



**LATRINE UTILIZATION AND ASSOCIATED FACTORS IN THE  
RURAL COMMUNITY OF JARDEGA JARTE DISTRICT, OROMIA  
REGIONAL STATE, NORTH-WEST ETHIOPIA**

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**JIMMA, ETHIOPIA**

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## **ABSTRACT**

**Background:** Ensuring adequate sanitation is one of Millennium Development Goals that Ethiopia shares with other countries. Poor sanitary facilities and hygiene practices are highly associated with huge burden of communicable diseases. The most affected are the populations in the rural and peri-urban communities of developing countries. Studies have shown that proper latrine utilization coverage has to reach 90% of population to have an impact on health: however, latrine utilization and associated factors of the rural community of the district is not well assessed.

**Objective:** To assess the level latrine utilization and associated factors of the rural community of Jardega Jarte District, Horo Guduru Wollega Zone, Oromia Regional State, North west Ethiopia.

**Methods:** A community based cross sectional study using quantitative data collection method by using structured questionnaire was conducted. A total of **403** households were surveyed for their latrine utilization and associated factors. Simple Random Sampling using lottery method was used to select kebeles. The sample was then allocated to the selected six kebeles using population proportional to size (PPS) based on the number of households with latrine facility in the selected kebeles. The study households were selected by simple random sampling technique using Computer generated method from the sampling frame. Data was entered, cleaned and analyzed by SPSS version 16. Bivariate analysis was conducted to see whether there was association between dependent and independent variable. Those variables with  $p < 0.25$  in the bivariate analysis were included in to multivariate analysis for identifying the independent factors that influence latrine utilization. In the final model  $p < 0.05$  was considered statistically significant.

**Result:** From the total of 403 households surveyed 156(38.7%) had satisfactory latrine utilization. Ninety five (23.6%) of them have hand washing facility. Educational status of the head of households who can Read & Write, Annual income of households >13000 Ethiopian birr, presence of hand washing facility near the latrine and frequent supportive supervision households by Health Extension Workers had significant association with latrine utilization with [AOR=2.87195% CI:(1.728,4.771)], [AOR=2.871, 95%CI (1.728, 4.771)], [AOR =11.400 95% CI (6.489, 20.029)] & [AOR= 1.804, 95 %CI (1.085, 2.999)] respectively.

**Conclusion and recommendation:** Latrine utilization was low even though there was improved latrine coverage. Thus, we recommend that the level of latrine utilization can be improved by improving predictors of latrine utilization like increasing the awareness level of the rural community on proper latrine utilization, making hand washing facility available near the latrine and frequent supportive supervision of households by Health Extension Workers.

**Key Words`:** Latrine utilization, factors associated with latrine utilization, rural community

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## ACRONYMS

CLTSH	Community Led Total Sanitation & Hygiene
DALYs	Disability Adjusted Life Year
EDHS	Ethiopian Demographic Health Survey
HEWs	Health Extension Workers
HHs	Households
HI	Health Institution
JMP	Joint Monitoring Program WHO/UNICEF
MDG	Millennium Development Goal
ODF	Open Defecation Free
PPS	Population Proportional to Size
SRS	Simple Random Sampling
UNICEF	United Nation International Children Emergency Fund
WHO	World Health Organization
WASH	Water Sanitation and Hygiene

# **CHAPTER ONE: INTRODUCTION**

## **1.1. BACKGROUND**

World Health Organization (WHO) defines sanitation as group of methods to collect human excreta and urine as well as community waste waters in a hygienic way, where human and community health is not altered. Sanitation is a system to increase and maintain healthy life and environment. Typically health and hygiene education is connected to sanitation in order to make people recognize where health problems originate and how to improve sanitation by their own actions. Essential part of sanitation is building and maintenance, education on sewerage systems, wash up and toilet facilities [1].

Globally around 2.5 billion do not have access to any type of improved sanitation facility. About 2 million people die every year due to diarrheal disease ,most of them are children under five years age. The most affected are the populations in the developing countries, living in extreme conditions of poverty, normally peri-urban dwellers or rural inhabitants. Among the main problems which are responsible for these situations are lack of priority given to the sector, financial resources, and sustainability of water supply and sanitation services, poor hygiene behaviors, and inadequate sanitation in public service places including Hospitals, health centers and schools [2].

Though it is unlikely that the world will meet the MDG sanitation target by 2015, encouraging progress is being made. Many sub-Saharan African and southern Asian countries are off track in meeting the MDG sanitation target. Globally 15% (1.1 billion) of population still practice open defecation. It is estimated that 25% and 41% of the population in sub-Saharan African and Southern Asian countries still practice open defecation respectively. The majority of those practicing open defecation (946 million) people live in rural areas of the developing world. Nearly 60% of open defecation is practiced in India, and Ethiopia is also among top 10 countries which open defecation is practiced by a majority of rural population with 38 million people practicing open defecation [4].

Ensuring adequate sanitation is one of Millennium Development Goals that Ethiopia shares with other countries. Only eight percent (8%) of households in Ethiopia use improved toilet facilities that are not shared with other households, 14 % in urban areas and 7 % in rural areas. One in ten households (32 % in urban areas and 3 % in rural areas) use shared toilet facilities. The large majority of households, 82 percent, use non improved toilet facilities (91 percent in rural areas and 54 percent in urban areas.) The most common type of non-improved toilet facility is an open pit latrine without slabs, used by 45 % of households in rural areas and 37 % of households in urban areas. Overall, 38 % of households have no toilet facility, 16% in urban areas and 45 % in rural areas [3].

Adequate sanitation is the foundation of development, but a decent toilet or latrine is an unknown luxury to half of the people on earth. The percentage of those with access to hygienic sanitation facilities has declined slightly over the 1990s, as construction has fallen behind population growth. The main result can be summed up in one deadly world; diarrhea. It kills 2.2 million a year and consumes precious funds in health care costs, preventing families and nations from climbing the ladder of development [5].

The main reasons for high prevalence of parasitic disease in developing countries are poor living standards, deficiency of sanitary facilities, unsafe human waste disposal systems, inadequacy and lack of safe water supply, and low socioeconomic status in general. Intestinal parasites are amongst the most common parasitic infections in the world, being responsible for morbidity and mortality. According to WHO estimates about 200-500 million peoples of sub-Saharan African populations are infected at least with one or more species of nematodes. Similar situations are observed in Ethiopia due to low level of living standards, poor environmental sanitation, and ignorance of simple health promoting factors [6].

Improved sanitation attributes to 36% reduction in risk of diarrhea while hand washing with soap reduces the risk of diarrhea by 48%. In addition, good hygiene practice improves the overall health through reduced rates of pneumonia, scabies, skin and eye infections and influenza [7].

## **1.2 STATEMENT OF THE PROBLEM**

Around the world, poor sanitation remains a major threat to development, impacting countries' progress in health, education, gender equity, and social and economic development. The construction of latrine is relatively simple technology that may be used to control the spread of infectious diseases. Studies have shown that latrine coverage has to reach 90% of population to have an impact on health. However, 2.5 billion people, 40% of total world population, lack improved sanitation worldwide, 1.2 billion, of the world's population, this is the case for nearly 1 in 3 people in rural areas, practice open defecation and 80% of these people live in rural areas [8].

WHO and UNICEF reports that, 1.2 billion almost a fifth of people of the world are defecating in open field. Eighty one percent of 1.2 billion people that defecate in the open field worldwide live in 10 countries. According to this report Ethiopia had 38 million people practicing open defecation. This study showed in Ethiopia even though there is improvement when compared with that of 1990 still 8% of urban and 71% of rural area practice open defecation [9].

In Ethiopia lack of reliable data is one of the main challenges facing the sector. There is great variation between official Government of Ethiopia figures and internationally accepted Joint Monitoring Program (JMP) figures compiled by the WHO and UNICEF. Official government reports show access to water supply at 91.5% for urban and 65.8% for rural. Access to sanitation facilities is reported to be 60%. According to these figures, Ethiopia has already achieved its MDG targets. However, the lack of reliable figures results in uncertainty on the achievement of the MDG targets for improved water and sanitation access 70 and 56% respectively [10].

A recent quarter report of the District health office showed latrine coverage is 75%, but intestinal parasitosis stands the third among the top ten diseases (449 out of 11,580 total patients) seen in the district. So far no study was conducted in Jardega Jarte District regarding latrine utilization and associated factors. Therefore, this study was intended to assess the extent of latrine utilization and its associated factors in the rural community of the district [33].

## CHAPTER 2: LITERATURE REVIEW

**2.1. Latrine utilization:** Religious laws such as Moses law, writings in the old and new testaments and laws in the Koran played a major role in the lives of ancient peoples. These laws mainly concentrated on the provision of personal hygiene. Dead bodies and contaminated surfaces were known to be unclean or unhygienic to touch. The importance of burying of human feces and body cleanliness before praying was strongly indicated for maintaining the integrity hygiene with religious practice [11]. An ancient Hindu scripture such as Vishnupuran says that defecation ought to be done at least at a distance of 150 feet from source of water and urination at a distance 15 feet [12].

Human excreta (mainly solid excrement) contain pathogens; many diseases can spread through excreta if treatment has not been handled adequately and safely. Adequate excrete handling methods (collection, storing, and treatment procedures) enhance human health. Therefore sanitation programs can be of great importance providing good human health [12]. One gram of feces contains about 100 million E.coli, 10-100 million fecal streptococci and 1-2 millions spores of clostridium perfringes [13].

Using properly constructed latrine and burying excreta in proper pit helps to avoid direct human contact with feces ,avoid pollutions of soil, water, air, animals and vegetables by human excreta, helps to prevent contact of flies, rodents ,and other insects with feces and avoids foul odors from the environment [14].

Although there are regional variations, it was thought that some kind of latrine access ranges between 9% in rural areas to 72% in urban ,this gives the national coverage of 18% mainly traditional latrines made from locally available materials as World Bank report 2003 [15].

The national strategy for improved hygiene and sanitation has been developed to complement the existing health policy (developed by ministry of health) and the national water sector strategy (developed by Ministry of water resource) in placing greater emphasis on “on site “hygiene and sanitation. The primary focus is on blocking feces from entering the living environment through the safe management of feces, hand washing at critical times and the safe water chains from source to mouth [16].

**2.2. Magnitude of latrine utilization related problems:** Lack of sanitation is a critical determinant in the contamination of drinking water by microbes. Fecal pollution of drinking water can lead to a number of diseases including Cholera, Typhoid fever and paratyphoid fever, Salmonellosis, Shigellosis, Giardiasis, Hepatitis and Poliomyelitis. Of particular concern is the evidence that the burden of disease associated with the lack of sanitation services falls disproportionately on children [17].

A high incidence of enteric diseases associated with poor sanitation is characteristic of the disease picture in many developing countries of the world. The best ways of combating these diseases from a cost-benefit and cost-effectiveness point of view are: the provision of safe drinking water, the practice of food hygiene and the sanitary disposal of excreta [18].

Diarrheal disease is one of the leading causes of mortality, responsible for the deaths of an estimated 1.8 million under 5 years of age worldwide. Diarrhea accounts for 18% of child death in low-income countries. Rota virus, the most common cause of severe diarrhea in children under 5 years, causes 25%-50% of severe diarrhea cases worldwide and nearly 90% of Rota virus related deaths occur in developing countries and spread primarily by the fecal-oral route directly from person to person or indirectly through contaminated fomites [19].

Poor excreta disposal practices are responsible for a significant proportion of the world's infectious disease burden. Sanitation facilities interrupt the transmission of fecal-oral disease at its most important source by preventing human fecal contaminations of water and soil. Over 50 infections can be transferred from a diseased person to a healthy one by various direct or indirect routes involving excreta [20].

