LATRINE UTILIZATION AND ASSOCIATED FACTORS IN THE RURAL COMMUNITIES OF ODA BULTUM DISTRICT, WEST HARERGHE ZONE, OROMIA REGIONAL STATE, EASTERN ETHIOPIA

MPH THESIS

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Latrine Utilization and Associated Factors in the Rural Communities of Oda Bultum District, West Harerghe Zone, Oromia Regional State, Eastern Ethiopia

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BIOGRAPHICAL SKETCH

My name is Misahun Shimelis Gizaw. I was born in kebele 16, Habro Woreda, West Harerghe Zone, Oromia Regional State, Eastern Ethiopia. I completed my elementary education at Biftu Gelemso primary school (Grade 1-6) and Gelemso Number 1 elementary school (Grade 7-8) from 1996-2003 and secondary and preparatory education at Gelemso secondary and preparatory school from 2004-2007. After I completed my preparatory school and took entrance examination for higher education, I joined to Haramaya University for tertiary education in 2008. After three years of education in Environmental Health program at Haramaya University I graduated in BSc Environmental Health qualification in 2010. After I completed my higher education, the university gave for me temporary document and Oromia Regional State Health Bureau assigned me at West Harerghe Zone as a professional Environmental Health at Badesa Woreda health office since 2011.

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ABREVIATIONSAND ACRONYMS

AOR	Adjusted Odds Ratio
BMC	Bio Medical Central
CLTSH	Community Led Sanitation and Hygiene
COR	Crudes Odds Ratio
CSA	Central Statistical Agency
EDHS	Ethiopian Demographic Health Survey
FMoH	Federal Ministry of Health
IHRERC	Institutional Health Research Ethical Review Committee
HCWs	Health Care Workers
HEWs	Health Extension Workers
HEP	Health Extension Program
HHs	Households
JMP	Joint Monitoring Program
MDG	Millennium Development Goal
NGOs	Non-Governmental Organization
OD	Open Defecation
ODF	Open Defecation Free
PI	Principal Investigator
PPS	Proportion to population size
SPSS	Statistical Package for Social Science
UN	United Nations
UNICEF	United Nations International Children's Emergency Fund
WASH	Water Sanitation and Hygiene
WHO	World Health Organization

ABSTRACT

Background: The use of sanitation facilities is known to interrupt the transmission of fecal-to-oral related disease. Health improvement comes from the proper use of sanitation facilities, not simply their physical presence. Proper disposal of human excreta remains a public challenge especially in low income countries like Ethiopia including the study area. However, despite having good latrine facility coverage, there is repeatedly occurrence of diarrheal diseases. There was a limited data related to level of latrine utilization and associated factors in the study area

Objective: To assess latrine utilization and associated factors in the rural communities of Oda Bultum District, West Harerghe Zone, Oromia Regional State, Eastern Ethiopia.

Methods: A community-based cross-sectional study design was used from February 15 to March 15, 2018. A total of 695 households were selected using systematic random sampling technique. A structured pre-tested questionnaire was used for data collection and the data were collected by trained data collectors using a face-to-face interview. Data were computed using descriptive and bivariate analysis, and multivariate logistic regression model. For all statistical tests, p-value ≤ 0.05 was considered as a cut of point for statistical level of significance.

Results: Latrine utilization among latrine owned households was72.6%, 95% CI: (69.2, 75.8). Educational status of mother [(AOR=2.17,95% CI (1.05,4.47)], frequency of latrine cleaning [(AOR=2.58, 95% CI :(1.02,6.55)], Hygienic condition of the latrine[(AOR=3.86, CI 95 %: (1.60,9.33)], households self-initiation for latrine construction [(AOR=2.30, 95%CI: (1.23,4.32)], latrines having a superstructure[(AOR=2.16, 95%CI: (1.29, 3.64)], latrines having closing door[(AOR=4.77, 95%CI: (2.17,10.50)] and presence of school children [(AOR=2.14, 95% CI : (1.18,3.86)] were significantly associated with latrine utilization of the households.

Conclusion: Latrine utilization level among the households was not much satisfactory. The use of latrine was higher among households that had clean latrines, households having latrines that had a superstructure, cover on the squatting hole , a closing door, educational status of mother who can read and write, presence of school children, household's construction of latrines by self-initiation and cleaning their latrine always. Therefore, efforts should be made to improve the status of latrines for better utilization.

Key words: Oda Bultum District, Latrine utilization; households

1. INTRODUCTION

1.1. Background

Sanitation can be defined as the provision of facilities for the safe disposal of human faeces and urine that associate hygiene practices or a safe toilet accompanied by hand washing with soap (Elisa et al, 2012; FMOH, 2015). Human excreta are the source of many infectious disease agents. The provision of appropriate facilities for defecation is essential response for people's dignity, safety, health and well-being (Sphere Project, 2011). Safe sanitation is widely acknowledged to be an essential groundwork for better health, welfare and economic productivity, but progress in reducing the burden of sanitation related diseases in developing countries remains slow (Water aid, 2011).

The latest figures from the Joint Monitoring Program (JMP) of United Nations Children's Fund and World Health Organization revealed that approximately 29 percent of Ethiopia's population (over 28 million people) defecates in the open. Open defecation (OD) throughout the country has reduced by 64 percent since 1990, which is the largest recorded country reduction over this period, but there is still high open defecation practice. Achieving access to adequate and equitable sanitation and hygiene for all, ending open defecation, and paying special attention to the needs of women and girls and those in vulnerable situations, is key to the Sustainable development Goals (WHO /UNICEF,2015).

Ethiopia has made huge progress in reducing OD, with a reduction from 92% in 1990 to 37% in 2012. It is the 38,000 health extension workers that are promoting sanitation and hygiene using the Community Led Total Sanitation and Hygiene (CLTSH) approach (WASH, 2015). The rural heath extension service packages mainly focus on disease prevention and Health promotion; Hygiene and environmental sanitation is one of the major component. The percentage of the population in Ethiopia without access to sanitation services is reported as 63% (National WASH Inventory 2010).

Many international agencies and non-governmental organizations (NGOs) have been working hard to improve the hygiene and sanitation status of the Ethiopia. Despite many years of effort, it is still difficult to find a village that is completely open defecation free (ODF) and practices good hygiene practices at all times. The report indicates high disparities between rural and urban contexts in the country in latrine utilization (Plan International Ethiopia, 2012; FMOH, 2012).

1.2. Statement of the problem

Globally 2.5 billion people lack access to improved sanitation facilities; that is almost twice the no of people living in extreme poverty. There are 46 countries where less than half the population has access to an improved sanitation facility. Among the world's regions, Southern Asia and sub-Saharan Africa have the lowest levels of coverage (WHO, 2014).

Due to poor sanitation and hygiene in the world, its disease burden estimated to account 4.0% of all deaths in which diarrhea accounts the largest share of sanitation related disease morbidity and mortality. Especially in most of Sub-Saharan Africa despite encouraging progress on sanitation, did not meet the MDG sanitation target which is ensuring access to improved sanitation for the community. According to the WHO/UNICEF JMP, approximately half of the population in developing countries does not have access to improved sanitation facilities, namely in South Asia, East Asia and Sub-Saharan Africa (WHO/UNICEF, 2015).

According to the World Bank, diarrheal diseases are a major cause of death across the globe due to inadequate sanitation, lack of access to potable water for consumption and usage in preparing food, and absence of hygienic behavior to reduce the transmission of diarrheal disease. Africa was a region highly affected by these issues, 115 people die every hour from resulting diseases (World Bank, 2012; WHO, 2012).

Although the trend of access to sanitation coverage in Ethiopia increased from 4% in 1990 to 47.9% in 2014, it falls short of the MDG target of 56% (Hopewell MR et al, 2014). The 2015 JMP report revealed that 72 percent of Ethiopia's total populations do not have access to improved sanitation. Open defecation and inadequate sanitation expose Communities to serious diseases, including diarrhea and Cholera. In 2014, 9 percent of under-five children in Ethiopia died from diarrheal diseases. Poor sanitation and hygiene also negatively impacts education, economic productivity, dignity and the personal safety of women and girls. In Ethiopia although CLTSH has had tremendous success since its initial start, only 24% of the population currently has an improved toilet. Traditional un-improved pit latrines which are constructed from locally available and affordable materials are low cost and easy to construct, but are not considered hygienic or sustainable since people stop using dirty and smelly toilets also go back to open defecation after their latrines collapse(WHO/UNICEF,2015).

The rural community in developing countries faces heath problems related to sanitation and hygiene. In Ethiopian also, the data from nationwide inventory of sanitation facilities, which are presented along with the sanitation ladder, reveal that more than half of the population (52.1%) still used un- improved sanitation facilities in 2014. The majority practiced open defecation, implying that the country is far from the MDG target for access to improved sanitation (56%) (Beyene et al, 2014).

The government of Ethiopia is making efforts in strengthening health extension program to the rural communities across the country. Even though there was a progress in intensifying the health extension program to the rural communities for high latrine coverage and its utilization, there are evidences that showed the gap between latrine construction and its proper utilization. Diarrheal diseases are repeatedly occurring in the study area. This problem cannot be basically reduced unless all community members properly utilize latrine facility. But the challenge is on identifying such factors that make people to /not to utilize latrine. Latrine utilization level was unknown in the study area. Therefore, the purpose of this study was to identify the household's latrine utilization and its associated factors that help to develop targeted strategies for improving the environmental health services of rural health extension program in latrine construction and its utilization by the community.

1.3. Significance Of the study

This study will be vital to identify level of latrine utilization and associated factors in the study area. It will provide baseline information to programmers, HCWs and HEWs to intervene for the health of the community. Thus, the findings of this study will give insight for the District Health Office and local NGOs working on sanitation activities by providing evidences in reducing open defecation through different strategies. The households in the rural communities of the district will ultimately benefit from this study. The local planners will use it for planning purpose in protecting the community health and it will also provide baseline information to other researchers.

1.4. Objectives

1.4.1. General Objective

To assess Latrine utilization and Associated factors in the Rural Communities of Oda Bultum district, West Harerghe Zone, Oromia Regional State, Eastern Ethiopia from February 15-March 15, 2018.

1.4.2. Specific Objectives

To assess level of latrine utilization among households of Oda Bultum District

To identify factors associated with latrine utilization among households of Oda Bultum District

2. LITERATURE REVIEW

2.1. Latrine Utilization

Community based cross sectional study done in Hattimuda Village, Eastern Nepal (2015) among 625 households showed that about 75.7% of the latrines were less than at six meter distance away from the kitchen and more than three fifth of the households (65.3%) with latrines always clean their latrine. The extent of latrine utilizations among the households was (94.3%) (Budhathoki et al, 2017).

A Community-Based Cross-Sectional Study done in 2015 in rural community members in Samburu east, Samburu Kenya indicated that from the total 210 households only 6.7% of them use improved latrines. According to this study the main motivation for constructing and using latrine which was for disease prevention which was about 78% from the total 210 households. Regarding its benefits majority (82.4%) of the respondents mentioned privacy, convenience, status or prestige as the main benefits of using latrines compared to only 17.6% that mentioned for diarrheal disease prevention. (Rachael W.W., 2015). The study done in the in Idiofa Democratic Republic of Congo in 2017 indicates from the total 720 households 98.3% of them used their latrine, but 433(95.7%) had under four children's who do not used the latrine (Cha Si., et al 2017).

