and at village level“.

All study participants do not dare to declare that they practice to defecate in the open fields despite having access to their own latrine and explain that the main problem created by under five children and guests who are coming for business activities and lack of communal latrine as the main challenge on open defecation practice. A female key informant indicated that “Individuals who are coming for business and other social reasons defecate in open fields and contaminate the area since they didn’t get communal latrine”. Moreover, the majority of participants indicated that in areas where communal latrine is constructed lack of proper utilization was raised as the main challenge. In line with this stakeholders and partners have not yet identified the root cause for the problem of backsliding. However, some of participants suspect that since open defecation has long been practiced creating a sustainable behavioral change leading to ODF areas requires a continuous and consistent effort sustained for a long period of time.

Other participants raised lack of resource as the constraint; one female FGD participant said “Even though the

community has adequate knowledge on the use of latrines, in most cases latrines are constructed from locally available materials for temporary uses and when damaged and need maintenance, households cannot afford materials to reconstruct and maintain the toilet because of these they would be obliged to defecate in open fields. This problem is mainly seen in female headed households, and I would recommend stakeholders to consider this problem and help us on constructing long lasting latrine”.

Most of the time availability and utilization of toilet is poor in female headed households. Added to these one PD said that that, “Being a single household head I cannot afford to construct infrastructure for the toilet I used locally available materials, to construct facilities”. More over most of the key informants reported that although health education had been given for the beneficiaries on proper waste disposal, hand washing practice at critical times and proper utilization of latrines; sufficient changes have not been observed. One of the key informants from ORDA said” we are dedicatedly working to improve the hygiene and sanitation behavior of the community; even though it is not adequate some improvements and observable changes are there in knowledge and practice. Most households have latrines but there is problem of proper utilization. In most cases the change is not sustainable and most of the time women and adolescent girls uses latrine appropriately. But male individuals observed to defecate in open fields; and we learn that we have to continue our effort with different approaches by doing barrier analysis and of course we feel that our follow up is not adequate”. Most of the study participants recommend that the toilet utilization advocacy should also be implemented at schools because students can better disseminate information to the household, and coordinate the community at large. The other challenge raised by the key informants was the budget allocation for CLTS which gives much emphasis to improve the soft skills than establishing gender sensitive latrines.

Some of the PD and non PD key informants reported that they observe fear, shame and guilt feeling among those who have no latrine and field defecators. The kebele leaders treated them like criminals in their own homes and this should be encouraged to urge households not only to construct but utilize toilet properly. From key informant participant responses, PDs perceive fear as a positive factor to change the behavior of non PDs. One PD revealed that- “all individuals defecate in the field hiding themselves or at night because nowadays is becoming shameful to defecate in the field being an adult. According to participant responses, it is also possible to identify and punish them by local law and enforce to act accordingly”.

Responses from the PDs reveal that previous CLTS activities run by the government and NGO was good to change their health behaviors for the better. One other both PD and non-PD explained that health education meetings had empowered people to work together and take control of their health and the frequent mobilization visits by the health assistant can make husbands responsive enough to put up facilities and encourage their households to utilize toilets properly.

Conclusions and Implications of the study

Even though open defecation is prevalent in the study area latrine utilization performance is found fairly well. However; there is a lot to do to make it part of their culture

by investing on community involvement particularly females who are taking initiative for proper toilet utilization in most families. Latrine utilization will be better and sustainable when the toilet is available and reinforced by need based health education followed close follow up and supportive supervision. This implies that SPIR DFSA field officers, health and agricultural extension workers do have a pivotal role for increasing proper utilization toilet and construction of communal latrine. This can be achieved mainly through community and its sustainability seems to be achievable by strengthening supportive supervision and scaling up the behavior of positive deviants. In all piloted villages it is observed that the community member’s shows a sense of ownership to make their households and villages open defecation free and monitor the activity by themselves if they are reinforced with supportive supervision by all stakeholders.

The present study indicated the effectiveness in engaging communities in a problem-solving approach, resulting in actionable outcomes to solve local problems through local solutions. Hence the SPIR should focus on strengthening the community engagement and responsibility to solve their problem by themselves.

Hence to achieve sustainable change in open defecation practice and to create better sanitation conditions in SPIR-DFSA programe areas of Amahara and Oromia regions we recommend change in implementation approach and apply PD model. To achieve this three focused activities are recommended:-

Activity one –Identify positive deviants, recruit volunteers from the community and give short training on communication and health education skills which is aimed at facilitating the identified PD behaviors be shared by the community members (build on the positive behaviors).

Activity two- Actively involve the community members particularly the positive deviants and encouraging volunteer’s among them to conduct sessions on their convenience monthly/fortnightly to share their unique practice and behavior using the VESA group, social places (i.e. schools, churches, mosque, community events) and make the monitoring participatory. This is good opportunity to strengthen linkages, share monthly progress report, plan for the next month activities and also enables the community to develop ownership on creating open defecation free villages. As reported by previous research this is successful and innovative approach to improve best health outcomes in the community ^[33].

Activity three- Use the following enabling factors for improved sanitation and sustained Open Defecation-Free communities in the study area:

- Encouraging females to play leading role on sanitation activities
- Using the fear and shame to trigger the community towards open defecation
- Using village economic and social group as entry point for sharing PD behavior
- Using family laws to urge community not to defecate in open fields
- Declare ODF households and villages and mark the houses with PD behaviors
- Acknowledge community volunteers and PD households
- Reinforce messages through innovative ways (i.e. role plays, poster competitions, and success stories)

- Develop village maps and update these maps on monthly basis(ODF/non ODF)

Finally, a large community event at the end of project should be considered to officially end intervention and handing over the responsibility to the community.

End line evaluation plan

Baseline and end line surveys should be done by collecting both qualitative and quantitative data. Conducting household survey aimed at measuring the change with observational parameters, focus group discussions and in-depth interviews.

Challenges and opportunities on applying PD model

- PD process helps understand context, normative behaviors which enables us develop tailored communication strategy for target groups
- PD engages community at each step which develops ownership
- As PD behaviors and strategies are local hence easily accepted and make easy the process of behavioral change
- PD is a human and time intensive approach and requires trained facilitators
- We learn that additional community problems can be addressed by this model.



Fig 2: Solid waste disposal pit in model household of Amhara region, Ethiopia



Fig 3: Key informant interview session in PD households at Mekit Woreda, Amhara region



Fig 4: Liquid waste disposal pit at model households, Amhara region

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