It is reported that up to 60% of the current disease burden in Ethiopia is attributable to poor sanitation where 15% of total deaths are from diarrhea, mainly among the large population of children under five. Some 250,000 children die each year. On top of diarrhea, there is a high prevalence of worm infestations (causing Anemia) which has a synergistic effect on the high levels of malnutrition. This in turn, impacts on school attendance and level of education attendance [21].

## **2.3. Factors affecting latrine utilization:**

**2.3.1. Socio-demographic and economic factors:** socio-demographic and economic factors affect latrine utilization in different ways. As study conducted in developing countries indicated, there are several reasons for non-adoption of latrines. The most common are related to poverty, socio-cultural issues, and technical difficulties. The most commonly identified reason for the lack of a household toilet was the high cost, followed by ‘use public latrines’, ‘lack of space’, and ‘difficult to operate and maintain’[22].

Another study conducted on factors affecting the utilization of improved ventilated latrines among communities in Mtwara Rural District, Tanzania found that at least half of the households (50.5%) owned an improved latrine and less than half (40.0%) of the households members used the facility. Those male headed and with better income households utilize latrine more [23].

**2.3.2. Latrine condition:** the condition of the latrine can also affect utilization of latrine in different ways. Study conducted on Latrine use among rural households in northern Ethiopian Hawuzien district, Tigray showed that out of the interviewed 422 households having latrines, more than half of the respondents (54.5%) did not use them at all; only 37.4% reported their consistent use and 8.1% used them occasionally. The rest of the households cited cultural beliefs (44%), foul smell (22.6%) and inconvenience of use (17.8%) as the major reasons 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 [24].

Another study done on assessment of sanitation facilities in primary schools within Ilorin, Nigeria showed in terms of usage of sanitation facilities, 26.5% of the schools effectively use the toilets and urinals as they are either culturally acceptable to pupils, or there was no security or privacy risk. In forty-five schools (22.5%), pupils seldom use the facilities because of potential security or privacy risks while pupils in seventy-seven schools (38.5%) do not use the facilities at all. Pupils from sixty-one public schools and sixteen private schools fall into this category. The high figure may be attributable to long walking distance to sanitation facilities, security risk, little or no privacy, cultural unacceptability or because the facilities are in a state of disrepair [25].

Another study in Jimma Zone South West Ethiopia showed 10.2% of households dispose excreta on the open field while the remaining majority use pit latrine with or without shading. This is quite an encouraging finding in the light of the national proportion of households without latrine facility is much higher than this finding. Similarly, 13.2% and 10.4% of the households reported that their members do not practice hand washing with soap after using the latrine and before main meals, respectively, while the remaining majorities do so [26].

**2.3.3. Environmental factors:** Environmental factors can affect latrine utilization in different ways. A cross sectional study on usage of sanitary latrines in a village in district Pune of Maharashtra, India was performed. In this survey, in spite of presence of community latrines, 67% of the population resorted to open air defecation in the study. Inadequate water supply was one of the major reasons for this under utilization (48.6%) of community latrines [27].

Another study on Assessment of the extent of implementation and affecting factors of environmental health extension packages at house hold level in Damboya Woreda, SNNPS, showed majority, 573 (93.8%) households had latrine facility. The rest 38 (6.2%) households did not have their own and use toilets, out of this 15 (39.5%) of them used open field to defecate. The reasons given for unavailability of their own toilets were nature of loose soil formation, termites and low income of the respondents [28].

A study conducted on Sanitation behavior among schoolchildren in a Multi-ethnic area of Northern rural Vietnam showed all surveyed schools had student latrines. However, the observed schoolchildren most commonly urinated and defecated in the open. Main barriers for latrine use included inadequate number of latrines, limited accessibility to latrines, lack of constant water supply in latrines and lack of latrine maintenance by school management. Programs promoting latrine use for children were not conducted in either schools or communities and were not established as a preferred social norm in such settings [29].



**2.3.4. Individual factors:** Individual factors like awareness & information about latrine use can affect latrine utilization in different ways. Studies conducted on impact of latrine utilization on diarrheal disease in rural community of Hullet Ejju Ennessie woreda, and latrine coverage and associated factors among rural communities of Bahir Dar Zuria; North West Ethiopia showed 61% and 62% of households with traditional pit latrine had reported latrine utilization respectively. Among the reasons given by the respondents, staying out for work, 10 (7.3%), was the second reason for not using the latrines next to latrines were not functional, 110 (80.3%). Frequent visits and the promotional activities of households by health extension workers were the major factors that favor latrine utilization in both studies [30, 31].

A study conducted on Impact of Indian Total Sanitation Campaign on Latrine Coverage and Use showed households with latrines, 37% of householders were reported to always practice open defecation. Another 5% reported always defecating in the compound; these were mainly young children. The remaining individuals were reported to either use the latrine “sometimes” or “usually” (usually was defined as more often than not). The most common reasons why latrines were not in use was that individuals within households preferred open defecation (29%), the latrine was not complete (28%) or using a latrine was deemed inconvenient (20%). Other reasons for non-use were that the latrines lacked privacy (23%), were used for storage (22%), were broken (17%) or blocked (9%). Only one household ascribed nonuse to water being too distant and only 4% of households reported that it was too difficult to empty the pit [32].

**Hand hygiene:** Hand hygiene, defined as the act of washing one’s hand with soap and water has been recognized for more than 150 years as a single most effective and cost effective means of preventing illness in the community that may lead to hospitalization. Despite this, many studies have documented that compliance with hand hygiene recommendations in the health care setting is consistently less than 50%. Intensive education programs have been associated with modest improvements in hand hygiene and dramatic reductions in rates of hospital acquired infections [35]. Ensuring access to clean water and basic sanitation services is the first step in eliminating poverty. Global drinking water related problems show nearly 1.2 billion people around the world do not have clean drinking water, 3.4 million affected by disease annually ( 5.8 % of global disease ), 8.4 % of global burden of disability (DALYS 2004), 88 % death due to un safe WASH [34].

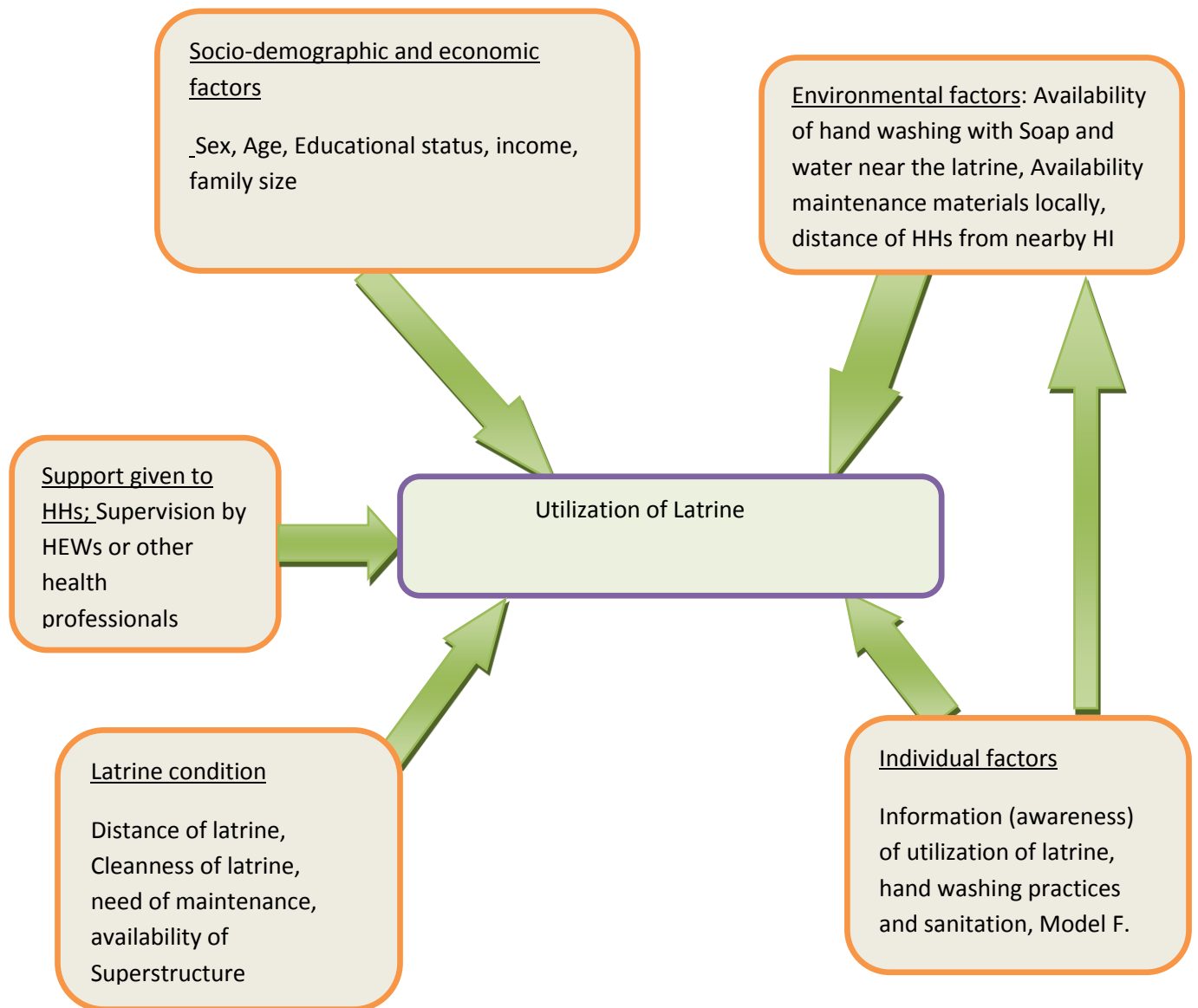
Although there are robust studies about the frequency of hand washing in Ethiopia, it is generally held that hand washing after defecation is low, but higher before and after eating (to remove grease) . Among Muslims particularly the more strict, hand and body washing is widely practiced. Where rigorous hygiene education has been applied as reported by Water Aid hand washing frequency after contact with feces is reported to be regularly practiced by women .An ethnographic study by CARE revealed that only 5 percent of water collected is allocated for hand washing [36].

Study conducted by Global Public Private partnership For Hand washing (PPPHW) which included several Sub-Sahara African countries including Kenya, Senegal, Tanzania and Uganda reported that 17% of participants washed their hand with soap and water after using toilets, while 45% used only water [37].

Another study conducted on hand washing practices among school children in Bogota, Colombia in 2009 showed only 33.6% of the sample reported always or very often washing their hands with soap and water before eating and after using toilet. About 7% of students reported regular access to soap and clean water at school. Scarcity of adequate hand washing facilities in most schools in Bogota prevents children from adopting proper hygiene behavior [38].

As study conducted on hygiene behavior and health attitudes in African countries showed Overall, suboptimal hygiene behavior (hand washing before meals: 62.2%, after toileting: 58.4% and washing their hands with soap: 35.0%) was reported. Hand washing after toileting was found less frequent in this study than hand washing before meals. Additionally, hand washing with soap among this African adolescent population was higher (35%) than hand washing with soap after toilet among mothers or caregivers in Senegal, Tanzania and Uganda (13–23 %) [39].

## 2.4. Conceptual frame work



**Fig. 1 Conceptual frame work developed for latrine utilization and associated factors in the rural community of Jardega Jarte District, North-west Ethiopia, May 2014. (Adopted from Anteneh A. and Kumie A., (2010).**

## **2.5. Significance of the study:**

The significance of hygiene and environmental health is recognized in United Nation Millennium Development Goals (MDGs). One of the MDG targets is to halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation. Recent reports suggest that good progress has been made towards reaching the target, but there is still a long way to go.

Construction of latrine facilities were widely started in all parts of Ethiopia particularly by giving due attention to rural community since the start of health extension program by the Ministry of Health because improving sanitation facilities are one of the main components of health extension program. Health extension workers assigned for each Kebeles are teaching the community on disease prevention methods like latrine construction and utilization; but helminthiasis and diarrheal diseases are among top ten diseases among outpatient visit of the district. Access to a latrine must be accompanied by proper utilization and availability of hand washing facilities after use to reduce the morbidity of communicable diseases, particularly those transmitted by the fecal oral route.