Different studies in rural communities in Ethiopia showed that the low coverage of improved latrines and the sanitation practice of mothers were also very poor. The study done on household level sanitation practice of mothers' and associated factors in Gedeo Zone, South Ethiopia by Negasa Eshete, et al reported that only about 12.5% mothers have good sanitation practice(Negasa Eshete et al., 2015).

A community based cross sectional study done on Sanitation Facility in the Selected Households of Awabel District, North west Ethiopia, in 2014 indicated only pit latrine is available in that study area and also have no a well-constructed superstructure. Most of the households; 92.9% had no any kind of hand washing facilities, Only 7% of households had hand washing facility and use either soap or ash. The latrine utilization level was satisfactory among 297(51.7%) households (Gedefaw et al, 2015). The study done in Gulomekada district Out of the 756 households who have latrine, only 433 (57.3%)used latrine always, 160 (21.1%) used sometimes and163 (21.6%) did not used latrine at all (Debesay al, 2015).

A Study done by Chanie et al in 2014 on Latrine utilization and Associated Factors in Rural Community of Aneded District, North West Ethiopia indicates almost all households, 633 (100%) had functional latrine facility. From the total of households, 259 (64.2%) utilized latrine from one to three years, and 117 (29%) utilized more than three years ago. On the other hand, households of 309 (76.8%) always utilized latrine. Nearly fifty percent, 315 (49.8%) of households had under-five children. Only 223 (71%) of children utilized latrine facility. About 91 (28.9%) children who utilized latrine started at the age of three to five years. Head of households claimed that only 70 (22%) of children feces were disposed into latrine facilities by their families before self-utilization. According to this study 403(63.7%) had utilized their latrine however only 279 (69.2%) households had continual latrine utilization **(**Chanie T, 2016).

The study done in 2013 on latrine utilization and associated factors in the rural Community of Chencha District, Southern Ethiopia indicates: among 415 households, 249(60%) use latrine in some frequency and the remaining 40% households were not using latrine. Over all consistent latrine utilization was found to be only 120 (31.08%). There were fresh feces at squat hole indicating the recent use of latrines in 187 (66.78%) of households with functional latrine (Hailu Ch.K., et al 2017**).**

A community based cross sectional study done on level of health extension service utilization and associated factors among community in Abuna Gindeberet district, West Shoa Zone, Oromia Regional State, Ethiopia carried out from February to March in 2012 indicates from the total 806 households;297 (36.8%) of the study participants had used their latrine (Kelbessa et al , 2014). Regarding consistent use of latrines as study done in 2009 on Latrine use among rural households in northern Ethiopia: study in Hawzien district, Tigray region shows, out of the interviewed 422 households having latrines, more than half of the households (54.5%) did not used them at all, only 37.4% used consistently and 8.1% used them occasionally (Yemane A et al., 2013).Of the households, 726 (88.2%) with latrines, about one third of them (32.8%) did not used at all, only 261 (36%) consistently used, and 227 (31.3%) used them occasionally(Oljira D and Berkessa TS, 2016).In Ethiopia most of the households especially in rural communities use shared latrine facilities. According to 2016 EDHS report shows Only about 15.9% of total households have privately owned improved latrine, 49.5% of the households have un-improved

sanitation and 34.6% of the households use shared sanitation facility which are not an improved (CSA,2016).

As the cross-sectional study done on latrine utilization and associated factors among people living in rural areas of Denbia district, Northwest Ethiopia, in 2013 by Yimam et al indicates types of available latrines in the district were 100% simple pit latrines. According to this study the majority 695 (86.8%) of latrines were used as reported by the respondents and the rest 106 (13.2%) latrines were never used at all. Whereas based on observation 609 (76.0%) households were observed with the presence of at least one sign of use as an indication of utilization and 192 (24%) have no any sign of use. The extents of latrine utilization among 490 (61.2%) households with latrines were satisfactory (Yimam et al, 2014).

As the study done community based study done in the rural community of Hulet Ejju Enessie Woreda, East Gojjam Zone, Amhara Region by Andualem et al, 2010 on Assessment of the impact of latrine utilization on diarrheal diseases indicates the latrine utilization of the district reported by the respondents was 93% however the extent of latrine utilization was satisfactory only among 500 (60.7%) households (Andualem A., et al 2010).

2.2 Factors associated with latrine utilization

A cross-sectional study done in 2015 on Latrine coverage and its utilization in a rural village of Eastern Nepal indicated that from the total 625 households the households having children less than 5 years were85% less likely to use latrine than those without child (AOR0.15, 95% CI 0.05–0.46). People from households who always clean latrine were 3.66 times [(AOR 3.66, 95% CI 1.09–12.29)] more likely to utilize latrine than those who rarely clean latrine. Households who built latrine on self-initiation were 4.22 times more likely to use the latrine [(AOR= 4.21, 95% CI 1.06–16.66)]. Latrines constructed within 2 years 82% [(AOR =0.18, 95% CI 0.07–0.51)], latrines needing maintenance 79% [(AOR 0.21, 95% CI 0.09–0.49)] and latrines built with any assistance from government or NGO 67% [(AOR 0.33, 95% CI 0.13–0.80)] were less likely to be utilized. In other way, latrine height more than 1.5m nearly 13 times [(OR 12.26, 95% CI 5.35–28.07)], latrines with closure for privacy nearly 22 times [(OR21.97, 95% CI 9.26–52.11)]

and latrines cleaned always 3.45 times [(AOR 3.45, 95% CI 1.54–7.73)] were more likely to be utilized latrine (Budhathoki et al.,2017).

As a Community Based Cross-Sectional Study done on Latrine utilization and associated factors in the Rural Communities of Gulukomeda District, Tigray Region, North Ethiopia, 2013 indicated that from the total 759 sample HHs those households with husbands educational status of primary and above were 3.71 times (AOR=3.71, 95%CI: 1.52-9.09) more likely utilized latrine than households with illiterate husbands. The households with school age children, all attending the school were 4.45 times (AOR=4.45, 95%CI: 1.32-14.97) more likely to use latrine than households without school age children. Concerning to latrine type, households owned pit latrine with pit cover were 7.86 times (AOR=7.86, 95%CI: 3.61-17.10) more likely to use latrine. Regarding years of construction, households owned latrine for more than 3 years were 3.19 times (AOR=3.19, 95 %CI: 2.04-4.98) more likely to use (Debesay et al, 2015).

The study done in 2013 indicated also households which had house mothers with educational status who can read and write were 2.43 times (AOR: 2.437, 95%CI :(1.03, 5.75) more likely to utilize than those households with house mother unable to read and write (Yimam et al., 2014).

The Study done by Chanie T et al in 2014 on Latrine Utilization and Associated Factors in Rural Community of Aneded District, North West Ethiopia shows households that had clean latrine facilities (AOR: 4.1, 95%CI (1.7, 10.0) were 4 times more likely to use latrine than households that had dirty latrine facilities (AOR: 0.2, 95%CI (0.5, 0.9). Households that had bad latrine facilities were 5 times less likely to utilize latrine than those who had good latrine facilities. Households that had children (AOR: 2.5, 95%CI (1.0, 6.0) were 2.5 times more likely to utilize latrine than households that did not have children (Chanie T et al, 2014).

The study done on Opportunities, and Challenges of Latrine utilization among Rural Communities of Awabel District, Northwest Ethiopia, in 2014 shows, households with primary or secondary school children were 2 times more likely to utilize latrine than households with no primary or secondary school children (AOR: 1.824, 95%CI (1.189 - 2.799). Moreover, latrine utilization was about 4 times more likely (AOR: 4.294 (2.625 - 7.02) among households with latrines that do not need maintenance compared with those households whose latrine which needs maintenance. Households who construct their latrine following advice given by health professionals were about 4 times (AOR: 4.194, 95%CI: (1.674 - 10.508) and self initiation were

7 times more likely (AOR: 7.461 (1.850-30.084) to utilize latrine than those imposed by government officials. In addition, those households whose latrine has superstructure were three times more likely (AOR: 3.01, 95%CI (1.36- 6.63) to utilize latrine compared with households having latrine with no superstructure (Gedefaw et al, 2015).

The study done on Household Level Sanitation Practice of Mothers' and Associated Factors in Gedeo Zone, South Ethiopia asserted that majority of the mothers' in the households, (68%) had shared toilet facility and almost all were simple traditional pit without a slab. According to this study the sanitation practice of mother, the toilet provided with good hand washing facility was 60(11.0) with AOR (95% CI) 0.54(0.31-0.93) and AOR of (95%) CI) 0.43(0.22-0.83) toilet not provided with hand washing facility, 19(3.5) have good hand washing practice and 173(31.7) have poor hand washing practice (Negasa Eshete et al., 2015).

2.3. Conceptual framework

For the development of the following conceptual framework, factors associated with utilization of latrine in different studies were used. It was also based on an understanding of the factors that can affect latrine utilization

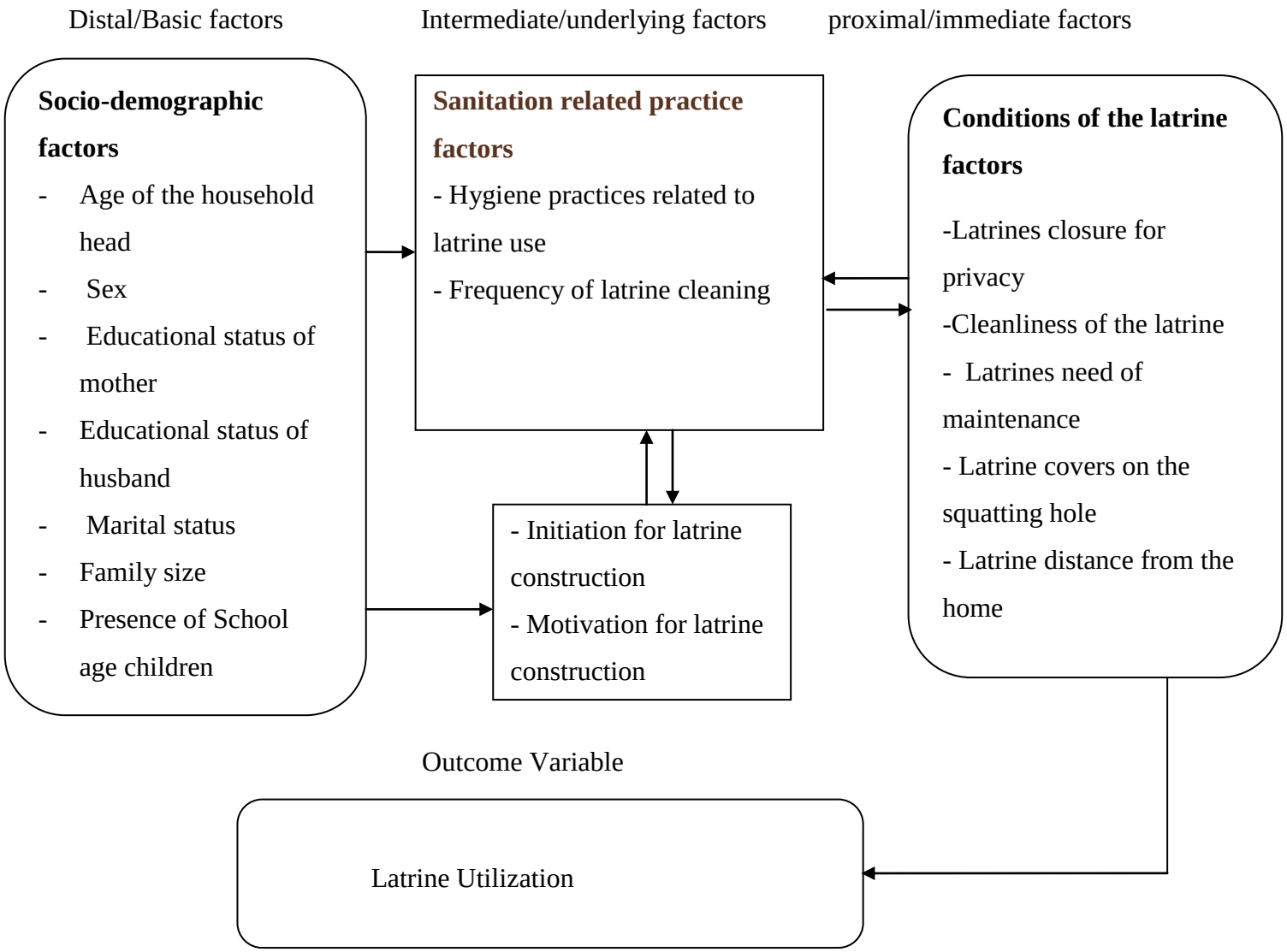

Figure 1: Conceptual framework for latrine utilization and associated factors :(source: Rachael, W.W., 2015, Gedefaw et al., 2015, Chanie T et al., 2014, Yimam et al., 2014)