Though there is no study conducted on Latrine utilization and associated factors in the District; recent quarter reports showed latrine coverage of the District is about 75%. The level of handling and utilization status of existing latrines is not known. The Findings and Recommendations of the study might be used as an input for health managers and decision makers at different levels to take appropriate measures on latrine utilization and associated factors in the rural community.

## **CHAPTER THREE: OBJECTIVES**

### **3.1: General objective**

- ❖ To assess the level of utilization of latrine and associated factors in the rural community of Jardega Jarte District, Horo Guduru Wollega Zone, North-west Ethiopia

### **3.2: Specific Objectives**

- To assess the level of latrine utilization of the rural community in the District
- To identify factors associated with latrine utilization of the rural community in the District

## **CHAPTER FOUR: METHODS**

### **4.1. Study area & period**

The study was conducted in Jardega Jarte district, which is one of the ten districts in Horo Guduru Wollega Zone, Oromia Regional State, North West Ethiopia in April to May, 2014. Jardega Jarte district is located at 370 kilo meters away from Addis Ababa and 56 kilometers away from the Zonal town, Shambu in the North-West direction. The district has a total population of 59,493 and the total number of households is 12,394. The number of rural households with latrine facility is estimated to be 8169 (75% of rural households). The District has five Public Health Centers and twenty one Health posts with two health extension workers for each Health post. The district also has one technical and vocational school, one preparatory school, four high schools and 31 primary schools. According to the district health office Annual Report of 2012/2013 shows, Diarrheal disease stands the second (468 out of 2014 total patients) and Helminthiasis is the third (449 out of 11,580 total patients) of top ten diseases among Pediatric and Adult outpatient departments respectively.

The District also has 24 kebeles (3 urban and 21 rural kebeles) with the climatic condition of 74% weinadega, 20 % kola and 6% Dega. Pure water supply coverage of the district is about 60%.

**4.2. Study Design:** A community based cross sectional study design was used.

### **4.3. Population**

**4.3.1. Source population:** The source population of this study was all households with latrine facility in rural kebeles of Jardega Jarte district.

**4. 3.2. Study population:** The study population was all selected households with latrine facility in rural kebeles of Jardega Jarte district.

**Study participants:** All heads/spouse of heads of households with latrine facility in selected households.

**4.3.3. Inclusion criteria:** All households in the rural kebeles used for residence with latrine facility and selected by sampling technique.

### **4.3.4. Exclusion criteria:**

Households not used for residence at the time of data collection

Newly built houses used for residence for less than six months

#### 4.4. Sample size and sampling procedure

**4.4.1. Sample size determination;** sample size (n) was determined using single population proportion formula with the assumption of 95% of confidence interval, 5% margin of error, proportion of households utilizing latrine (p = 61%) [30] and 10% non-response. This gives the total sample size of **403** households to be included into the study.

P = Population proportion of households which utilize latrine estimated to be 61% [30].

q = (1-p) = which is 0.39

Z = the standard normal deviate (Z = 1.96) at 95% confidence limit

d = 5% degree of precision, 95% confidence interval

n = the required sample size

Assuming a non-response rate of 10%, the minimum sample size required for the study became **403 households**

$$n = (z \alpha/2)^2 p (1-p)/d^2 = (1.96)^2 \times (0.61) (0.39) / (0.05)^2 = 366$$

**366+10%non- response rate (37) = 403 households** was the final sample size.

**4.4.2. Sampling technique:** The district has 21 rural kebeles. Simple random sampling using lottery method was used to select study kebeles. Six kebeles were selected for study. After the study kebeles were identified, a proportional sample was allocated to the six selected kebeles using population proportional to size based on the number of households with latrine facility in the selected kebeles. The sampling frame for the study was all households with latrine facility from the existing lists of households from registration book of health extension workers in the selected kebeles of the district. The study households were selected by simple random sampling technique using Computer generated method from the sampling frame in the selected kebeles.

#### 4.4.3. Schematic presentation of sampling procedure

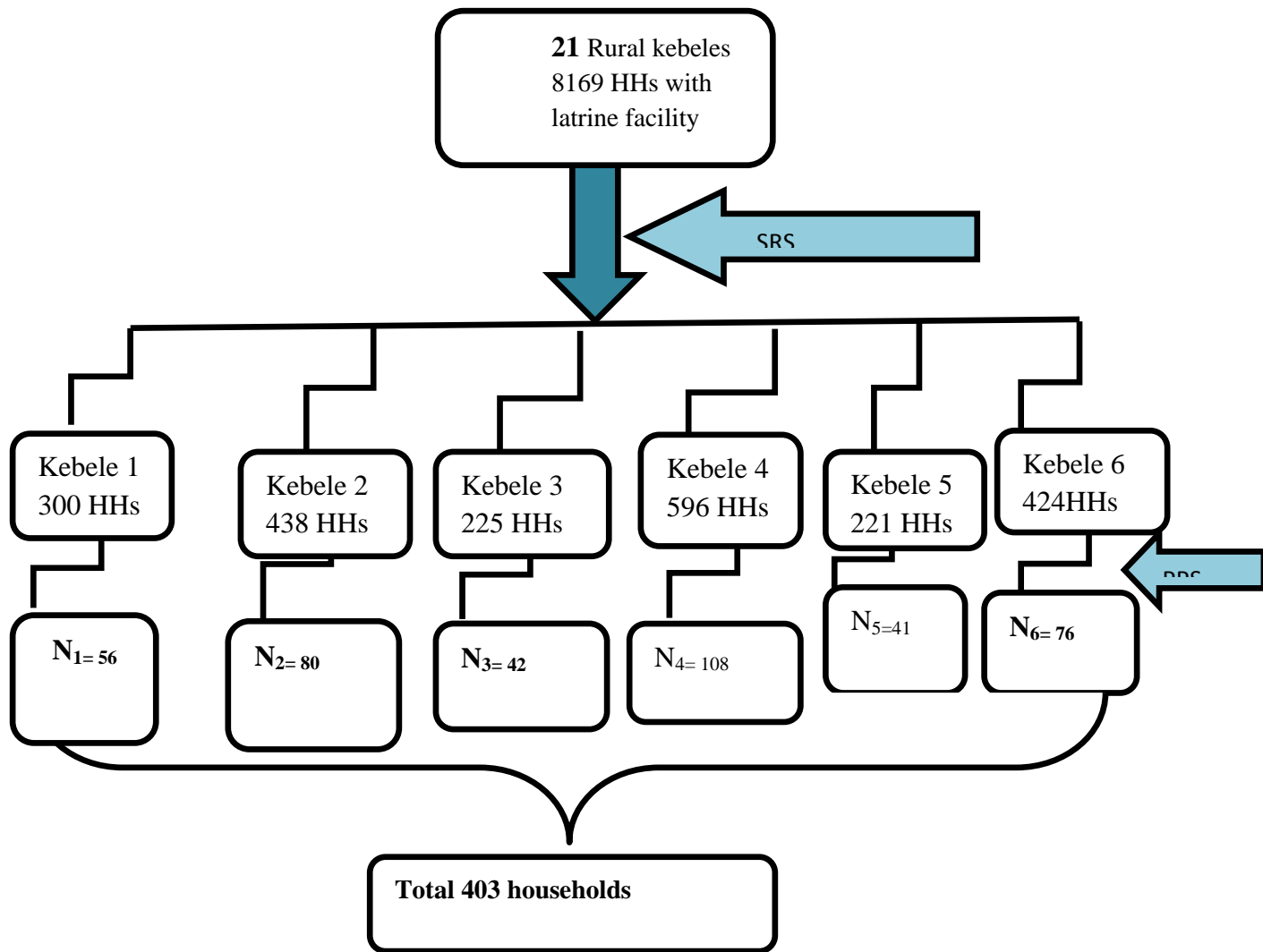


Fig. 2 Schematic presentation of sampling procedure for latrine utilization and associated factors in the rural community of Jardega Jarte District, Horo Guduru Wollega zone North West Ethiopia May, 2014.



## 4.5 Study variables

### ❖ **Dependent Variable**

Latrine utilization

### ❖ **Independent Variables**

- **Socio demographic characteristic:** age, sex, annual income, occupation, educational status, household wealth, family size,
- **Environmental factors:** Availability of hand washing facility with soap and water
  - Availability of maintenance materials locally
- **Latrine condition:** Availability of sub/superstructures of the latrine
  - Distance of latrine from home and cleanness of the latrine
  - Status of latrine (need of maintenance)
- **Individual factors:** Access to information/awareness about the importance of latrine & hand washing
- **Support given to HHs:** Supervision by HEWs or other health professionals

**4.6 Data collection process:** Data was collected using structured questionnaire by data collectors. The questionnaire was prepared in English by the principal investigator. It was then translated into local language (Afaan Oromo) by an expert who is fluent in both languages and back translated to English by another expert to check consistency. The data was collected by interviewing from the head of the household or in the absence of head, spouse of the head. Data collectors also observed the compound for proper latrine utilization using observation check list. Income of the HHs was estimated by calculating the total harvested grains and other sources of incomes of the year by the costs of the current market in the area for each HHs. The questionnaire was pretested on 5% of the sample size in one of the kebeles not included in the main study. And the questionnaire was modified based on the pretest findings before the actual data collection. Six data collectors who were grade 10<sup>th</sup>/12<sup>th</sup> completed from each kebele and three supervisors who were Diploma Nurses were recruited from the study area. Data collectors and supervisors were trained for two days by principal investigator before data collection.

**4.7 Data processing and analysis:** Data was entered and analyzed by SPSS for window version 16. Data were edited, coded, entered and cleaned for analysis. The result was summarized by Percentages, graphs, and tables. . Bivariate analysis was conducted to assess whether there is association between the dependent and independent variables. Variables with  $p < 0.25$  in bivariate analysis were included in to the final logistic regression model to determine that factors that independently influence latrine utilization and  $p < 0.05$  was considered statistically significant.

**4.8 Data quality Assurance:** In order to ensure quality, the questionnaire was developed in English and was translated to Afan Oromo and then translated back to English to ensure consistency. Training was given for data collectors and supervisors for two days. Observation check list was also prepared to observe households for their latrine utilization by data collectors. The questionnaire was pretested and checked for its consistency and clarity. Instruction manual that explains the questionnaire was developed and given to supervisors to check the data daily, the supervisors were oriented on how to solve problems. The principal investigator was also communicating with supervisors daily and checked the completeness and consistency of the data collected.

**4.9 Ethical considerations:** Ethical approval was obtained from Ethical Review committee of College of Public Health and Medical Sciences, Jimma University. Permission of the District administrative office and health office was sought before starting data collection. Informed verbal consent was obtained from the respondents. The purpose of the study was also explained to household heads before interviewing. The participants were asked to give correct information honestly and they were also told that participating in the study would be by their free will and that they have the right to withdraw from participating at any time.

**4.10. Plan for dissemination of findings:** The result will be presented to Jimma University, College of Public Health and Medical Sciences .The findings will also be communicated to the stakeholders at different levels, like the Zonal health department, District Health office, District Administration office, and Kebeles administration. Efforts will be made to publish it in peer reviewed scientific journal.

## **Operational Definitions**

**Functional latrine** –in this study is to mean latrine that provides services at the time of data collection even if the latrine is required maintenance.

**Hand washing at critical times:** is washing of one’s hand using soap /substitute before eating, after using toilet, before handling food, after cleaning child’s bottom and before breast feeding /feeding a child.

**Hygiene and sanitation:** is the process where people demand, develop and sustain a hygienic and healthy environment for themselves by erecting barriers to prevent the transmission of diseases, primarily from fecal contamination.

**Improved Latrine coverage:** in this study is that households have access to a sealed, used, not shared, maintained latrine and if the facility used by the household separates the waste from human contact.

**Unimproved Latrine facilities:** in this study are latrines constructed of local materials and designs, may lack privacy, structural integrity, and proper coverage of pits. They are largely unsafe, short-lived, and unsustainable.

**Kebele:** The lowest administrative unit.

**Satisfactory latrine utilization:** in this study is based on the respondents answer and evidences like no observable feces in the compound, observable fresh feces through the squat hole, the foot-path to the latrine is uncovered with grasses/has been walked on and wash their hands after latrine use.

**Unsatisfactory latrine utilization:** households utilize latrine but not met criteria of satisfactory latrine utilization.

## **CHAPTER: 5 RESULT**

### **Socio- demographic and economic characteristics**

A total of 403 participants with latrine facility, with response rate of 100%, were involved in the study. Two hundred sixty seven (66.3%) respondents were male. The mean age of the respondents was 43.78 with SD +/- 13.56 years. Regarding marital status, 89.3% were married and 89% of households were headed by males. Three hundred thirty eight (83.9%) households had a family size of  $\geq 5$  persons and 65(16.1%) had family size  $< 5$  persons.

Regarding the religion of the respondents, two dominant religions were Orthodox Christian 52% and Protestants 44%. The majority of respondents 387(96%) were Oromo and the rest 16 (4%) were Amhara. One hundred sixty three (40.7%) Heads of households were grade 1 - 8, and 46.2% of spouse of head of households were illiterate. The majority (92.8%) of the respondents were farmers and the rest 2.0%, 3.0%, 1.7% and 0.5% were merchants, housewives, government employee, and daily laborers respectively. Among the households who have school age children; in 343(91.0) households all school age children were attending school, while from 5(1.3%) households no children were attending school. The average annual income of the households was 13000.00ETB with the minimum 1000.00 ETB and maximum 80000ETB. (Table 1)

**Table 1. Sociodemographic characteristics of the study participants of Jardega Jarte District rural community May, 2014**

<b>Variables</b>	<b>Frequency</b>	<b>Percent</b>
<b>Sex of respondents</b>		
Male	267	66.3
Female	136	33.7
<b>Sex of head of HH</b>		
Male	360	89.3
Female	43	10.7
<b>Age (mean)</b>		
<=43yrs	209	51.9
>43yrs	194	48.1
<b>Marital status</b>		
Married	360	89.3
Divorced	13	3.2
Widowed	30	7.4
<b>Family size</b>		
< 5	65	16.1
>= 5	338	83.9
<b>Yearly Income</b>		
<=13000	251	62.3
>13000	152	37.7
<b>Religion</b>		
Orthodox	177	43.9
Protestants	210	52.1
Muslim	9	2.2
Wakefata	7	1.7
<b>Ethnicity</b>		
Oromo	387	96
Amhara	16	4
<b>Educational status of head's of HH</b>		
Illiterate	103	25.6
Read& Write	52	12.9
Grade 1-8	164	40.7
Grade 9-12	69	17.1
Diploma and above	15	3.7
<b>Occupation respondents</b>		
Farmer	374	92.8
Merchant	10	2.5
House wife	12	3
Gov't employee	7	1.7

### **Housing condition:**

Almost all (98.0%) of houses are covered with corrugated iron sheets with dung/earthen floor and only 8(2.0%) of the houses are with thatched roof. All corrugated iron sheet covered houses have separate kitchen while thatched roof have not.

From the total households surveyed, 184(45.7%) share living quarter of households with at least one domestic animals. The majority 367 (91.1%) of households have Radio, Television or telephone (commonly mobile phone). (Table 2)

**Table 2 Housing condition of the rural community of Jardega Jarte district, May, 2014 (n=403)**

<b>Variable</b>	<b>Frequency</b>	<b>Percent</b>
<b>House type</b>		
Corrugated iron sheet	395	98.0
Thatched roof	8	2.0
<b>Floor type</b>		
Cemented	5	1.2
Dung/earthen	398	98.8
<b>Separate kitchen</b>		
<b>Yes</b>	395	98.0
<b>No</b>	8	2.0
<b>Domestic animals in the house</b>		
Yes	184	45.7
No	219	54.3

## Condition of the latrine

Almost all latrines (99.8%) were found in the compound. Three hundred eighty three (95%) of the latrine were traditional pit latrines and 98% of the latrines were privately owned while 2% were shared with their neighbors.

Two hundred forty (59.6%) of latrines had superstructures. Majority (77%) of latrines were constructed since five years back and the rest 23% were constructed before five years back with the mean(SD) of 4.41( +/-3.013)years. Hygienic condition of the latrines revealed 67.2% was clean and 69.2% of respondents reported as they clean their latrine regularly.

From the total latrines 69.2% needed maintenance. Those latrines needed maintenance of superstructure, roof or slab were 68.2% and the rest 31.8% needed reconstruction. For those which needed maintenance or reconstruction, materials for maintenance or reconstruction were available locally. Concerning distance of the latrines from households <5meter 27(6.7%), 5-10meter 247(61.3%), 10-20meter 105(26.1%) and above 20meter is 24(6.0%).

Almost all respondents (99%) reported as using latrine has benefit while only 1% reported as if using latrine has some disadvantages like bad odor and attract flies. Among respondents who responded as latrine use had an advantage, 97% reported as using latrine had health benefits and improves cleanliness.

Among households with latrine facility only 95(23.6%) had hand washing facility. Seventy two (75.8%) of respondents with latrine facility had soap or ash for washing of their hands.

Hundred sixty six (41.2%) of latrines were sealed with mud and only 54(13.6%) had squat cover. Three hundred forty seven (86.1%) Of respondents self reported as if they consistently use the latrine and the rest 56(13.9%) not used consistently. The major reasons cited for not using their latrine were lack of awareness (37.2%), inconveniences to use like bad odor (31.9%), far from house (6%) and filled/damaged structures (6%).[Table 3]

**Table 3 Latrine condition in the rural community of the Jardega Jarte, May, 2014 (n=403)**

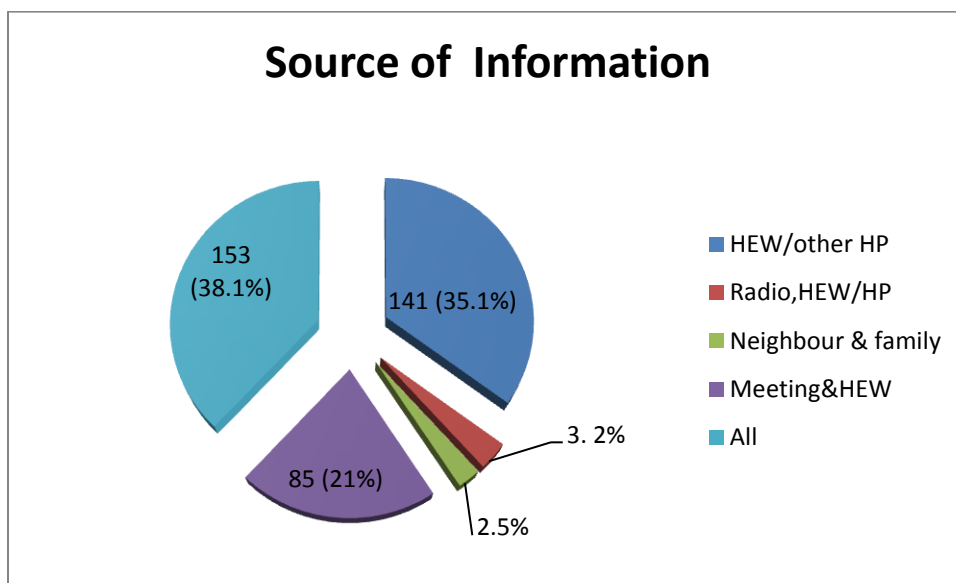
<b>variables</b>	<b>Frequency</b>	<b>Percent</b>
<b>Type of Latrine</b>		
Traditional pit	383	95.0
improved	402	5.0
<b>Years latrine constructed</b>		
<=5 yrs	310	76.9
>5yrs	93	23.1
<b>Distance of Latrine</b>		
<5 meter	27	6.7
5 to 10 meter	247	61.3
10 to 20 meter	105	26.1
> 20 meter	24	6.0
<b>Ownership of latrine</b>		
Private	395	98.0
Shared/communal	8	2.0
<b>Hand washing facility</b>		
No	308	76.4
Yes	95	23.6
<b>Latrine with superstructure</b>		
No	163	40.4
Yes	240	59.6
<b>Latrine sealed</b>		
No	237	58.8
Yes	166	41.2
<b>Squat cover</b>		
No	349	86.6
Yes	54	13.4
<b>Latrine Need maintenance</b>		
No	123	30.8
Yes	280	69.2
<b>Parts of maintenance( n=280)</b>		
Superstructure	100	35.7
Slab	11	3.9
Roof	80	28.6
All part	89	31.8



### Individual factors

Almost all respondents (98.8%) had information on importance of latrine from different sources. One hundred forty one (35.1%) got the information on use of latrine from Health Extension workers (HEWs) (fig 3).

Forty seven (11.7%) of respondents were graduated model families where as the majority 88.3% were not graduated model families. Three hundred forty seven (86.1%) of respondents reported that they had used their latrine consistently and 67.2% of respondents said the whole family used the latrine consistently while the rest (32.8%) reported only adults had used (table 4).



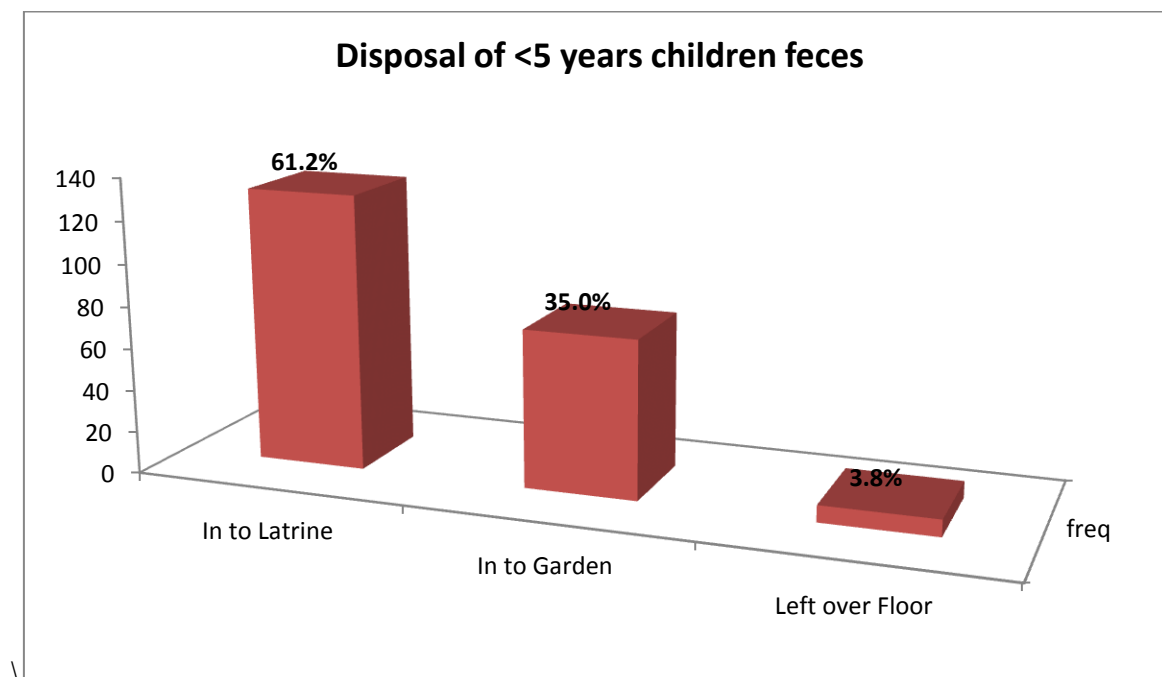
**Fig. 3 Source of information on importance of latrine use in the rural community of Jardega Jarte district, May, 2014.**