3. METHODS AND MATERIALS

3.1. Study Area and Period

Oda Bultum district is located at 363 km East of Addis Ababa and about 37 km far from the capital city of the West Harerghe zone Chiro. Oda Bultum district has 37 rural kebeles and 2 sub-cities. Based on the 2018 CSA population projection this district has a total population of 201,299, of whom 102,702 are men and 98,597 women. In this district, the total number of households was 43,997, and out of it only 2,833 households live in sub-city villages. The geographic feature and settlement of households in the district was suitable for latrine construction. This district was found at an altitude of 1100-2220m humidity 22^{o}c –^{o}c35 with a landscape of 130,412 Hek. The community mainly depends on agriculture and livestock Living style. Around 94% of the district was rural population (CSA, 2007). This district has six health center; one under construction and 37 health posts. There were 76 HEWs in the rural health posts of this district (Oda Bultum District Health Office, 2018). The study was conducted from February 15- March 15/2018.

3.2. Study design

A community-based cross-sectional quantitative method study design was used.

3.3. Populations

3.3.1. Source population

All households with larine facilities in the rural kebeles of Oda Bultum district.

3.3.2. Study population

Households with latrine in the selected kebeles of the rural community of Oda Bultum district during the study period

3.3.3. Sampled population

The selected households from the selected kebeles and participants of this study in the district during the study period were the sampled population

3.4. Inclusion and Exclusion criteria

3.4.1. Inclusion criteria

In selected kebeles of the district, households who have a latrine were included in the study. The household head or the house mother (if the father not available) were interviewed

3.4.2. Exclusion criteria

Households who had not functional latrine were excluded from this study.

3.5. Sample size determination

For objective one the sample size was determined using single population proportion formula based on 63%latrine utilization in rural community of Aneded district (Chanie T et al, 2016) with 95% confidence level, 0.05 margin of error and taking 10% for non-response rate as shown below. The final sample: Where: *n*= Sample size

Z= Standard Normal Deviate (1.96) which corresponds to 95% confidence interval

p= Expected coverage (69.8)

q=1-p

d= margin of error = 0.05

Therefore: $n=1.96^2 *0.63*0.37/(0.05)^2=358$

When 10% non-response rate was added the sample size will be 398 HHs

For objective two: Factors associated with latrine utilization among households (Educational status of husband, educational status of mother and cleanliness of latrine).

Table 1: Sample size determination for objective two factors associated with latrine utilization among households of Oda Bultum District, west Harerghe zone, Oromia Regional State, Eastern Ethiopia 2017/2018.

		Proportion value (%) of exposed with outcome and (%) of unexposed with outcome)	Sample size
Objective two	Factors associated		
Factors associated with Latrine utilization	Educational status of husband (Debesay et al,2015)	Un able to read and write 160(73.7) Read and Write 67(80.7) Primary and above 95(93.1)	134
	Educational status of mother (Yimam et al,2014)	Un able to read and write (33.5) Read and write (66.5)	82
	Cleanliness of latrine (Chanie T et al, 2014).	Clean (96%) Dirty (90%)	632

Based on the above sample size calculations taking the largest sample size 632 by adding 10% Non-response rate 695 HHs was used for the study.

3.6. Sampling procedures (techniques)

There were 37 rural kebeles in Oda Bultum district. All Kebeles in the district were considered in the sampling process for the selection of the study participants. Using simple random sampling technique 11 kebeles were selected for the study. The total sample size was distributed within all selected kebeles proportionate to the total number of households found in each kebeles. Eleven kebeles from the district were selected by considering households registration numbers from the health extension registration book as a sampling frame. Systematic random sampling technique was employed to select households from selected kebeles. The study participants were selected every (K^{th}) household intervals, by dividing the total number of households with latrines to the allocated sample size. The first household was selected randomly. The household head or the house mother (if the father not available) of the households resident of greater than six month of the study area were considered as respondent.

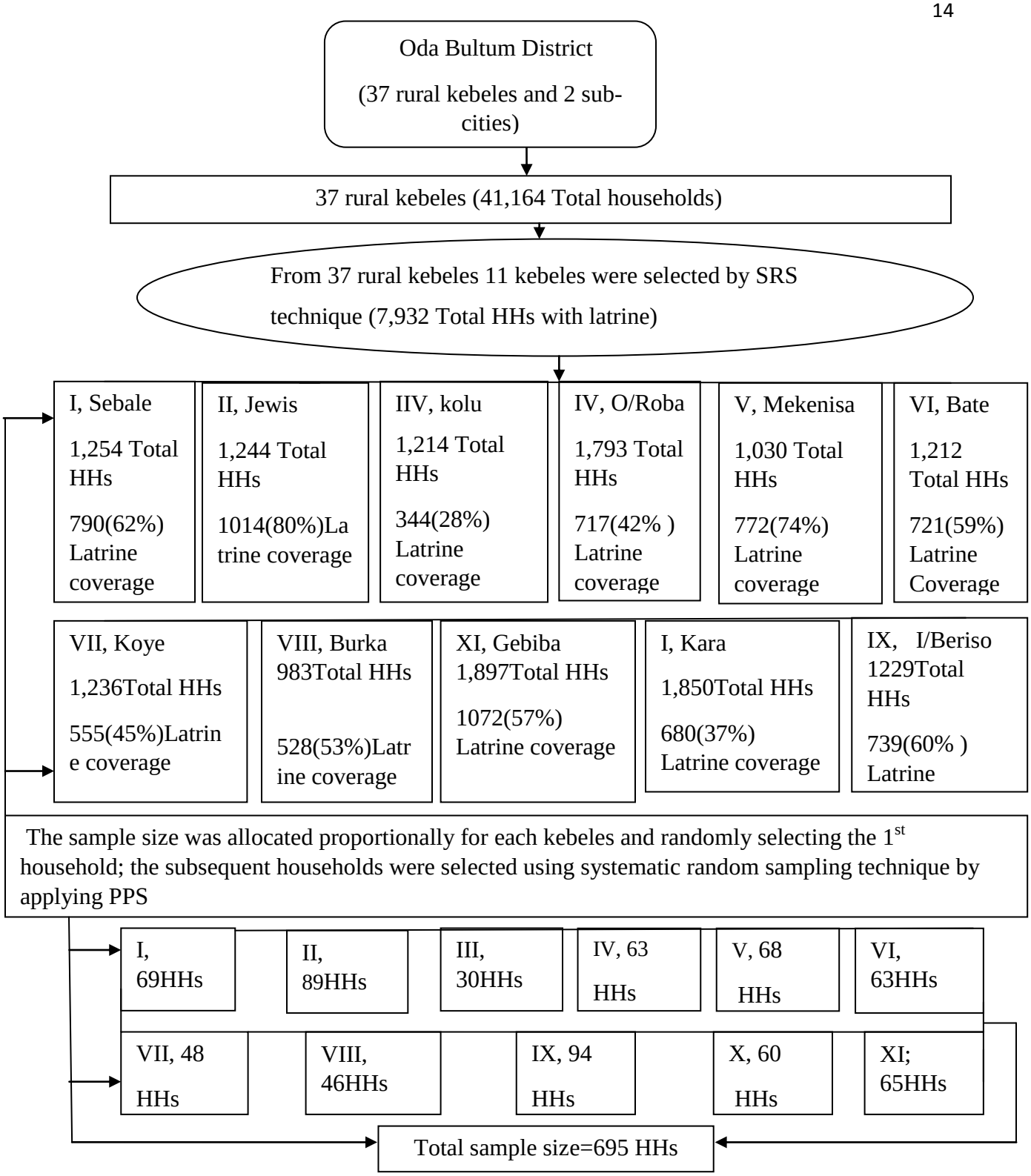

Figure 2**:** Schematic presentation of sampling procedure for research studies on latrine utilization and associated factors in the rural communities of Oda Bultum district, West Harerghe Zone, Oromia Regional State, Eastern Ethiopia

3.7. Data collection Methods

The questionnaire was adopted from different related literatures. The instrument was first prepared in English and then translated in to the local language Afan Oromo; and it was again translated back to English to maintain its consistency in translation. Data were collected by interviewing the household head or the house mother (if the father not available) of the households resident of greater than six month of the study area was considered as respondent; by using structured Afan Oromo interview questionnaires. Initially 35 households in Biyo kebele were interviewed for pre-test and then study subjects were interviewed by two supervisors who were BSC degree holder nurses and nine twelve grade completed data collectors with previous experience of data collection and fluent speaker of the local language were recruited.

3.8 Study Variables

3.8.1 Dependent variable

Latrine utilization

3.8.2. Independent variables

Socio-demographic related factors: Age, sex, marital status, family size, educational status, occupation of the household head.

Latrine utilization related factors: Cleanliness of latrine, Presence of school age children in the households, latrines need of maintenance, Latrines having a closing door, latrines having a superstructure and built latrine on self- initiation.

3.9. Operational definitions

Latrine utilization: Latrine is utilized when the reported use of latrines is showing at least one sign of use assured through physical observation (foot path to the latrine not covered by grass, no spider web in the squatting hole and the foot seat is wet) (Yimam et al., 2014).

Head of household: The husband, wife or adult family member residing permanently in the household who are greater than 18 years of age and have the higher responsibility for the household.

Functional latrine: is a latrine that provided services at the time of data collection even if the latrine required maintenance

Pit latrine: Is the simplest form of dry latrine and consists of a pit-dug in the ground and a cover slab or floor above the hole (Oljira D and Berkessa TS, 2016).

Clean latrine: No faecal matter in and around the pit latrine, properly swept (Chanie T., 2016)**.**

Dirty latrine: Faecal matter littered in or around the pit latrine not swept (Chanie T., 2016).

Consistent latrine use: Was assumed when all family members used the latrines as reported by the respondents, and no faeces were observed to be present in the vicinity (Oljira D and Berkessa TS, 2016).

Latrine with maintenance: latrine with damaged slab or super structure.

Public or shared toilet, open pit toilet and bucket toilet.

Shared Latrine means latrines which are used by more than one household

Self-initiation: construction of latrine without any external influence by already aware households.

Availability of hand washing facility: This is availability of hand washing facilities at the entry or adjacent to the latrine; usually a plastic container hung from a tree which can be tilted or tipped to release a small amount of water for washing hands.

Critical time for hand washing practice- hand washing practices mainly after visiting latrines or cleaning bottoms of children, before preparing food and before feeding children.

Availability of water: This is presence of water in the plastic container hung from a tree which can be tilted or tipped to release a small amount of water for washing hands during the observation.

3.10. Data quality control

The data was collected by nine twelve grade completed data collectors with previous experience of data collection and fluent speaker of the local language after having two days of training. The training mainly focused on how to interview questions and fill the questionnaires, neutrality of interviewers, responsibilities of data collector, and rights of respondents. From rural kebeles of Oda Bultum district; in Biyo kebele which was not selected for the study pre-test on 5% of the sample was conducted to know the length, content, question wording and language understandability of the question before two weeks of the actual data collection time. All the questionnaires were checked daily to ensure that whether they are appropriately filled. Any

missing data was confirmed before the start of the next day's interviews. Double data entry for 20% of the questionnaire was performed to see consistency in data entry and separately entered data was checked to correct mismatches. In addition quality of data collection was ensured through close supervision of the data collectors by the principal investigator.

3.11. Data Processing and analysis

After the completion of data collection process, all the questionnaires were checked for completeness, clarity and consistency. The data were entered and cleaned using EpiData version 3.02 and were exported in to SPSS Version 20 statistical software for data processing and analysis. Descriptive statistics like frequency, mean and standard deviations was used to compute independent and dependent variables. Crude odds ratio along with 95% CI was used to assess the presence of association between independent and dependent variables. Then those variables which had P- value ≤ 0.20 were considered as candidate variable for the final model. Multi-collinearity was checked to see the linear correlation among the independent variables by using standard error of >2 were dropped from the multi-variable analysis. The fitness of the model was tested by Hosmer-Lemeshow's goodness-of-fit test model and the coefficient was found to be insignificant with a large p-value (P=0.940) and the omnibus tests was significant (P=0.000). Finally multivariate logistic regression was used to control the effect of confounding variables and to determine the predictors of the outcome. Accordingly, the adjusted odds ratio and its 95% confidence level were reported.

3.12. Ethical consideration

The research topic and methodology was approved by the Institutional Health Research Ethics Review Committee (IHRERC) of Haramaya University College of Health and Medical Sciences. Permission to conduct the study was also obtained from Oda Bultum district health office and from the local kebele also. Informed written consent was obtained from respondents after explaining the objective of the study. Participants were assured of confidentiality with regard to all information acquired. In addition withdraw from the study during the interview was guaranteed to all the study participants at any time.

4. RESULTS

4.1. Socio-Demographic Characteristics of study participants

In this study, among 695 planned households who had latrine, total of 686 were participated making a response rate of 98.7%. The mean age (+SD) of the household heads were 38.51(±10.93) years. From the total respondents 364(53.1%) were males and also 91.5% of the household heads were males. Regarding religion of the household heads 185(27%) were Orthodox Christian and 501(73%) were Muslim religion followers. With regarding to marital status of the household head 649(94.6%) were married and regarding the educational status, about 367(53.5%) of mothers and 268(39.1%) of husbands were unable to read and write. Regarding the occupation of the household heads 609(88.8%) of them were farmers. Regarding the family size 351(51.2%) of the households had<=5 family size **(Table 2)**.

Table 2: Socio-demographic and economic characteristics of household heads in the rural areas of Oda Bultum District, Eastern Ethiopia, 2018(n=686).

Variables	Frequency (%)
Sex	
Male	628(91.5)
Female	58(8.5)
Age	
15-29	139(20.2)
30-44	373(54.4)
>=45	174(25.4)
Religion	
Orthodox Christian	185(27)
Muslim	501(73)
Marital Status	
Married	650(94.8)
single	10(1.5)
widowed	21(3.1)
divorced	57(0.6)
Family Size	
≤5	351(51.2)
>5	335(48.8)
Educational Status of husband	
Un able to read and write	268(39.2)
Read and Write	231(33.7)
Primary school	159(23.2)
Secondary School	10(1.5%)

Educational Status of mother	
Un able to read and write	367(53.5)
Read and Write	147(21.4)
Primary school	159(23.2)
Secondary school	13(1.9)

4.2. Magnitude of Latrine Utilization

The latrine type in the study area was 100% pit-latrine. During the time of data collection, from the total 686 households, 498(72.6%) were utilized their latrines. However, only 388(56.6%) consistently use their latrines, and 120(17.5%) share the latrine facility with other households; 113(16.5%) with one to three households and 10(1.5%) households with four or more households. Only 388(56.6%) household family members always use their latrine facility and 298(43.4%) rarely use their latrine facility. From the total households who were using their latrine, 261(38%) households had family members who do not use the latrine facility. From those who do not used the latrine facility in that households 31% of them were under five children's **(Figure 3).**

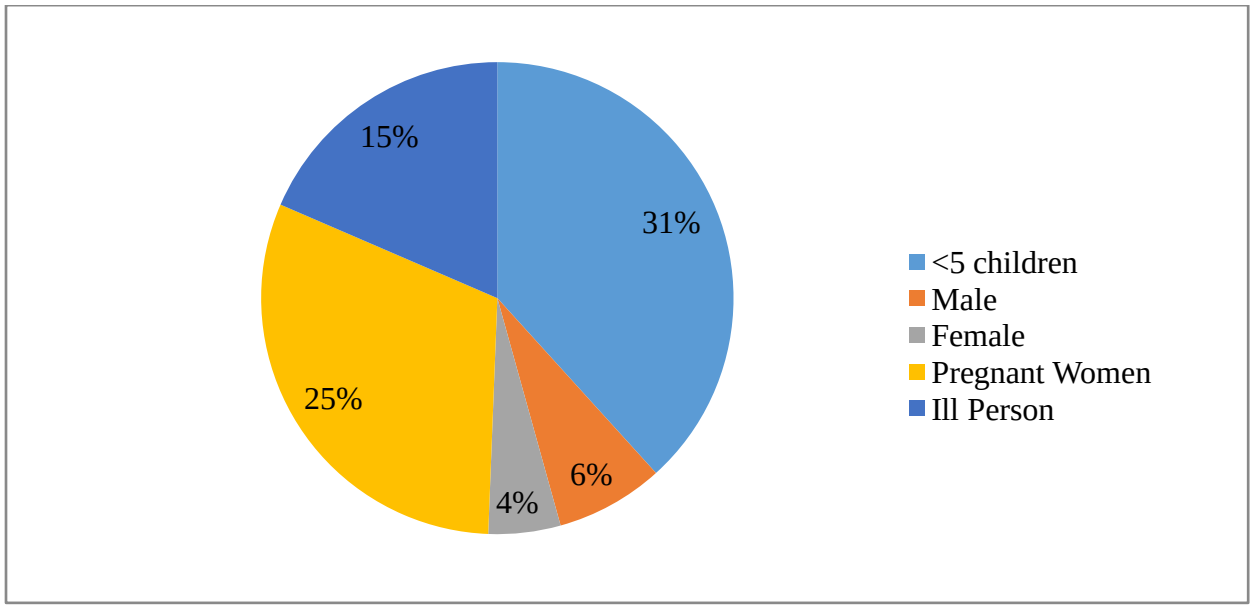

Figure 3: From household utilizing latrine family members who do not utilize the latrine facility, in Oda Bultum District, 2018(n=686)

4.3. Reasons not to use latrine

Individual perception (behavioral factors): The respondents were asked the benefits they can got by utilizing the latrine facility. Accordingly from the total 686 respondents, 633(93.2%) of them reported that latrine utilization has health benefit by preventing disease and 39 (5.7%) were reported as it improves personal status important for privacy.

Perceived reasons not to use latrine: The reasons for non utilization were also asked to 283 households who did not use latrine at all. Due to poor cleanness of the latrines 102(50.2%) preferring to go in to field was the most frequent rated reason followed by poor privacy of the latrine which was 85 (41.9%)**.**

4.4. Conditions of the latrines structure

From the total households 686 households participated in this study 180(26.2%) latrines were adequately clean and 506(73.8%) were latrines were not clean. With regard to cleaning the latrine, only 96(14%) of the households with latrine clean their latrine always (**Figure 4**).

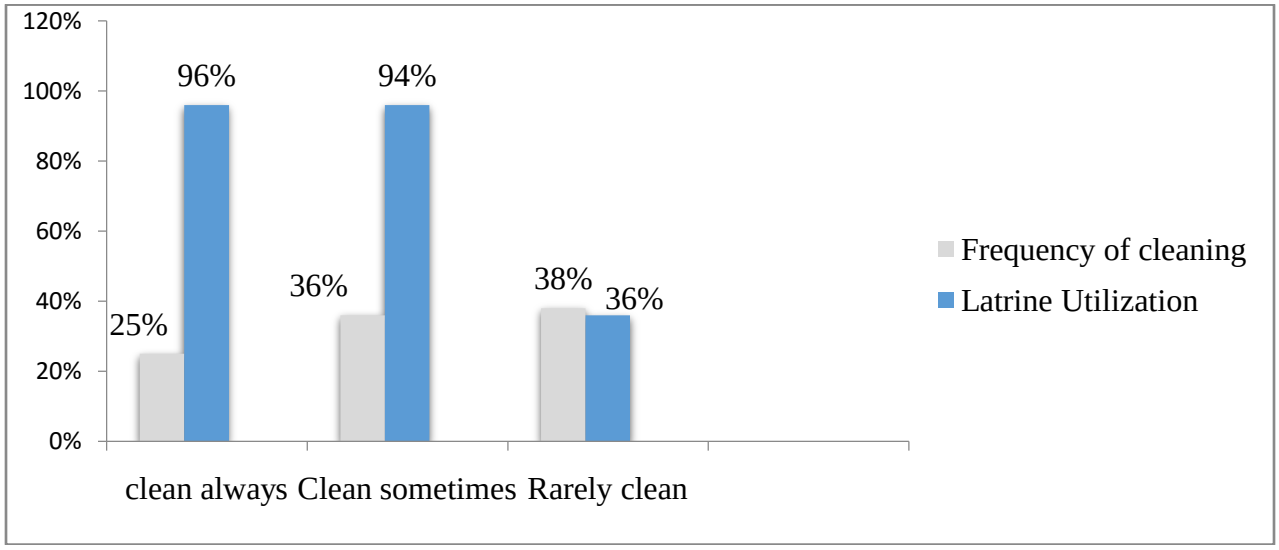

Figure 4 Frequency of latrine cleaning compared with status of latrine utilization among household's in the rural communities of Oda Bultum District, West Harerghe Zone, Oromia Regional State, Eastern Ethiopia

With regard to the conditions of latrine most of the latrines in the study area 570(83.1%) do not had cover on the squatting hole and 39.9% of the latrines do not have a super structure; most of them 584(85.1%) need also maintenance **(Table 3).**

Table 3: Conditions of latrine structure in the rural Communities of Oda Bultum District, Eastern Ethiopia, 2018

S.NO	Condition of latrine	Yes	No
1	Having superstructure	412(60.1)	274(39.9%)
2	Having a closing door	226(32.9)	460(67.1%)
3	Latrine greater than 1.5m in height	425(62%)	261(38.0%)
4	Latrines Need of Maintenance	584(85.1)	102(14.9%)
5	About six meter away from the living room	558(81.3%)	128(18.7%)
6	Having Cover on the squatting hole	101(14.7%)	585(85.3%)
7	Having washing facilities attached with toilet	49(7.1%)	637(92.9%)

From the total households who had latrine facility in 271(39.5%) household's about 570(83.1%) of latrines had no cover on the squatting hole. Most of the households; 562(92.9) % had no any kind of hand washing facilities. Hand washing devices were not available in 271(39.5%) of the households and also in the 340(49.6%) household's water for hand washing service was not available. From the total households who had latrine at the time of the data collection during the study period, 386(58%) households built their latrine by their own self-initiation, 116(16.9%) households due to neighbors' initiation and the rest constructed their latrine by government support. From the total households 655(95.5%) of them wash their hands after visiting a toilet. However out of them 394(57.4%) do not used ash or soap for hand washing.