**Table 4 Individual information source and latrine use related variables in the rural community of Jardega Jarte district, May, 2014**

<b>Variables</b>	<b>Frequency</b>	<b>Percent</b>
<b>Use of latrine</b>		
Improves hygiene/cleanliness	13	3.2
Health benefits and cleanliness	390	96.8
<b>Had Information on latrine use</b>		
No	5	1.2
Yes	398	98.8
<b>Model family</b>		
No	356	88.3
Yes	47	11.7
<b>Who uses latrine</b>		
Whole family	271	67.2
Only adults	42	10.4
Adults and children >5yrs	78	19.4
<b>Frequency of latrine use by whole family</b>		
Always	347	86.1
Mostly	25	6.2
Rarely	19	4.7
Never at all	12	3.0
<b>Frequency of hand washing</b>		
All the time	167	41.4
Some times	152	37.7
Never at all	84	20.8
<b>Reason for not washing hand</b>		
I forgot	96	23.8
I don't think its importance	67	16.6
It is not my habit	52	12.9
<b>Critical times of hand washing</b>		
Before handling food, before and after feeding	259	64.3
Before feeding child	44	10.9
At all critical times	100	24.8
<b>Do you clean the latrine</b>		
no	124	30.8
yes	279	69.2
<b>Observed cleanliness</b>		
Clean	271	67.2
Not clean	132	32.8
<b>Frequency of HEW supervision</b>		
<= 1 month	154	38.2
>= 2months	249	61.8

### Disposal of child feces and hand washing at critical times

Among respondents 214(52.9%) had children under five years. Among these, 131(61.2%) dispose their under five years children feces into latrine and 63.4% of respondents knew the health effects of under five years children's feces.



**Fig. 4 disposal system of <5 years children feces in the rural community of Jardega Jarte district May, 2014**

Hand washing after latrine use was reported as always, sometimes and never by 41.4%, 37.7% and 20.8% of the respondents respectively. Concerning critical times of hand washing 259(63.3%) wash their hands before handling of food, before eating and after eating whereas only 24.8% wash their hands at all critical times of hand washing. The major reasons cited for their not washing their hands at critical times of hand washing were forgetting (44.7%), lack of awareness (31.2) and not having the habit (24.2%). (Table 4 above)

### Water sources and waste disposal pit

The majority of households (65.5%) got water from unprotected spring and over half walked 15-30 minutes to get water. House wives were largely responsible (53.1%) for fetching water from water source for households' consumption. Women and girls are much more likely to be the main water carriers for families.

Only a quarter (25.6%) of households had either of solid or liquid waste disposal pits. About half of the waste disposal pit is used only for solid wastes and 42.6% had separate waste disposal pits for liquid and solid wastes.

**Table 5 Water sources and waste disposal pit in the rural community of Jardega Jarte district, May, 2014.**

	Frequency	Percent (%)
<b>Source of drinking water</b>		
Piped water(public)	10	2.5
Spring (protected)	129	32.0
Spring (unprotected)	263	65.3
From well	1	.2
<b>Distance (walking hours) of water sources</b>		
<15 minutes	74	18.4
15-30 minutes	223	55.3
>30 minutes	106	26.3
<b>Responsible person to fetch water (commonly)</b>		
House wives	214	53.1
Daughters	104	25.8
Son and daughter	84	20.8
Other family members	1	0.2
<b>Waste disposal pit</b>		
No	300	74.4
Yes	103	25.6

More than half of households (65.5%) on average used water about 70 liters per day and the rest 34.5% used above 70 liters per day for all household consumption. This gives an average daily consumption of water per individual is >10 liters.

## **Latrine utilization and associated factors**

Three hundred forty seven (86.1%) of respondents reported as they consistently used their latrine, but satisfactory latrine utilization of the rural community of the district was found to be **156(38.7%)** from the total sample of 403 households based on the definition

Observation results revealed that, in 20% of households, there were observable faeces in the compound, in 7.2% of households, there was no observable faeces in the pit/squat hole of the latrine and the foot-paths to the latrines was covered with grasses.

During bivariate analysis, from socio-demographic and economic factors: educational status of households heads with Diploma & above [OR=15.81795% CI (3.363, 74.385)] and annual income of households [OR=1.789, 95%CI (1.185, 2.703)] had significant association with utilization of latrine. Environmental factors like having hand washing facility [OR= 11.400, 95% CI (6.489, 20.029)] and frequency of supportive supervision by health extension workers had significant association with utilization of latrine [OR= 2.152, 95% CI (1.423, 3.254)]. The extent of latrine utilization was more in the households' heads with educational status of diploma and above nearly 16 times than illiterate households' heads. However, the educational status of mothers was not found to be significantly associated with the extent of latrine utilization.

The extent of latrine utilization is more likely satisfactory among graduated model families [OR= 8.516, 95% CI (3.985, 18.198)] than their counter parts. Having squat cover has also significant association with latrine utilization with [OR= 3.817 95% CI 2.079, 7.006)] than latrines without squat cover. Households with latrine facility without sub/superstructures were less likely to utilize the latrine by 0.6 than with sub/superstructures [OR= .559 95% CI (.368, .851)]. Those households who had constructed their latrine before five years back more likely utilized the latrine than their counterparts with [AOR= 1.681, 95% CI(1.052, 2.685) ]. (Table 6)

**Table 6: Bivariate analysis of the extent of latrine utilization by different variables of the rural community of the district, May, 2014**

<b>Variables</b>	<b>Extent of latrine use</b>		<b>COR (95%CI)</b>
	<b>Satisfactory, f (%)</b>	<b>Unsatisfactory, f (%)</b>	
<b>Educational status of HHs</b>			
Illiterate	30(29.1%)	73(70.9%)	1
Read &write	16(30.8%)	36(69.2%)	1.081 (.523, 2.236)
1-8	66(40.2%)	98(59.8%)	1.639 (.967, 2.777)
9-12	31(44.9%)	38(55.1%)	1.985 (1.050, 3.753) *
Diploma & above	13 (86.7%)	2(13.3%)	15.817 (3.363, 74.385) *
<b>Annual income</b>			
<=13000	84(33.5%)	167(66.5%)	1
>13000	72(47.4%)	80(52.6%)	1.789 (1.185,2.703) *
<b>Information Sources (radio, TV.)</b>			
No	10(27.8%)	26(72.2%)	.582 (.273, 1.243)
Yes	146(39.8%)	221(60.2%)	1
<b>Type of latrine</b>			
Traditional pit	140 (36.6%)	243(63.4%)	1
Improved	16(80.0%)	4(20.0%)	.144 (.047, .439)
<b>Latrine with superstructure</b>			
No	50(30.7%)	113(69.3%)	.559(.368, .851)
Yes	106(44.2%)	134(55.8%)	1
<b>Year Latrine Constructed</b>			
<=5 yrs	111(35.8%)	199(64.2%)	1
>5 yrs	45(48.4%)	48(51.6%)	1.681 (1.052, 2.685) *
<b>Distance of latrine from HH</b>			
<5 meters	12(44.4%)	15(55.6%)	1
6-10 meters	88(35.6%)	159(64.4%)	.692 (.310, 1.544)
11-20 meters	50(47.6%)	55(52.4%)	1.136 (.486, 2.659)
>20 meters	6(25.0%)	18(75.0%)	.417 (.126, 1.378)
<b>Squat cover</b>			
No	120(34.4%)	229(65.6%)	1
Yes	36(66.7%)	18(33.3%)	3.817(2.079, 7.006) *
<b>Hand wash facility</b>			
No	80(26.0%)	228(74.0%)	1
Yes	76(80.0%)	19(20.0%)	11.400(6.489, 20.029) *
<b>Frequency of Visit by HEW</b>			
<=1month	77 (50.0%)	77(50.0%)	2.152(1.423,3.254) *
>=2months	79(31.7%)	170(68.3%)	1
<b>Model family</b>			
No	118(33.1%)	238(66.9%)	1
Yes	38(80.9%)	9(19.1%)	8.516(3.985, 18.198) *

(\*P<0.25)

All variables that had p. value  $< 0.25$  in the bivariate analysis were included in to multivariate analysis for forward logistic regression. P.value  $< 0.05$  was considered statistically significant. From total of 12 variables included into the logistic regression model four variables were found to be statistically significant at the level of  $P < 0.05$ . Accordingly: educational status of households heads, annual income of households  $> 13,000$ ETB per year, presence of hand washing facility and supportive supervision by Health Extension Workers (HEW) were statistically significantly associated with latrine utilization. Those households whose heads had educational level of diploma and above utilized the latrine 10.5 & Read and Write nearly 3 times more likely than those with illiterate heads [AOR =10.505, 95% CI (1.992,55.391)]&[ AOR= 2.871,95%CI (1.728, 4.771)] respectively. Households with annual income  $> 13,000$ ETB utilized nearly 3times than their counterparts [AOR=2.871 95% CI (1.728, 4.771)]. Similarly households with hand washing facilities near latrine facilities and frequently visited by HEWs utilized more than their counter parts [AOR=12.074 95% CI (6.526, 22.337)] & [AOR=1.804 95% CI: (1.085, 2.999)] respectively (Table 7).

Other variables that had significant associations in bivariate analysis like Type of latrine, Years since latrine construction, Distance of latrine from house, Having squat cover and being Model Family showed P-value  $> 0.05$  in multivariate analysis and excluded from final model.

**Table.7 Result of final model of multivariate Analysis of latrine utilization by selected variables of rural community of Jardega Jarte district, May, 2014**

Variables	Extent of latrine utilization		COR (95% CI)	AOR (95% CI)
	Satisfactory Utilization	Unsatisfactory utilization		
<b>Educ. Status of head of HH</b>				
Illiterate	30(29.1%)	73(70.9%)	1	1
Read & write	16(30.8%)	36(69.2%)	1.081 (.523, 2.236)	2.871 (1.728, 4.771)*
1-8	66(40.2%)	98(59.8%)	1.639 (.967, 2.777)	1.331 (.730, 2.430)
9-12	31(44.9%)	38(55.1%)	1.985 (1.050, 3.753)	1.435 (.686, 3.003)
Diploma& above	13 (86.7%)	2(13.3%)	15.817 (3.363, 74.385)	10.505 (1.992, 55.391)*
<b>Annual income</b>				
<=13000	84(33.5%)	167(66.5%)	1	1
>13000	72(47.4%)	80(52.6%)	1.789 (1.185,2.703)	2.871 (1.728, 4.771)**
<b>Hand washing facility</b>				
No	80(26.0%)	228(74.0%)	1	1
Yes	76(80.0%)	19(20.0%)	11.400(6.489, 20.029)	12.074 (6.526, 22.337)**
<b>Frequency of Visit by HEW</b>				
<=1month	77 (50.0%)	77(50.0%)	2.152(1.423, 3.254)	1.804 (1.085, 2.999)*
>=2months	79(31.7%)	170(68.3%)	1	1

\*-P.value < 0.05, \*\*-P. value<0.001



## CHAPTER 6: DISCUSSION

Sanitation has to be the main area of attention in developing countries because diseases related to sanitation are also significant in developing countries including Ethiopia. The mere existence of latrine is not enough to tackle problems related with poor sanitation. There has to be proper utilization of the existing latrine facilities. This study tried to assess latrine utilization among rural community of Jardega Jarte district.

The findings of this study revealed that satisfactory latrine utilization by rural community of Jardega Jarte district was **38.7%**. This is similar with the study conducted in the rural community of Hawuzien Northern Tigray, Ethiopia which showed consistent latrine use was about **37.4%** [24], but lower than the study done in the rural community of Hullet Ejju Ennessie woreda [30] and Bahir Dar Zuria Woreda; North West Ethiopia [31] which reported 61% and 62%. This difference could be due to the inclusion of hand washing after latrine use to define the household's latrine utilization as satisfactory in this study. The major reasons for inconsistent use of latrine were lack of awareness, inconveniences like bad odor, far from house and filled/damaged structures.