From the total households with latrine in the study area 96(14%) households clean their latrine always, 291(42.4%) clean their latrine sometimes and the rest 299(43.6%) households rarely clean their latrine facility in which mainly women's were responsible for cleaning. From the total households included in the study 486(70.8%) households had under five children's and 200(29.2%) of the households do not have under -five children in their home. The households who had under five children in their home 461(67.2%) of the households do not dispose their children feces in the latrine. In the total households who had <5 children in 159(23.2%) households children's start self-latrine use at age of five and above five years. In this study area during the time of data collection 507(73.9%) of the households had school age children in their households. Regarding the motivation for constructing and using their latrine in the study area 160(23.3%) of the households constructed and used latrine without any motivation, 368 (53.6%)

constructed their latrine due to health education received from health professionals, 114 (16.6%) constructed for disease prevention and 42(6.1%) constructed because of influence from neighbor and due to social pressure **(Figure 5)**.

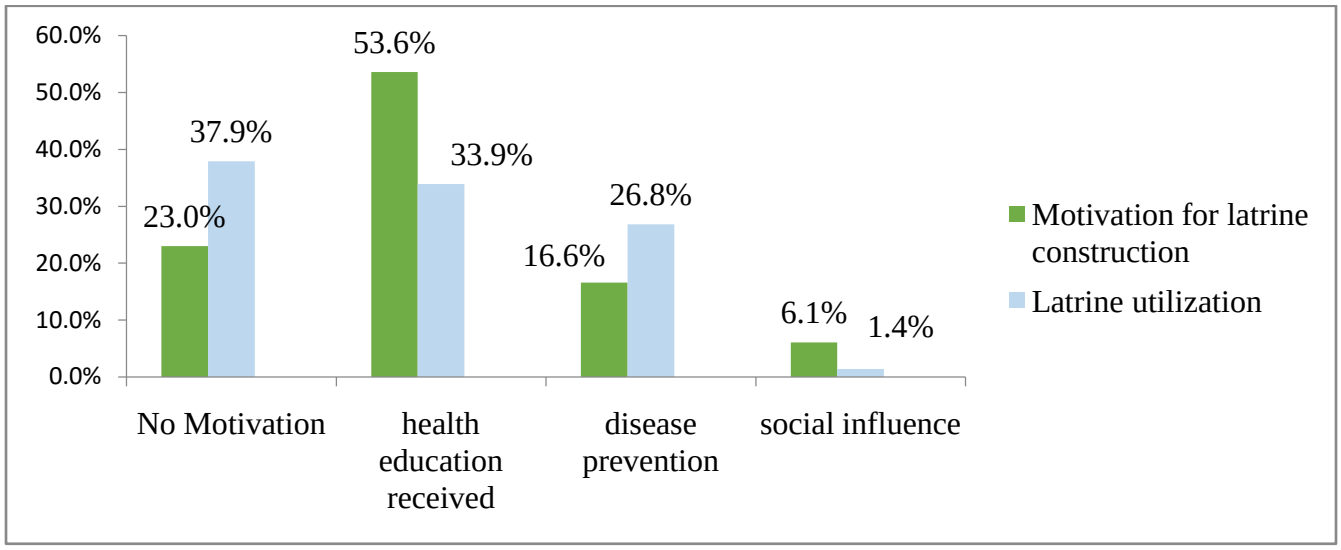

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Figure 5: Main motivation for latrine construction and use among households interviewed in the rural communities of Oda Bultum district (n=686).

4.5. Factors associated with latrine utilization among the households

4.5.1. Factors associated with latrine utilization among households during Bivariable logistic regression analysis

The selected variables were tested their individual contribution for latrine utilization through binary logistic analysis. The variables showed significant association were the educational status of the mother, educational status of the husband, presence of school age children in the household, initiation for latrine construction, frequency of latrine cleaning, latrine having a superstructure, conditions of cleanliness of the latrines, latrines having a closing door, latrines need of maintenance, latrine cover on the squatting hole, recognizing benefits of latrine use and washing hands after visiting a toilet (P-value ≤ 0.05).

In bivariate analysis households with house mother who can read and write were 3.87 times [(COR=3.87, 95%CI: (2.30, 6.49)] more likely to use latrine than household's with mother

unable to read and write and households with husband educational status of primary and above were 4.29 times [COR=4.29, 95% CI: (2.53, 7.28) more likely to utilize than households with husband un-able to read and write. On the other hand households which perceived benefits of latrine as disease prevention were 6.99 times [(COR=6.99, 95% CI: (3.46, 14.14)] more likely to utilize than who perceive as it has no any benefit. The households having latrine that had a superstructure were 5.14 times [(COR=5.14, 95% CI: (3.58, 7.38)] more likely to utilize latrines than households having latrine without a superstructure. The households having latrine that had latrine with cover were 3.54 times [(COR=3.54, 95% CI: (1.85, 6.80)] more likely to utilize latrines than the households having latrine without cover. The households having latrine that had a closing door were twelve times [(COR=12.23, 95%CI: (6.48, 23.05)] more likely to utilize latrines than households having latrine with no a closing door. On the other hand households that construct their latrine by their own initiation were 4.90 times [(COR=4.90, 95% CI :(3.25, 7.39)] four times more likely to utilize latrines than households construct latrine due to social influence and government support.

Mainly households having adequately clean latrines were 10.40 times [(COR=10.40, 95% CI :(5.19, 20.83)] more likely to utilize their latrines**.** Also households having latrines that do not need maintenance were 5.23 time [(AOR=5.23: (2.49, 11.00)] times more likely utilized than households having latrines that need maintenance. However households who perceive latrine use as disease prevention were 6.99 times more likely to utilize than who perceive as no benefit [(COR=6.99, 95% CI: (3.46, 14.14)] than their counter part (**Table 4**).

Table 4: Bivariable logistic regression analysis of factors associated with Latrine utilization in the rural communities of Oda Bultum District, West Harerghe Zone, Oromia Regional State, Eastern Ethiopia, 2018 (n=686).

Variables	Latrine Utilization		**COR (95% CI)**
	Utilized (%)	Not Utilized (%)	
Age			
18-29	117(84.2)	22(15.8)	1.00
30-44	256(68.6)	117(31.4)	0.41(0.24,1.08)
>45	125(71.8)	49(28.2)	0.48(0.27,1.04)
Sex			
Male	454(72.3)	174(27.7)	0.83(0.61,1.18)
Female	44(75.9)	14(24.1)	1.00
Educational status of the husband			
Un able to read and write	170(63.4)	98(36.6)	1.00
Able to read and write	166(71.9)	65(28.1)	1.47(1.00,2.15) *
Primary and above	149(88.2)	20(11.8)	4.29(2.53,7.28) *
Marital status			
married	476(73.3)	173(26.7)	1.00
Currently unmarried	22(59.5)	15(40.5)	0.53(0.27,1.05)
Occupation			
Farmer	435(71.4)	174(28.6)	0.56(0.30,1.10)
others	63(81.8)	14(18.2)	1.00
Family Size			
<=5	222(66.3)	113(33.7)	1.00
>5	276(78.6)	75(21.4)	0.53(0.38,1.05)
Frequency of cleaning			
Always	89(92.7)	7(7.3)	16.30(7.50, 36.38) *
Sometimes	278(95.5)	13(4.5)	27.42(15.03,50.03) *
rarely	131(45.1)	168(56.2)	1.00
Conditions of cleanliness			
Adequately clean	171(34.3)	9(4.8)	10.40(5.19,20.83) *
Not clean	327(65.7)	179(95.2)	1.00
Educational status of the mother			
Un able to read and write	222(61)	142(39)	1.00
Able to read and write	121(85.8)	20(14.2)	3.87(2.30,6.49) *
Primary and above	155(85.6)	26(14.4)	3.81(2.39,6.07)
Support for latrine construction			
Self initiation	341(85.7)	57(14.3)	4.90(3.24,7.39)
Neighbors initiation	63(54.3)	53(45.7)	0.97(0.60,1.56)
Government support	94(55)	77(45)	1.00
Latrines need of maintenance			

Yes	404(81.1)	94(18.9)	1.00
No	180(95.7)	8(4.3)	5.23(2.49,11.00) *
Latrines cover on the squatting hole			
Yes	90(89.1)	11(10.9)	3.54(1.852,6.80) *
No	408(69.7)	177(30.3)	1.00
Superstructure of latrine			
Yes	352(70.7)	60(31.9)	5.14(3.58,7.38)*
No	146(53.3)	128(46.7)	1.00
Closing door for latrine			
Yes	215(95.1)	11(4.9)	12.23(6.48,23.05) *
No	283(61.5)	177(38.5)	1.00
Washing hands after visiting a toilet.			
Yes	444(82.4)	95(17.6)	8.05(5.39,12.03) *
No	54(36.7)	93(63.3)	1.00
Perceived benefits			
Disease prevention	479(75.7)	154(24.3)	6.99(3.46,14.14) *
Privacy	7(50.00)	7(50.00)	2.25(0.64,7.84) *
No benefit	12(30.8)	27(69.2)	1.00
Latrines closing door			
Yes	215(95.1)	11(4.9)	12.22(6.48,23.05) *
No	283(61.5)	177(38.5)	1.00
Presence of school children			
Yes	402(79)	107(21%	3.17(2.20,4.56) *
No	96(54.2)	81(45.8%)	1.00

*P-value <0.05, CI = Confidence Interval, COR = Crude Odds Ratio

4.7.2. Factors associated with latrine utilization among households during multivariable logistic regression analysis

For multivariate analysis variables twelve variables that had a p-value less 0.20 were candidated. These Variables were educational status of mother, educational status of the husband, superstructure of latrine, latrine cover, latrines need of maintenance, initiation for latrine construction, conditions of cleanliness of the latrines, the latrines having a closing door, frequency of latrine cleaning, Washing hands after visiting a toilet, Perceived benefits of latrine utilization and presence of school children.

After that these predictors were entered together to determine their effect on the outcome variable (latrine utilization) through logistic regression model and seven of the predictors;

educational status of the mother, superstructure of latrine, initiation for latrine construction, conditions of cleanliness of the latrines, the latrines having a closing door, frequency of latrine cleaning and presence of school children in the household remained a significant and independent predictors of latrine utilization in the multivariate analysis.