Majority of the latrine types were traditional pit latrines & privately owned which is consistent with the finding of EDHS, 2011 report [3] and the findings in Hawuzien that most latrines were traditional pit latrines [24]. Hundred ninety nine (64.2%) latrines were constructed since five years back. This coincides with the introduction of Health Extension Program in Ethiopia.

Majority of latrines needed maintenance of superstructure, roof or slab and some needed reconstruction. This is due to the construction materials were less durable (usually wood, corn stalk and straw). For this reason the termites easily eat the wood and, wind and heavy rain destroys it easily.

About 23.6% of households with the latrine facility had hand washing facilities. This was better than the study conducted in Bahir Dar Zuria Woreda; Ethiopia which showed only 6.2% had hand washing facility [31].

Concerning critical times of hand washing 259(63.3%) washed their hands before handling of food, before eating and after eating whereas only 24.8% reported as if they wash their hands at all critical times of hand washing. This finding is lower than the finding of study done in India that showed majority of the participants washed their hands both before handling of the food and eating, 88% of the participants washed their hands after defecation and 75% of them wash their hands after eating [40]. This could be due to socioeconomic & awareness difference between two countries. The major reasons cited for not washing their hands at critical times of hand washing were forgetting, lack of awareness and not having hand washing as a habit. This finding was similar with study done in Colombia, that the most frequently given reasons for not washing hands were forgetfulness, laziness, and lack of time [38].

The means of disposal of <5 children faeces varied among respondents in that 61.2% put in to the latrine, 35.0% throw into the garden and 3.7% left over the floor which is more or less similar with the study conducted in Hullet Ejju Ennessie woreda, North West Ethiopia which showed 65.9% throwing faeces in the latrine, 2.3 % burying while 31.8% threw away from the house either in the bush or in the garden [30].

The extent of latrine utilization is less satisfactory among households with latrine facilities without superstructure than their counter parts. This might be due to the fact that uncovered latrines are unfavorable for use particularly for women as privacy cannot be maintained.

Multivariate logistic regression analysis indicated that the latrine utilization was significantly associated with educational status of heads of households. Accordingly, households whose heads had educational level of diploma and above utilized latrine 10.5 more compared to households whose heads were illiterate. This finding was also in line with the study done in Tigray that showed households with illiterate heads were 71% less likely to use latrines compared to those having  $\geq$  primary educational status [24]. The variation could be attributed to the difference in the knowledge and awareness levels of the two groups regarding human waste management and human health. This might be due to the fact that the more educated heads of households could

have been exposed to sanitation information in school positively favored latrine utilization in the home environment.

Maternal educational status however showed no significant association with latrine utilization. This finding is not in line with the study conducted in India that showed a positive association between level of education and use of toilet facilities. With increases in women's education, utilization of toilet facility improves steadily. It is likely that general education brings about awareness and positive attitudes toward use of sanitary toilets [41]. This might be due to the difference in the maternal awareness level on sanitation between two countries.

Household income was also another socio-demographic & economic predictor of latrine utilization in the study area. It was observed that utilization of latrines was about 3-folds higher in households that had an income of 13,000 or more birr per year than in households with less than 13,000 birr per year. This finding also agrees with study conducted in Tigray [24] and Bahirdar Zuria woreda, Ethiopia [31] that showed households with high income were more likely to use latrines than their counterparts who had low income. Similar finding in sub-Saharan African countries showed, improvements in sanitation are strongly correlated with wealth. The trend data showed that sanitation coverage & utilization in the two poorest quintiles has shown little change over the 13-year period; 4 out of 5 people in these two quintiles practice open defecation. The most progress was seen in the higher wealthiest quintile population with better latrine utilization [4]. A study from Tanzania also reported that households with better income utilize latrine more than their counterparts [23]. Households with better income had greater improvements in sanitation than poorer households. This might be due to the fact that lower income households gave priority for their livelihood and considered the sanitation issues as secondary.

Another factor that had significant association with latrine utilization was hand washing facility near the latrine. It known that improved sanitation attributes to 36% reduction in risk of diarrhea while hand washing with soap reduces the risk of diarrhea by 48% [7]. Households with hand washing facility utilized latrine about 12-folds higher than those without hand washing facility.

This finding agrees with study conducted on Sanitation in Northern rural Vietnam that showed all surveyed schools had student latrines, but most students urinate and defecate in open field and the reason for not using latrine was inadequate hand washing facilities in 48.6% of community latrines [29]. Similar study conducted in Bogota, Colombia showed only 33.6% of the sample reported always or very often washing their hands with soap and water after using toilet. Scarcity of adequate hand washing facilities in most schools in Bogota prevents children from adopting proper hand hygiene behavior [38]. Similar study in Sub-Sahara African countries including Kenya, Senegal, Tanzania and Uganda reported that 17% of participants washed their hand with soap and water after using toilets, while 45% used only water. The reason for not washing their hand is inadequate water & hand washing facilities [37]. This indicated that presence hand washing facility with soap & water favors latrine utilization.

Another predictor of latrine utilization in the study area was support given to households by Health Extension Workers. Those households frequently ( $\leq$ one month) visited by health extension workers utilized latrine nearly 2-folds than less frequently ( $\geq$  two months) visited households. As study from Bahirdar Zuria reported, utilization of a latrine was also affected by the frequency of supervision. The utilization of latrines was twofold higher in households who were visited at least three times per month by health professionals than those who received no visits [31]. This could be because of households visited more frequently were better informed about latrine utilization through health promotion programs given by HEWs at household level. Frequent visits and the promotional activities of households by health extension workers were the major factors that favor latrine utilization.

Unlike studies from Bahirdar Zuria Woreda[31] and Hawuzien, North Ethiopia showed latrine utilization was affected by distance of HHs from nearby health institutions, in this study distance from nearby Health institutions has no association with latrine utilization in the rural community of the District. This might be due to the fact that health posts are currently constructed in all rural kebeles of the District and all Kebeles have access to health institutions (Health posts) at near distance.

### **6.1. Strengths of the study**

- The study was community based particularly addressing the rural community.
- Response rate was high (100%)

### **6.2. Limitation of the study**

- Data was collected by different individuals, while observing the compound of each household the way data collectors observe may differ, so it may face observer bias.
- In houses where the respondents were spouse, the information like income of households might not be as correct as that where heads of household gave the response.
- Some of the data like sources of information and use of hand washing facilities after latrine use were based on interviews response (information bias may occur).

## **CHAPTER 7: CONCLUSION AND RECOMMENDATIONS**

### **7.1 Conclusion:**

This study assessed utilization of latrine in the rural community of the district and concluded that the majority of households with latrine facilities had unsatisfactory latrine utilization. Hand washing with soap (ash) and water after latrine use and at critical times of hand washing is still practiced by a minority of the population. Almost all latrines were traditional pit latrine and over half of the available latrines required maintenance and lacks superstructures.

More than one third of respondents did not consider as if children's feces are harmful and disposed inappropriately. Only a quarter of respondents wash their hands at all of critical times of hand washing and the major reason behind was lack of awareness.

The frequency of household visits as currently made by Health Extension Workers may not be enough to guarantee households to develop the desired behavior - it was recognized that sanitation and hygiene promotion is not a one-off activity.

Educational level of heads of households, income level of the households, frequent supportive supervision by Health Extension Workers (HEWs) given to households and availability of hand washing facility near the latrine facility were the factors that showed significant association with latrine utilization. Considering the reasons behind the non-adoption of proper latrine utilization is important in engineering new tactics in sanitation promotion at household & community level.

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## **7.2: Recommendations**

- Based on the above findings the following recommendations are given to
- **Woreda Administration Office:**
- Should incorporate sanitation and hygiene topics to the already started adult education program to create awareness about proper utilization of latrine.
- Should plan to afford adequate and safe water supply to the rural community

### **Woreda health office & Zonal health department**

- Sanitation and hygiene education promotion should be done regularly, repeatedly and continuously to adopt behavior or practice on latrine utilization among the community
- Latrine utilization has to be accepted first by the community to be used sustainably and hence using a role model approach to promote hygiene and sanitation behavior among the community is more important.
- Promotion activities among the community should be done by focusing on proper utilization, maintenance and reconstruction of latrine facilities to have sustainable utilization.
- Close supervision and follow up for proper utilization of latrine.
- Hand washing practices at critical times with Soap and water has to be encouraged.

### **For Researchers**

- Further studies has to be conducted that focus on impacts of poor sanitation on health.

### **WASH**

- Should strengthen the recently started Community Led Total Sanitation and Hygiene (CLTSH) program in the rural community of the district mainly by focusing on proper latrine utilization than latrine coverage alone.
- Should encourage the construction of improved latrine instead of nondurable type of open pit latrine in the rural community.

## REFERENCE

1. Sari Huuhtanen, and Ari Laukkanen, A guide to sanitation and hygiene for those working in Developing countries, Tampere Finland 2006.
2. World Health Organization, water supply, sanitation and hygiene development; May 2011  
[http://www.who.int/water\\_sanitation\\_health/en/index.html](http://www.who.int/water_sanitation_health/en/index.html)
3. Central Statistical Agency [Ethiopia] and ORC Macro: Ethiopia Demographic and Health Survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency and ORC Macro; 2012.
4. UNICEF and World Health Organization. Progress on Drinking Water and Sanitation. Report Of UNICEF and World Health Organization, 2012. (Page 15-18).
5. Water and sanitation commentary. The progress of Nations, 1997.
6. Report of World health organization expert committee prevention and control of intestinal Parasitic infections. Technical report series WHO, Geneva 1978
7. UNICEF. Water, Sanitation and Hygiene. 2009 [Cited 2010 May]; Available from:  
URL:<http://www.unicef.org/wes/index.html>.
8. World Bank. Water supply and sanitation. Hygiene and sanitation promotion: why promote Sanitation? 2002.
9. World Health Organization, progress on sanitation and Drinking Water, WHO, 2010.
10. CCRDA. Water and Sanitation Forum Annual Joint CSOs Report On Water, Sanitation And Hygiene (WASH) Report, Addis Ababa, Ethiopia, 2009.
11. Federal Democratic Republic of Ethiopia Ministry of Health. Hygiene and Environmental Health, module for Health Extension Workers, 2005.



12. Short Text book of Public Health Medicine for the tropics, 4<sup>th</sup> edition, 2003.
13. World Health Organization. Common water and sanitation-related diseases. 2008 Available online at:[http://www.searo.who.int/LinkFiles/Water,\\_Sanitation\\_and\\_Health\\_CommonWater-WWD 08.pdf](http://www.searo.who.int/LinkFiles/Water,_Sanitation_and_Health_CommonWater-WWD 08.pdf) (accessed 01 February, 2012)
14. Federal Democratic Republic of Ethiopia, Ministry of Health: Construction Usage and Maintenance of Sanitary Latrine Extension Package. Addis Ababa; 2004.  
[http://cnhde.ei.columbia.edu/training/documents/Sanitary\\_Latrine.pdf](http://cnhde.ei.columbia.edu/training/documents/Sanitary_Latrine.pdf).
15. G.E. Teka and Mulugeta.-Issues paper, WSP-AF World Bank 2003.
16. Federal Democratic Republic of Ethiopia, Ministry of Health National Hygiene and Sanitation strategy December, 2005.
17. Children's Health and The Environment. A Global perspective, WHO Geneva 2004.
18. WHO. Guide to simple sanitary Measures for Control of Enteric Disease, 1994.
19. Federal Ministry of Health Introduction of Rota virus Vaccine in Ethiopia Training manual for Health workers August, 2013
20. World Health Organization. World Water Day 2001: Sanitation: Controlling Problems at Source. Available from: URL: <http://www.worldwaterday.org/wwday/2001.html/thematic>
21. WHO. Health and Environment in sustainable Development, 1997
22. Mc Convile J. Field engineering in the developing world: How to Promote the Use of Latrines in Developing Countries; 2003. Available from: URL:[www.cee.mtu.edu/peacecorp](http://www.cee.mtu.edu/peacecorp)
23. Koronel K, Innocent S, Serafina M, Ignatio K, Florence T, Festus I. and Martin M. Factors Affecting the utilization of improved ventilated latrines among communities in Mtwara Rural District, Tanzania. Pan Afr Med J. 2012;13(Supp 1):4

24. Yemane A, Hardeep Rai S, Kassahun A & Getahun K. Latrine use among rural households in northern Ethiopia: a case study in Hawzien district, Tigray, 2013. *International Journal of Environmental Studies*, 70:4, 629-636.
25. Aremu, A.S. Assessment of Sanitation Facilities In Primary Schools With In Ilorin, Nigeria M A R C H, 2 0 1 2. *Journal of Applied Sciences in Environmental Sanitation*, 7 (1): 29-33.
26. WoldieKerie M .Contribution of the Health Services Extension Program to improve coverage and comprehensiveness of primary health care services in Jimma Zone, Southwest Ethiopia 2009.
27. Anu B, Avinash S, Prassana Mi, Abhishek S, Sanjeet P and Pankaj C. A Community based Cross sectional study on use of sanitary latrines in a rural setup in Maharashtra [health line pISSN 2239-337X/eISSN 2320-1525 Volume 4 Issue 1 January-June 2013.
28. Korma S. Assessment of the extent of implementation and affecting factors of environmental health extension packages at house hold level in Damboya Woreda, Kembata, May 2011
29. Le thi Thanh X., Luu Ngoc H., Thilde R., Anders D. and Flemming K. Sanitation behavior among schoolchildren in a multi-ethnic area of Northern rural Vietnam Xuan et al. *BMC Public Health*, 2012.
30. Anteneh A. and Kumie A. Assessment of the impact of latrine utilization on diarrheal Diseases in the rural community of Hulet Ejju Enessie Woreda, East Gojjam Zone, Amhara Region, 2010 *Ethiop. J. Health Dev.* 2010; 24(2)
31. Awoke W. and Muche S: A cross sectional study: latrine coverage and associated factors among rural communities in the District of Bahir Dar Zuria, Ethiopia. *BMC Public Health* 20

32. Barnard S, Routray P, Majorin F, Peletz R, Boisson S, et al. Impact of Indian Total Sanitation Campaign on Latrine Coverage and Use: A Cross-Sectional Study in Orissa Three Years following Programme Implementation. 2013, PLoS ONE 8(8):doi:10.1371/journal.pone.007143.
33. Jardega Jarte District Health Office: 2012/2013 Annual report. Jardega Jarte: Unpublished document from the District Health Office.
34. Global Water Supply and sanitation Assessment 2010 report. WHO, UNICEF, 2010.
35. World Health Organization. Healthy villages; A Guide for Communities and Communities Health Workers. Geneva; 2002
36. Ministry Of Health. Formative Research on Hand Washing, 2011.
37. Curtis VA, Danquah LO, Aunger RV. Planned, motivated and habitual hygiene behavior: an eleven country review. Health Educ Res. 2009; 4:655–673. [PMC free article] [Pub Med].
38. Catolna Lopez, Quantero Paul Freeman and Yehuda Neumark. Hand washing among school Children in Bogota, Colombia; Jan. 2009. vol.99 No 1
39. Supa Pengpid and Karl Peltzer. Hygiene, behavior and health attitudes in African countries 2012. Volume 25 No.2 March 2012
40. Ashish Joshi, Satish Prasad, Jyoti B Kasav, Mehak Segan & Awnish K Singh. Water and Sanitation Hygiene Knowledge Attitude Practice in Urban Slum Settings. Global Journal of Health Science; Vol. 6, No. 2; 2014
41. FangHsun Wei, Vijayan Pillai, Arati Maleku. Sanitation in India: Role of Women's Education. Health Science Journal Volume 8 (2014)

## ANNEXES

### English Questionnaire

Questionnaire to Assess latrine utilization and associated factors in the rural community of Jardega Jarte district Oromia regional state, North-West Ethiopia.

Introduction

Greeting:- Good morning/Good afternoon

My name is \_\_\_\_\_ I am here today as a data collector of a study conducted by college of Public Health and Medical Sciences, Jimma University. I am going to ask you some questions about latrine utilization and hygiene practices. Yours is one of the households selected randomly for this study.

All information you provide as a response will be confidential. Your name will not be written on this paper. Information about your family and your compound will be told to nobody. It will be used only for the study purpose. Your provision of correct information will help the study to achieve its objective. So would you participate in our study? \_\_\_\_\_

If yes we can proceed to the next page.

If No go to the next house.

## Questionnaire identification

1. Questionnaire Identification number \_\_\_\_\_

2. Kebele \_\_\_\_\_

3. Goti \_\_\_\_\_

### Part 1- Socio demographic characteristics

Serial no	Question/variable	Response	When to skip	Response code
Part 1 Socio demographic characteristics				
101	Sex of respondent	1.Male 2.Female		
102	Age	-----years		
103	Marital status	1.Maried 2.Single 3.Divorsed 4.Widowed/er		
104	Sex of head of households	1. Male 2. Female		
105	Family size including the respondent in number	1.Male _____ 2.Female _____		
106	Religion	1.Orthodox 2.Protestant 3.Muslim 4.Wakefeta 5.Other specify _____		
107	Ethnicity	1.Oromo 2.Amhara 3.Tigre 4.Other specify		
108	Educational status of head of household	1.Illiterate 2.Able to read and write 2.Grade 1-8 5.Grade 9-12 6 .Diploma and above		
109	Educational status spouse of head of household	1.Illiterate 2.Able to read and write 2.Grade 1-8 5.Grade 9-12 6 .Diploma and above		

110	Occupation of head of household	1.Farmer 2.Merchant 3.House wife 4.Government employee 5.Other,Specify _____		
110	Number of children in the household aged for school.	1. Attending formal education____. 2.Not attending formal education_____		
111	Annual income	_____in Birr		
Part 2.housing & Household Wealth				
201	In your house is there any of the following? No=0, Yes=1	1.Radio __ 2.Television__ 3.Telephone/mobile phone__		
202	What type of house they have? (Observation)	1.Corrugated iron sheet 2.Thatched roof 3.Other-----		
203	What type of floor does the house have?(observation)	1.Cement 2.Dung 3. Earth/sand 4.Other _____		
204	Do you have separate kitchen?	1.Yes 0.No		
205	Do domestic animals (cattle) share the living room?	1.Yes 0.No		
part 3 Latrine utilization				
301	Is there latrine in the compound? (observation)	1.Yes 0. No		
302	Type of latrine? (observation)	Dry pit latrine Improved Other.		
303	Is the latrine with sub/ super structure , (observe)	1.Yes 0.No		
304	Owner ship of the latrine	1.private 2.Shared/communal		
305	Do you have information on importance of latrine?	1.Yes 0.No		

306	From whom you got information for latrine utilization?	1. from HEWs/other H. prof. 2. Radio 3. Neighbor 4. From meetings or local administrators. 5. Family members		
307	Years since latrine construction.	-----years		
308	Does the latrine need maintenance?	1. Yes 0. No		
309	Which part of the latrine need maintenance?	1. Superstructure 2. roof 3. Slab 4. Other _____		
310	Do space and maintenance materials available locally?	Yes No		
311	How far is the latrine from the house?	-----meters		
312	How often do you use the latrine?	1. Always 2. Mostly 3. Rarely 4. Never at all		
313	If you are not using latrine what is the reason? (Never at all)	1. It is not comfortable (bad odor, increase flies) 2. It is far from home 3. I do not think it is use full 4. filled/damaged 5. Other, specify _____		
314	Who uses the latrine regularly?	1. The whole Family 2. Only adults 3. Adults and children > 5 years 4. Only females		
315	Observe for latrine utilization 1. No observable feces in the compound 2. Observable feces through squat hole 3. Foot path to latrine uncovered with grass	1. Yes 0. No  1. Yes 0. No  1. Yes 0. No		
316	Do you clean the latrine	1. Yes 0. No		
317	What does the inner side of the latrine look like? Observe for cleanness of latrine	1. Clean 2. Used recently (fresh feces seen)		

		3. Dirty, feces on the floor 4. Not used recently		
318	Is the latrine sealed?	1. Yes 2.No		
319	Does the latrine have squat cover?	1.Yes 0.No		
320	Is the latrine with a hand washing facility nearby?	1.Yes 0.No		
321	Is the hand washing facility with soap or any substitute?	1.Yes 0.No		
322	How often do you wash your hand after toilet?	1.All the time 2.Sometimes 3.Never		
323	What other times do you wash your hand?	1.Before eating 2. Before handling food. 3. After cleansing child's bottom. 4. Before feeding the child 5.Allthe time		
324	If you do not wash your hand all the time, what is the reason?	1.Lack of water 2.I forget 3.I do not think it is important 4. It is not in my habit 5. Other, specify.....		
325	What is the advantage of using Latrine?	Improve cleanliness Health benefits Privacy Reduce flies Other.....		
326	Do you think using latrine have disadvantages?	1.Yes 2. No		
327	If yes....	1.Attract flies 2.Bad odor 3.Space to build 4.Harms cattle 5. Other.....		
328	Do you have children less than five years?	1.Yes 0. No		
329	If yes where do you dispose their feces?	1. In to the garden. 2.In to the latrine 3. left over the floor		



330	Do you think children's feces has risk for health/harmful?	1.Yes 0.No		
331	How often health professionals or HEWs visit your house?	1. Less than one month. 2. Every month 3. Two to four months. 4. Never at all.		
332	Distance of the HHs from health institution	-----hours		
333	Are you graduate Model family?	1. Yes 0. No		
Part 4 Water				
401	From where do you get drinking water?	1. Piped water (public) 2. Spring (protected) 3. spring (unprotected) 4. From well 5. Other, Specify _____		
402	On average how much water do you consume per day for HHs?	_____liters		
403	How much minutes will it take to get/fetch water?	_____minutes		
404	Who is usually responsible to fetch water for your household?	1. Housewife 2. Daughters 3. Son 4. Other family members		
Part 5. environmental hygiene				
501	Do you have waste disposal pit?	1. Yes 0. No		
502	If yes what type of disposal pit do you have?	1. For solid waste only 2. For liquid waste only 3. We do have both separately 4. We dispose all type in one pit 5. We do not have disposal pit		

## Observation check list

Is there latrine in the compound? 1. Yes 0. No

Type of latrine 1. Dry pit latrine 2. Improved 3. Other

Is the latrine with sub/superstructure and sealed. 1. Yes 0. No

Does the latrine need maintenance? 1. Yes 0.No

Observe for latrine utilization

No observable feces in the compound. 1. Yes 0. No

Observable feces through squat hole. 1. Yes 0. No

Foot path to the latrine is uncovered with grasses. 1. Yes 0. No

Observe for cleanness of latrine.

Clean (no observable feces and used paper on the floor)

Dirty (observable feces and used paper on the floor)

Is there hand washing facility? 1. Yes 0. No

Improved latrine 1. With sub/super structure 2.Sealed 3. Has squat cover 4. Not shared

5. Has door

## Annex 2 Afan Oromo Translation of Questionnaire

Aneeksii 2 Hiikkaa gaaffiiwwan Afaan Oromootiin.

Gaaffilee dhimma qorannoo fi qu'annoo Ittifayyadama mana fincaanii Hawaasa Baadiyyaa jiraatan Aanaa Jaardagaa Jaartee irratti gaggeeffamuuf gaafataman

Seensa

Akkam bultan/akkam ooltan?