The households constructed their latrines by self initiation were 2.30 times [(AOR=2.30, 95%CI: (1.23, 4.32)] more likely to use latrine than households constructed latrine due to influence from social and support from the government. Households that Latrines had superstructure were 2.16 times [(AOR=2.16, 95% CI: (1.29, 3.64)], more likely to utilize than households their latrines do not had a superstructure. On the other hand households having latrines which had a closing door were 4.77 times [(AOR=4.77, 95% CI: (2.17, 10.50)] more likely to utilize than households their latrines which had not a closing door. Households who had clean latrines were 3.86 times [(AOR=3.86, 95% CI: ((1,60.9.33)] more likely to utilize than households that had dirty latrines and households who clean their latrine always were 2.58 times [(AOR=2.58, 95%CI :(1.02,6.55)] more likely to utilize than households rarely clean their latrines. Also households who had school age children in their home were 2.14 times [(AOR=2.14, 95% CI :(1.18, 3.86)] more likely to utilize than households without school children and households with house mother who can read and write were 2.17 times [(AOR=2.17, 95% CI :(1.05, 4.47)] more likely to utilize than households with house mother un able to read and write (**Table 5)**.

Table 5:Bivariable and multivariable logistic regression analysis of factors associated with Latrine utilization in the rural communities of Oda Bultum District, West Harerghe Zone, Oromia Regional State, Eastern Ethiopia, 2018 (n=686) p-value less than 0.20.

Variables	Latrine Utilization		**COR (95% CI)**	**AOR (95% CI)**
	Utilized No (%)	Not utilized No (%)		
Frequency of cleaning				
Clean always	89(92.7)	7(7.3)	16.30(7.50, 36.38)	**2.58(1.02, 6.55)** *
Clean sometimes	278(95.5)	13(4.5)	27.42(15.03,50.03)	1.87(0.91,3.81)
Clean rarely	131(45.1)	168(56.2)	1:00	1.00
Superstructure of latrine				
Yes	352(70.7)	60(31.9)	5.14(3.58,7.38)	**2.16(1.29,3.64)** *
No	146(5+3.3)	128(46.7)	1.00	1.00
Condition of cleanliness				

Adequately Clean	171(34.3)	9(4.8)	10.40(5.19,20.83)	**3.86(1.60,9.33)** *
Not Clean	327(65.7)	179(95.2)	1.00	1.00
Closing door of latrine				
Yes	215(95.1)	11(4.9)	12.23(6.48,23.05)	**4.77(2.17,10.50)** *
No	283(61.5)	177(38.5)	1.00	1.00
Latrine Need of Maintenance				
Yes	404(81.1)	94(18.9)	1.00	1.00
No	180(95.7)	8(4.3)	5.23(2.49,11.00)	1.47(0.52,4.14)
Presence of school children				
Yes	402(79)	107(21%	3.17(2.20,4.56)	**2.14(1.18,3.86) ***
No	96(54.2)	81(45.8%)	1.00	1.00
Cover of latrine hole				
Yes	90(89.1)	11(10.9)	3.54(1.85,6.80)	1.48(0.61,3.63)
No	408(69.7)	177(30.3)	1.00	1.00
Benefits of latrine utilization				
Disease prevention	479(75.7)	154(24.3)	6.99(3.46,14.14)	0.85(0.13,5.57)
Privacy	7(50.00)	7(50.00)	2.25(0.64,7.84)	1.76(0.53,5.79)
No Benefit	12(30.8)	27(69.2)	1.00	1.00
Educational status of Mother				
Un able to read and write	222(61)	142(39)	1.00	1.00
Read and write	121(85.8)	20(14.2)	3.87(2.30,6.49)	**2.17(1.05,4.47) ***
Primary and above	155(85.6)	26(14.4)	3.81(2.39,6.07)	1.31(0.60,2.82)
Support for construction				
Self initiation	341(85.7)	57(14.3)	4.90(3.24,7.39)	**2.30(1.23,4.32) ***
Neighbors initiation	63(54.3)	53(45.7)	0.97(0.60,1.56)	0.59(0.27,1.27)
Government Support	94(55)	77(45)	1.00	1.00
Washing hands after visiting toilet				
Yes	444(82.4)	95(17.6)	8.05(5.39,12.03)	1.49(0.80,2.77)
No	54(36.7)	93(63.3)	1.00	1.00

*=P-value <0.05, CI = Confidence Interval, COR = Crude Odds Ratio, AOR= Adjusted Odds

The fitness of the model was tested by Hosmer-Lemeshow's goodness-of-fit test model and the coefficient was found to be insignificant with a large p-value (P=0.940)

5. DISCUSSION

The study has assessed latrine utilization status of the household, the household related characteristics, behavioral and environmental factors associated with latrine utilization of the study area. The level of latrine utilization was not much satisfactory in the study area. Educational status of the mother, condition of cleanliness of the latrines, initiation for latrine construction, frequency of latrine cleaning, latrines having superstructure, latrines having a closing door, and presence of school children in the household were predictors of latrine utilization.

The findings of this study revealed that the rate of latrine utilization in the rural community of Oda Bultum district was about 72.6%, 95% CI: (69.2, 75.8). The present study prevalence was higher than the study done in the community of Hulet Ejju Enessie district, East Gojjam Zone, Amhara Region (60.7%) (Antene et al, 2010), the study done on Sanitation Facility in the Selected Households of Awabel District, Northwest Ethiopia, in 2014 by Molla Gedefaw a community based cross sectional study which was only 52% (Gedefaw et al, 2015), Aneded District (63.7%) **(**Chanie T, 2016),Chencha District, Southern Ethiopia (60%)(Hailu Ch.K., et al 2017**)**, West Shoa Zone, Oromia Regional State, Ethiopia (36.8%) (Kelbessa et al, 2014) and Hawzien district, Tigray region (54.5%) (Yemane A et al., 2013). This inconsistency may be due to difference in the sample size, the year of study done since the rural communities awareness towards latrine utilization increased time to time and as result of repeated occurrence of diarrheal disease the community's preparedness for disease prevention. However, regarding consistent latrine use it was only 56.6% which was similar with the study in Gulukomeda District 57.3% (Niguse Debesay et al, 2015) this may be due to un-cleanliness and poor privacy of latrines, the people prefer to go in the field. But it was higher than the study in Ilu Aba Bor Zone 36% (Oljira D and Berkessa TS, 2016) and Hawzien district 37.4% (Yemane A et al., 2013) this may be due to time difference and health information given by health extension workers for prevention of diarrheal disease the communities in the present study area awwarennes was increased.

However, the present study result differs from study done in the rural in the rural village of eastern Nepal 94.3% and the study in Idiofa Democratic Republic of Congo which was 98.3%; this may be in those areas the community's good awareness towards the benefits of latrine

utilization and presence of better quality standard latrines (Budhathoki et al, 2017). In the present study area all the type of latrines was traditional pit latrines. The present study was also not similar with study done in Denbia district Denbia 609 (76.0%) (Yimam et al, 2013).The disparity might be due to relatively better involvement of local Non-Governmental Organizations (NGO's) and governmental interventions in that area. In the present study district, there was no organized and continuous Community Led Total Sanitation and Participatory Hygiene and Sanitation Transformation intervention carried out except the advice and education provided by health extension workers and local administrators. The low use of latrines in the study area could be also explained health extension workers promote the benefits from constructing latrines among the rural communities, but had been less active in teaching proper utilization and lack continuous follow up.

In the present study, it was interesting to notice that self-initiation for latrine construction was 2.30 times more likely to use latrines than government support and influence from neighbor; this result was similar with the study done in Chencha District which was (Hailu Ch.K., et al 2017**)** six times, Awabel District (Gedefaw et al, 2014) seven times more likely utilize than those imposed by government officials and influence from neighbor. This might be due to the fact those households may not be properly informed about the importance of latrine construction and its utilization.

In another way the other challenges were related to construction quality of latrine facilities. According to this study the households who had latrines with a superstructure were 2.16 times more likely to utilize than households without superstructure this result was similar with the study in Awabel District three times (Gedefaw et al, 2015) more likely to utilize than their counterparts. Also the households who had latrines with a closing door were 4.77 times more likely to utilize but it was higher in Nepal (Budhathoki et al, 2017) which was 21.97 times this might be due to the latrines not providing privacy and protection for the user of the latrine. Household's who had clean latrines where 3.86 times more likely to utilize than households with unclean latrine which was similar with study in Denbia which was 4.33 times (Yimam et al, 2013). Households with school children in their home also 2.14 times more likely to utilize than households without school children; this was similar with the study done in Gulukomeda district which was 4.45 more likely it is also consistent with the study in Awabel district in which the

households with school children were 4 times more likely to utilize. This could be partly explained by the fact that Ethiopian school books contain lots of information about common diseases; their causes, transmission, and prevention methods.

Regarding to the strength and limitations of the study, the strength of the current study was selecting more kebeles to represent the district rural community's latrine utilization status and in identifying the major associated factors with latrine utilization. Whereas, recall bias is one of the limitations since some of the questions were asking the practice of the community prior to the data collection. Also Behavior aspects of the community cannot be understood only by quantitative study. This study was also affected by reporting and social desirability bias.

6. Conclusion and recommendations

6.1. Conclusion

This study concluded that even if the latrine coverage was high in the study area its utilization level was not much satisfactory. The reasons for not to utilize their latrines by the households were, due to uncleanness of the latrines and poor privacy of latrines moreover, hygienic condition of latrine, presence of school age children, educational status of mother, latrines having a superstructure, latrines having closing door , initiation for latrine construction and frequency of latrine cleaning were the major factors affecting utilization of latrines in this study area. Thus, it was a public health problem in the study area.

6.2. Recommendations

Based on the study findings the following recommendations were made

For Oda Bultum District Health Office

Should made Participatory approaches that promote the communities to use latrine as well as should continuously follow up the community for sustainable and consistent latrine utilization.

For Local Rural Health Extension Workers

Collaborating with health professionals found in the health facilities and the local kebele administration health extension workers should give adequate health promotion for the community how to properly construct and use their latrines. Monitoring the community practice regularly, HEWs should follow the households to consistently utilize their latrines by properly cleaning it always and to have good hand washing practice after using a toilet.

For the Local NGOs

Collaborating with the district health office should provide more comprehensive and organized interventions. Local NGOs should work collaboratively with other stakeholders to increase the standard of latrines for the community to consistently to practice good utilization of latrine thereby preventing occurrence of diarrheal disease in the community.

For the scientific community

An in-depth formative research be undertaken to explore how existing latrine use barriers can be addressed in order to upscale latrine utilization in the study area.

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8. APPENDICES

8.1. Appendix A: Participant information sheet and informed voluntary consent form.

My name is---------- I am working as a data collector for the study being conducted in this community by Misahun Shimelis who is studying his Master's degree at Haramaya University College of Health and Medical Sciences school of Graduate studies. I kindly request you to lend me your attention to explain you about the study and being selected as the study participant.

The study title

Latrine Utilization and Associated Factors in the Rural Communities of Oda Bultum district, West Harerghe Zone, Oromia Regional State, Eastern Ethiopia

The purpose of the study

The purpose of this study are to assess the latrine utilization and associated factors in the Rural Communities of Oda Bultum district, West Harerghe Zone, Oromia Regional State, Eastern Ethiopia knowing this have paramount importance for the district health office to plan strategies that can address better latrine construction skills and its proper utilization system in the area. Moreover, the aim of this study was to write a thesis as a partial requirement for the fulfillment of a Master's Program in General public health for the principal investigator.

Procedure and duration

I will be interviewing you using a questionnaire to provide me with pertinent data that was helpful for the study. There are 40 questions to answer where I will fill the questionnaire by interviewing you. The interview will take 40 minutes.

Risks and benefits

The risk of being participating in this study is very minimal, but only taking your time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

Confidentiality

The information you will provide us will be confidential. There will be no information that will identify you in particular. The findings of the study will be general for the study community and

will not reflect anything particular of individual persons or housing. No reference will be made in oral or written reports that could link participants to the research directly.

Rights

Participation for this study is fully voluntary. You have the right to declare to participate or not in this study. If you decide to participate, you have the right to withdraw from the study at any time and this will not label you for any loss of benefits which you otherwise are entitled. You do not have to answer any question that you do not want to answer.

Contact address

If there are any questions or enquires any time about the study or the procedures, you can contact by using the following addresses.

Principal investigator: Misahun Shimelis

E-mail:misahuns@gmail.com

Mobile phone: +251-915-164-829

Haramaya University College of Health and Medical Sciences school of graduate studies Institutional Research Ethical Review Committee: Office phone: 0254662011 P.O.Box: 235, Harar

Declaration of informed voluntary consent

I have read/was read for me the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to participate in this study with my signature as indicated below.

Name and Signature of participant: ---------- Signature of data collector ----------

8.2. Participant information sheet and informed voluntary consent form in Afan Oromo Version

Maqaan koo----------jadhama. Obbo Misaahun Shimalis kanjadhaman Yuunivarsitii Haaramayaattii Gosa barnoota Fayyaa haawaasaa waligalaan qo'annoo sadarkaa baruumsaa Digrii lamafaadhaaf raawwatuuf gaafannoo akkan guchisuuf kaniin filamee dha. Aniis kabajaan kaniin isiin gaafadhuu maaluummaa waa'ee qo'onichaa isiinis maaliif qo'onichaaf akka filatamtan ibsa waaniin isiini godhuuf akka na dhageefatanifii.

Mata-duree Qo'onichaa

Naannoo Oromiyaa, Haararghee lixaa,Aanaa Oodaa Bultum aradoota Baadiyaamanneen jireenyaa jiran keessattii itti fayyadama mana fincaaniifi wantoota dhimma kana wajjiin hidhata qaban ilaalata.

Kaayyoo Qo'annoo kanaa

Kaayyoon Qo'annoo kanaa Aanaa Oodaa Bultuum keessattii abbootii warraatiin ittii fayyadamnii mana fincaanii maal akka fakaatuu fi dhiimmoota kana wajjiin hidhata qaban ilaalata.Haala kana beekuun Waajiira Eeguumsa Fayyaa Aanaaffaayidaa argamsiisa**.** Kunis waajiirii haanqiina jiruu adda baasuun ragaa kanaittii fayyadama tajaajiila mana fincaanii mirkaneessuuf akka karoorfachuu danda'uu isa dandeesisa. Inii kan biraatiis kaayyoon qo'annoo kanaa dhaleessaan qo'annoo kanaa Fayyaa Haawaasaa Waligalaatiin sadarkaa Baruumsaa lamafaatii bareefama ebbaa qopheessuuf fayyada.

Adeemsa Qo'onichaa

Anii gaafilee duubisuudhaan isiin imoo gaafileedhaaf deebisaa keenuun Daqiqaa 40'f waliin tuura.Baay'inii gaafileetiis 40. Kanaafuu ani gaafilee isiinif duubiseetiin deebilee naa keenitaniif idoo isaaniiti niin guuta.

Faayidaa fi Midhaa

Qo'annoon kun sa'aa keessan muraasa fuudhachuun ala rakkoon ini fiduu hin jiruu. Qo'annoo kanarattii hirmaachuu keessaniniis faayidaan haarkarattii argatan hin jiruu. Haa ta'uu malee bu'aan qo'annoo kanaa naannawa kanattii fayyaa irrattii dhaabilee hoojataniif ragaalee fayyadan ni keena.

Icituumaa isaa

Ragaaleen keenaman iciitin isaanii agamaadha. Gaafannoo keessatiis haala dhiimma keessan biifa adda ta'een kan gaafatuu hin jiruu. Bu'aan qo'anichaas iddoo qo'annoon ittii gaggeefameef ragaa cuunfamee kan kennamuu yommuu ta'uu, maaluumaa nama tokko ykn Maaluumaa mana sanaa kan muul'isuu mitii. Qo'anichiis haala kaminuu jechaanis taee bareefamaan maaluumaa hirmaataa qo'anichaa haala ibsuun fakeenya godhee hin dhaleessuu.

Mirga Hirmaataa

Qo'annicha irrattii hirmaachuun, guutumattii feedhinaa irrattii kan hundaa'ee dha. mirga hirmaachuus hirmaachuu dhabuus qabduu. Hirmaachuuf fedhinaa kan hin qabnee yoo ta'ee yeroo kamitiyuu dhaabuu ykn gaafilee deebisaa kennuu hin barbaadnee deebisaa kennuu dhabuu mirga qabduu. Sa'aa kamitiyuu qo'anichaa yoo adda dhaabdan haallii biifa addattii ittii ilaalmatan hin jiruu.Odeefannoo dabalataa argachuu yoo isiin barbaachisee qo'onicha kanilaalatuu gaafilee kamiiyuu ykn yaada yoo qabaatan teessoolee ittii aanan kanaan fayyadamuun odeefannoo argachuu dandeessuu.

Ogeesa Qo'annoo kanaa

Maqaa : Obbo Misaahun Shimalis

Lakk. Bilbilaa:+251-915-164-829

Email:misahuns@gmail.com

Yuunivarsitii Haaramaayaattii mana baruumsa fayyaattii kooree Qo'annoo fi qorannoo hoordofii naamuusaa.Lakk. Bilbilaa: 025-466-20-11

Lakk. Postaa 235 Haarar

Feedhinaa irrattii kan hundaa'ee qo'annoo kana irrattii hirmaachuu murteessuu bareefama ibsuu Ibsii walii-galtee kuunii bifa gaariin naaf duubifameera.Aniis kaayyoo qo'onnichaa haala gaariin huubadheera. Faayidaa fi midhaa isaa, icituummaa isaa, mirga kiyya akkasuumattis gaafilee qo'annoo ilaalatan fi yaada yooniin qabaadhee gaafachuu kan danda'uu ta'uu huubadheetiin jiira. Wantoota ifa naaf hin taanee akkan gaafadhuu carraan naaf keennamee jiira.Aniis miirga deebisuu dhabuu akkan qabuu naaf himameera. Kanaafiis feedhinaa irrattii kan hundaa'ee qo'annoo irrattii hirmaachuuf murteessee mallattoo koo armaan gadittii kaa'eera.

Mallattoo fi maqaa hirmaataa----------

Mallattoo gaafannoo nama guchisisee----------

Mallatoon nama gaafanoo gutuu ful-duurattii kan malataa'uu dha.

8.3. Appendix C: English Language Questionnaire

Table 6: Questionnaires on Latrine Utilization and Associated factors in the Rural Communities of Oda Bultum District, West Harerghe Zone, Oromia Regional state, Eastern Ethiopia, 2018

To be filled by data collector

Date of interview (date/month/year):_____

Oromia Regional State, West Harerghe Zone, Oda Bultum District

Name of Kebele …….....

Name of the interviewer……..……

Questionnaires

ID NO……..

Part-I Socio-economic and demographic factors			
S/r no.	Questions	Coding categories	Skip to
101	Sex of the household head	Male ---------- Female----------	
102	Age of the household head	--------years	
103	What is your religion?	1. Orthodox Christian 2. Muslim 3. Catholic 4. Protestant 5. Other if (specify)……..	
104	Marital Status?	1. Married 2. single 3. widowed 4. divorced 5. Separated	
105	Family Size	1. ≤5 family members 2. >5 family members	
106	Educational status of the husband?	1. Unable to read and write 2. Read and write	

		3. Primary school (1-8) 4. Secondary school (9-12) 5. Certificate 6. Diploma 7. Degree and above	
107	What is the educational status of the mother?	1. Unable to read and write 2. Read and write 3. Primary school (1-8) 4. Secondary school (9-12) 5. Certificate 6. Diploma 7. Degree and above	
108	What is the Occupation of head of household?	1. Housewife5. Daily laborer 2. Farmer 6. Government employee 3. Student 7.Self employed 4. Merchant 8. Other (specify)…….	
Part- II Latrine Utilization			
201	What kind of toilet facility does your household have?	a. Pit-latrine b. Ventilated improved pit latrine c. Pit latrine with slab d. Pit latrine without slab/open pit	
202	Is the latrine currently being used?-check through observation	a. Yes b. No	
203	Do all members of your family use the latrine always?	a. Yes b. No c. No Response	
204	Is there any one from your family members who do not use the latrine?	a. Yes b. No c. No Response	If no skip to Q.207
205	If yes who is that in from your family member who do not use the latrine facility? – more than	a. >5 children	

	one answer is allowed	b. Male c. Female d. Pregnant women e. Ill person	
206	Do you share this toilet with other households?	a. Yes b. No	If no skip to Q.209
207	How many households share this latrine facility?	a. Four or more households b. Two to three households c. Don't know	
208	For how many years do you have utilized this latrine?	a. 1-3 years b. More than three years c. No Response	
209	If Q. no 202 is no, why is the latrine not being used?	a. Poor cleanliness (insects, bad smell, etc) b. The latrine is too far c. Poor privacy d. Other (specify)	
Part-III Conditions of latrine factors			
301	Does the latrine present adequate conditions of cleanliness?-(check through observation)	a, Not clean (Visible feces or urine on the floor) b, Adequately clean (no visible feces or urine) C, Poorly clean (some dirt, but no visible feces or urine)	
302	Does the toilet facility have a superstructure?	a. Yes b. No	
303	Does the latrine have a closing door?	a. Yes b. No	
304	Does the latrine is greater than 1.5 meter in height?	a. Yes b. No	
305	Does the latrine need maintenance?	a. Yes	

		b. No	
306	Does the latrine hygienically separate human excreta from human contact?-(Check through Observation)	a. yes b. No	
307	Does the latrine is six meter away from the living room?	a. Yes b. No	
308	Does the latrine have cover on the squatting hole?	a. Yes b. No	
309	Is there hand-washing facilities attached with toilet?	a. Yes b. No c. No Response	
310	For latrine use hand washing devices are available?	a. Available b. Not available	
311	Near the toilet facility water for hand washing at the specific hand washing places is available?	a. Available b. Not available	
Part-IV Sanitation related Behavioral factors			
401	How you built this latrine facility?	a. Self initiation b. Neighbors initiation c. Government support d. NGOs Support	
402	Does your household member wash his hands after visiting a toilet?	a. Yes b. No c. No Response	If no skip to Q.404
403	If yes does the household use Soap/Ash for hand washing after visiting a toilet?	a. Yes b. No c. No Response	
404	What do you consider to be the main benefits of using a latrine?- (Probe do not prompt)	a. Disease prevention b. Privacy c. No benefit	
405	Do you clean your latrine?	a. Yes b. No c. No Response	
406	Who is responsible for cleaning latrines in your	a. Men	

	household?	b. Women	
407	How often do you clean your latrine?	a. always b. sometimes c. rarely	
408	Do you have under- five children in your household?	a. Yes b. No	If no Skip to Q.411
409	Do children's faeces disposed in to latrine facilities before self-utilization?	a. Yes b. No	
410	At how many age does <5 children's in your household start self-latrine use?	a. 3-5 years b. Age of 5 and above	
411	Primary or Secondary school children's are present in your household?	a. Yes b. No c. No Response	
412	What was your main Motivation for constructing and using this latrine?- (Probe – do not prompt)	a. No Motivation b. Health education received c. Disease prevention d. Influence from my neighbor/social pressure	

THANKS!