Maqaan koo \_\_\_\_\_jedhama

Har'a kanin asitti argameef qorannoo dhimma Ittifayyadama mana fincaanii irratti Yuuniversiitiin Jimmaa gaggeessaa jiru waliin ta'uudhaan raga tokko tokko funaanaa jirra. Nutis gaaffiidhuma dhimma itti fayyadama mana fincaanii tokko tokko isin gaafanna.Yoo fedhii qabaataan Manni keessan caarraadhaan kan filataman keessaa tokko dha

Wanti isin nutti himtan hundi qorannoo kanaaf qofa malee dhimma biraaf kan barbaadame miti. Kanaafuu, qaamni biraan beeku danda'u hin jiraatu jechuudha. Akkasumas maqaan keessan as irratti hin barreeffamu. Egaa yoo kan hirmaattan ta'e ragaa sirrii akka nuu laattan abdi qabna.

Ni hirmaattuu?\_\_\_\_\_Itti fufi

Hin hirmaattanii? \_\_\_\_\_Mana itti aanutti darbi

Unka ragaa Qorannoo Itti fayyadama mana fincaanii Hawaasa Aanaa Jaardagaa Jaartee Baadiyaa jiraatan bara 2006 ALE ittin funaanamu.

Lakk	Gaaffilee	Deebii	Irradar buuf	Koodii
Kutaa 1ffaa Ragaalee Dhuunfaa fi hawaasummaa				
101	Saala abbaa deebii kennaa	1.Dhiiraa 2.Dhalaa		
102	Umurii	Waggaa_____		
103	Haala gaa'elaa	1.Kan fuudhe/heerumte 2.Kan hin fuune /hin heerumne 3.Kan walhiikan 4.Haati/abbaan manaa kanjalaa duute/du'e.		
104	Saala abbaa/haadha manaa	Dhiira Dhalaa		
105	Waliigala namoota mana keessa jiraatan	1.Dhiira_____ 2.Dhalaa_____		
106	Amantaa	1.Orthodoksii 2.proteestantii 3.Muusiliim 4.waaqeffata 5.kan biroo-----		
107	Qomoo	1.Oromoo 2.Amaara 3.Tigiree 4.Kanbiraa_____		
108	Sadarkaa barnootaa abba manaa	1.Kan hin baratin 2.Barreessuu fi Dubbisuu dandaa'a 3.Kutaa 1-8 4.Kutaa 9-12 5.Diippiloomaa fi isaaoli		
109	Sadarkaa barnootaa haadha manaa	1.Kan hin baratin 2.Barreessuu fi Dubbisuu dandaa'a 3.Kutaa 1-8 4.Kutaa 9-12 5.Diippiloomaa fi isaaoli		
110	Hoji Abbaa manaa/Haadha manaa (Nama yaada kennu)	1.Qotee bulaa 2.Daldalaa 3.Haadha manaa 4.Hojjetaa mootummaa 5.Kan biroo _____		

111	Daa'imman mana keessa jiran Umurii barnootaa gahan	1.Barnoota idilee kan hordofan----- 2.Barnoota idilee hin hordofne_____		
112	Galii waggaa	Qarshii_____		
Kutaa lama- Qabeenya maatii kan agarsiisu				
201	Mana keessan keessa meeshaaleen armaan gadii jiruu? Hin jiru =0, Jira=1	Raadiyoo __ Televiiziyoonaa __ Bilbilamanaa/moobayila		
202	Manni keessanii irri keessa maal irraa hojjetame?	1.Qorqoorroo 2.Citaa 3.Kan biroo		
203	Lafti mana keessanii/isaanii maalirraa hojjetame?	1.Simmintoo 2.Dhoqqee horii 3. Biyyoo 4.Kan biroo _____		
204	Kushinaa (bakka nyaatni itti qophaa'u) kophaatti qabdu?	1.Eeyyee 0. Lakki		
205	Beeyladni mana kessa galan ni jiru?	1.Eeyyee 0. Lakki		
Kutaa 3 ffaaMana fincaanii				
301	Manni fincaanii mooraa keessa jiraa?	1.Eeyyee 0.Miti		
302	Gosa mana fincaanii	1.Kan aadaa 2. Mana fincaanii fooyya'aa 2.Kan biroo		
303	Manni fincaanii sun ijaarsa irraan olee qabaa? /ilaali	1.Eeyyee 0.Lakki		
304	Abba qabeenyummaa mana fincaanichaa.....	Kan dhuunfaa Kan waliinii		
305	Faayidaa mana fincaanii irratti odeeffannoo qabdu?	1.Eeyyee 0.Lakki		
306	Manafincaaniitt fayyadamuuf gorsa kan siif kenne eenyu?	1.Hojjettuu ekisteenshinii fayyaa 2.Raadiyoorraa 3. Barumsa wal-ga'iirraa 4.Gorsa ollaa 5.Gorsa maatii keessaa		
307	Manafincaanii ergee hojjetatanii yeroo/waggaa hangam?	Waggaa-----		
308	Haalli mana fincaanichaa haaromsa barbaadaa fakkaata ?	1.Eeyyee 0. Lakki		

309	Maal mana fincaanichaatu haaromsa barbaada?	1.kabaa/nannoosaa 2. Irra keessa/ajjeerra 3. Lafa isaa		
310	Meeshaaleen haaromsaaf ta'an naannotti argamu?	Eeyyee 0.Lakki		
311	Manni fincaanii mana irraa hagam fagaata?	Meetira-----		
312	Mana fincaaniitti yeroo kamkam itti fayyadmtu?	1.yeroo hundaa 2.yeroo bay'ee 3.dabree dabree 4.Inumaayyu itti hinfayyadamu.		
113	Mana fincaan iitti hin fayyadamtan yoo ta'e sababiin isaamaali?	1.Waan namatti hin toleef/ajaa'uuf 2. Mana irraa fagoodha. 3.Fayidaa qabaachuu isaa itti hin amanneef 4.waan guuteef ykn dulloomeef 5.kan biroo_____		
314	Eenyufa'itu itti gargaarama?	1.Maatii hunda/mara 2.Namoota guguddoo qofa. 3.namoota guguddoo fi ijoollee wagga shan olii 4. Dubartootaa		
315	Itti fayyadadama mana fincaaniif mallattoo jiu ilaali 1.Udaan mooraa keessa hinjiru 2.Udaan ho'aan qaawwa bollaarratti mul'ata. 3. karaan mana fincaanii geessu margaan hin uwwiffanee	1. Eyye 0. Lakki 1. Eyye 0. Lakki 1. Eyyee 0. Lakki		
316	Mana fincaanii ni qulqulleesituu?	1.Eeyyee 0.Miti		
317	Qulqullinni mana fincaanii sun maal fakkaata? Ilaali	1.Qulqulluu,itti fayyadamaa jiru. 2.Udaan irra keessa jira itti hin fayyadaman. 3.Kosii fi waraqaan ala guutee jira 4.itti fayyadamaa hin jiran		
318	Lafti mana fincaanichaa maragaa qaba?	1.Eeyyee 2.Lakki		
319	Qaawwii manni fincaanicha qadada qaba	1.Eeyyee 2.Lakki		
320	Manni fincaanii sun harka dhiqannaa qabaa?	1.Eeyyee 0.Lakki		
321	Bakki harka dhiqannaa sun saamunaa/daaraa qaba?	1.Eeyyee 0.Lakki		

322	Mana fincaanii booda harka keessan yeroo kam dhiqattu?	1.Yeroo hundaa 2.Al tokko tokko 3.Hin dhiqadhu		
323	Yeroo biroo yeroo kam kam harka keessan dhiqattu?	1.Nyaata nyaachuu dura 2. Nyaata qophesu dura 3.daa'mman sooruu dura 4.daa'imman qulqulleessuun booda 5.yeroo armaan olitti eerama hundaa		
324	Harka keessan yeroo hunda hin dhiqattan yoo ta'e Sababni maali?	1.Bishaan dhabuu 2.Irraanfachuu 3.Barbaachisaa natti hin fakkaatu 4. Kan biroo ._____		
325	Mana fincaanitti fayyadamuun bu'aa maalii qaba?	1. Qulqullummaaf 2. Fayyaaf 3. Namni nama hin argu 4. Kan biroo-----		
326	Mana fincaaniitti fayyadamuun miidhaa qaba jette yaaddaa?	Eyyee 0. Lakki	Lakki yoo ta'e	Gara lakk. 328
327	Eeyyee yoo jette ...	1.Titiisa harkisa 2. Foolii yaraa qaba 3.Bakka qabata 4. Horiin keessa bu'u 5. Kan biroo.....		
328	Daa'mman waggaa shanii gad qabdu?	1.Eyye 0.Lakki	Lakki yoo ta;e	Gara lakk. 331
329	Yoo ta'e bobbaa isaanii essatti gattu?	1.Gara borootti 2. Manafincaaniitti 3. lafumatti dhiifama		
330	Bobbaan daa'mmanii miidhaa fayyaa qabaachuu isaa beektu?	1.Eeyyee 0.Lakki		
331	Ogeessifayyaa YKN Hojjettotni ekistenshiniinfayyaamnakeessan daawwatu?	1.Ji;aa gaditti 2.ji;a ji'aan 3.Ji'a lamaahagaafuritti 4. Gonkuma nu hin daaww  atne		
332	Manni keessan dhaabbata fayyaarra dhihotti argamurraa hangam fagaata?	Saa'a-----		
333	Maatii moodeela ta'uun eebbifamteetta?(ragaa qabu? )	1.eeyyee 0.lakki		

Kutaa Afur- Bishaan				
401	Bishaan dhugaatii eessaa argattu?	1.Bishaan Boombaakanwaliin 2. Lagaittifameirraa 3.Lagaahinittiffamnerraa 4.B isshaan boollaa 5.Kan biroo_____		
402	Bishaan guyyaa tti hangam fayyadamtu ?	Liitira _____		
403	Bishaan waraabuuf yeroo hagam sitti fudhata?	Daqiiqaa-----		
404	Bishaan yeroo mara kan fidu eenyuu?	1.Haadha manaa 2.Ijolllee dubaraa 3.Ijolllee dhiiraa 4.Maatii biroo		
Kutaa 5 Qulqullummaa Naannoo				
501	Boolla kosii itti gatan qabduu?	1.Eeyyee 0.Lakki		
502	Yoo eeyyee jette	1.Boolla kosi igogaa qofa 2.Boolla dhangalaa'aa 3.Lamaan isaa 4. Hundaa bakka tokkotti.		



## Cheek Listii Daawwannaa

Manni fincaanii mooraa kessa ni jiraa? 1. Eeyyee 0. Lakki

Gosa mana fincaanichaa 1.Bolla fincaanii qofa 2.Mana ficanii fooyya'aa 3. Kan biroo

Manni fincaanichaa ijaarsaa olii fi maragaa qaba? 1. Eeyyee 0. Lakki

Manni fincaanichaa haaromsa barbaadaa? 1. Eeyyee 0.Lakki

Itti fayyadama mana fincaanichaaf ilaali.

Bobbaan/udaan mooraa kessatti hin argamu

Bobbaan/udaan qaawwa mana fincaanichaarratti mul'ata.

Karaan mana fincaanichaa geessu margaan hin uwwifamne/irra adeemamaa jira.

Qulqullummaa mana fincaanichaa ilaali.

Qulqulluu dha (boolii fi waraqaan itti fayyadamame lafarra hin jiru)

Qulqulluu miti ( bolii fi waraqaan itti fayyadamame lafa guutee jira)

Manni fincaanichaa harka dhiqanaa qaba ? 1.Eeyyee 0. Lakki

Mana fincaanii sadarkaa isaa eeggate. 1.kan ijaarsa olii (dhaaba fi baaxii) qabu

2.dhabaa fi lafti isaa kan maragame 3. Kan cufantaa qabu 4. qawwi bollichaa qadaada  
kan qabbu. 5. Kan dhuunfaa kan ta'e