8.4. Appendix D: Afan Oromo Version Questionnaire

Gaafannoo Ittiifayadama mana fincaanii fi ka'uumsoota isaan wal-qabatan, Haawaasa BaadiyaaAanaa Odaa Bultuumittii, Godina Haararghee lixaa , Naannoo Oromiyaa,BahaItiyoophiyaa bara 2018 A.L.A. Sassaabaa ragaatiin kan guutamuu

Naannoo Oromiyaa , Godina Haararghee lixaa, Aanaa Odaa Bultum

Maqaa Aradaa ----------

Maqaa Gaafataa ----------

Lakk.EenyuumaaGaafannoo_____

Kutaa-I Ragaa Bu'uraa haawaaasaa			
T/lakk	Gaafilee	Qoqodama kutaalee	Gara gaafii — darbii
101	Saala Ittigaafatamaa manaa	1. Dhira------- 2. Duubara-----	
102	Umrin ittigaafatamaa manaa?	Waggaa _____	
103	Amantaa isa kam hordooftuu?	1, Ortodoksii 4, Proteestaantii 2,Muuslima 5, Kan biraa (ibsii 3, Kaatoolikii	
104	Haala fuudhaa fi heeruumaa	1. Kan heeruumee/fudhee 2. Kophaa 3. Kan jalaa duu'ee/duutee 4. Kan adda ba'an	
105	Baay'ina maatii	1. 5 gadii 2. shaniii olii	
106	Sadarkaan baruumsaa Abbaa manaaa haamamii?	1, Sadarkaa baruumsaa kan hin qabnee 2, Sadarkaa tokkofaa 2, Sadrkaa lamaffaa 3, Sadarkaa 2ffaa olii	

107	Sadarkaan baruumsaa haadha manaa haamamii?	1. Barreessuu fi dubisuu kan hin dandeenye 2. Kan bareessuu fi duubisuu 3. Sadarkaa 1ffaa (1-8) 4. Sadraa lammaffaa (9-12) 5. Seertifikeeta 6. Diploomaa 7. Digrii fi isaa olii	
108	Hoojiin itti gaafataa manaa maalii?	1, Haadha Manaa5, Hoojataa guyyaa 2, Qotee bulaa6, Hoojataa mootumaa 3, Barataa7, Hoojataa dhunfaa 4, Daldalaa8, Kan biraa(ibsii)	
Kutaa-II: Ittii fayyadama mana fincaanii			
201	Mana fincaanii goosa isa kam abbaan warraa keessan qaba?	Mana fincaanii bollaa kan Aadaa a, Mana fincaanii qilleensa foyya'aa galchuu b, mana fincaaii Aadaa cuqaalaa qabuu c, mana fincaaii Aadaa cuqaalaa hin qabnee/Banaa	
202	Mana fincaanii keessan amma ittii fayyadamtanii? Ilaaluun mirkaneessii	a. Eeyyee b. Mitii	
203	Mana fincaanii yeroo mara ittii ni fayyadamtuu?	a. Eeyyee b. Mitii c. Deebisaa hin keeninee	
204	Maatii keessan keessaa mana fincaaniittii kan hin fayyadamnee ni jiraa?	a. Eeyyee b. Mitii c. Deebisaa hin keeninee	Mitii yoo ta'ee gara gaafii 207tti darbii

205	Eeyyee yoo ta'ee, Maatii keessan keessaa mana fincaanittii ittii hin fayyadamnee enyuu? – Deebisaan tokko ol ni eyyamama	a. Daa'iman (Waggaa Shanii gad) b. Dhiira c. Duubara d. Haadha garaa qabduu hin beekuu e. Nama dhukuubsatee g. kan biraa	
206	Mana fincaanii abbaa warraa biraa waliin fayyadamtuu?	a. Eeyyee b. Mitii	
207	Abbootii warraa meeqatuu mana fincaanii kana waliin fayyadamuu?	a. Tokko haanga sadii b. Sadii haanga ja'aa c. Ja'aa olii	
208	Waggoota meeqaaf mana fincaanii kana itii fayyadamtanii jirtuu?	a. Waggaa 1-3 b. Waggaa sadii olii c. Deebisaa hin keeninee	
209	Mitii yoo ta'ee maaliif mana fincaanii ittii fayyadamuu dhabdan?	a. Quulquulina dhabuu isaatiin (ilbisoota, folee badaa, etc) b. Manii fincaanii ni fagaata c. Dhooksa haanqata d. Kan biraa (adda baasii)	
Kutaa-III Haala mana fincaanii			
301	Mannii fincaanii qulquulina gahaa qabaa?-(ilaaluun mirkaneessii)	a, Qulquulu mitii (Sagaraan ykn fincaan iddoo taa'uumsaattii mul'atuu jiraachuu) b, qulqulina gahaa (Sagaraan ykn fincaan mul'atuu hin jiruu) C, Haala badaan qulquuna dhabuu	
302	Mannii fincaanii ijaarsa manaa gubbaa ni qabaa?	a. Eeyyee b. Mitii	

303	Mannii fincaanii balbala cuufamuu ni qabaa	a. Eeyyee b. Mitii	
304	Dheerinii mana fincaanii dhaabinii isaa meetiira 1.5 ni ta'aa?	a. Eeyyee b. Mitii	
305	Mannii fincaanii suphaa ni barbaadaa?	a. Eeyyee b. Mitii	
306	Mannii fincaanii qulquulinaan sagaraa namaa tuttuuqinsa namaa irraa ni dhorkaa?-(Ilaaluun mirkaneessii)	a. Eeyyee b. Mitii	
307	Mannii fincaanii mana jireenyaa fi kushnaa irraa meetiira 6 oli ni fagaataa?	a. Eeyyee b. Mitii c. Deebisaa hin keeninee	
308	Afaan boolla mana fincaanii qadaaddii ni qabaa?	a. Eeyyee b. Mitii	
309	Mana fincaanittii kan wal-qabatee haarka dhiqanaa ni jiraa?	a. Eeyyee b. Mitii	
310	Ittii fayyadama mana fincaaniif meshaan haarka dhiqanaa ni jiraa ?	a. Ni jiira b. Hin jiruu	
311	Mana fincaanii madittii bishaan haarka dhiqanaa iddoo haarka dhiqanaaf qophaa'ettii ni jiraa?	a. Ni jiira b. Hin jiruu	
Kutaa-III Goocha qulquulinaa			
401	Mana fincaanii keessan haala kamiin ijaaruu dandeessan?	a. Kaka'uumsa ofitiin b. Kaka'uumsa ofitiin c. Deegarsa mootuumaatiin d. Deegarsa NGO tiin	
402	Abbootiin warraa keessan mana fincaanii erga fayyadamee booda	a. Eeyyee b. Mitii	Mitii yoo ta'ee gara

	haarka isaa ni dhiqataa?	c. Deebisaa hin keeninee	gaafii 404tti darbii
403	Abbootiin warraa haarka dhiqachuuf Saamuunaa/Daaaraa ni fayyadamaa?	a. Eeyyee b. Mitii	
404	Mana fincaanii fayyadamuun faayidaa maalii qaba jattee huubata?- (caqasii irra hin arifatiin)	a.Faayidaa hin qabuu b. Ittisa dhukubaaf c. Dhoksaaf d. Kabaja maaluummaatiif e.waan mijaa'uuf	
405	Mana fincaanii keessan ni qulquuleesituu?	a. Eeyyee b. Miii c. Deebisaa hin laannee	Mitii yoo ta'ee gara gaafii 409tti darbii
406	Maatii keessan keessaa mana fincaanii qulquuleessuuf ittii gaafatamummaa kan qabuu enyuu?	a. Dhiira c. Duubartii	
407	Yeroo haamamiin mana fincaanii keessan qulquuleesituu?	a. Yeroo huunda b. Darbee darbee c. Yeroo muraasa	
408	Maatiin keessan daa'imman waggaa shanii gadii ni qabaa?	a. Eyyee b. Mitii	Mitii yoo ta'ee gara gaafii 412tti darbii
409	Ifiin fayyadamuu danda'uu jalqabuun duurattii sagaraan daa'imanii boollaa mana fincaanittii ni gatamaa?	a. Eeyyee b. Miii	
410	Waggaa meeqattii daa'imman waggaa shanii gadii ofii isaanitiin mana fincaanittii fayyadamuu egaluu?	a. Waggaa 3-5 b. Waggaa shanii fi isaa olii	
411	Maatii keessan keessaa ijooleen baruumsa sadarkaa tokkofaa ykn	a. Eeyyee b. Hin-jirtuu	

	Sadarkaa lamaffaa barachaa jirtuu ni jirtii?	c. Deebisaa hin keeninee	
412	Mana fincaanii kana akka ijaartaniif fi ittii fayyadamtan sababa guddaa kan isiini ta'ee maalii ?- (Srittii Qalbeefadhuu – hin ariifatiin)	a. Kaka'uumsii hin jiruu b. Baruumsa fayyaa argannee c. Ittisa dhukuubaatiif d. Dhibbaa olla/haawaasa irraa	

GALATOOMAA!!

8.5. Appendix E: Principal Investigator Curriculum Vitae

1.PERSONAL INFORMATION

Full name Misahun Shimelis Gizaw

Date of birth	19/05/1988 G.C
Sex	Male
Place of birth	Gelemso Town,West Harerghe zone, Oromia Regional State, Ethiopia
Marital status	Single
Nationality	Ethiopian

Address Badesa Town Administration

Phone no. +251-915-164-829,

E-mail=misahuns@gmail.com

2. EDUCATIONAL BACKGROUND

Primary School(1-6)	Biftu Gelemso Primary school
Elementary school(7-8)	Gelemso Number one Elementary School
High School	Gelemso Secondary and Preparatory School
Preparatory School	Gelemso Secondary and Preparatory School
University	Haramaya Univesity,2010 graduated in Environmental Health BSC degree
Haramaya University	MPH (GPH) on going

3. LANGUAGE SKILL

Language	Listening	Speaking	Reading	Writing	Remark
Amharic	✓	✓	✓	✓	Mother tongue
English	✓	✓	✓	✓	Excellent
Afan Oromo	✓	✓	✓	✓	Excellent

4. WORK EXPERIENCE…….seven years
5. HOBBIES……..serving responsibly
6. COMPUTER SKILL….. Excellent in basic computer skills and in some applications like SPSS, Epi-info and Epi-data
7. REFERENCES

Tesfaye Gobena (PHD, Associate professor):+251-911-937-043-: Haramaya University

Negga Baraki (MPH, Assistant professor): +251-912-479-752-: Haramaya University