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Latrine Utilisation and Associated Factors in Southern Ethiopia: Evidence from Selected Households in Holte Town, Ethiopia

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Abstract: *Globally, over 2.5 billion people are still without access to improved sanitation. Almost a third of the world's population suffers on a daily basis from a lack of access to a clean and functioning toilet. People are obliged to defecate in the open due to a lack of toilet facilities. Poor usage of latrines and excreta disposal are contributing factors to a high number of morbidity and mortality, especially among under-five children. Health improvement comes from proper sanitation facilities, not simply because of their mere physical presence. Therefore, this study assessed latrine utilisation and associated factors among households in Holte town of Derashe, especial Woreda, southern Ethiopia. A cross-sectional study was conducted on 356 households using an interviewer-administered questionnaire and checklist. An SPSS software Version.23 was used for analysis, and descriptive statistics and association among factors were finally calculated. From total respondents, 316 (88.76%) were using Latrine for 24 hours (good utilisation), 29 (8.1%) daily and the remaining 11 (3.0%) rarely (poor utilisation). Family members in each household were identified as using Latrine together. From the study respondents who have under-five children, 189 (53.1%) of the households do not allow their children to use Latrine. In conclusion, there is somewhat good latrine utilisation but poor hand washing practice after visiting Latrine in the study area. So, strengthening health information dissemination, appropriate technical support, and multi-sectorial collaboration should be key factors to improve the proper utilisation of latrines and handwashing practices.*

Keywords: Latrine utilisation, Associated factors, Households, Improved sanitation, Ethiopia.

1. Introduction

Globally, over 2.5 billion people are still without access to improved sanitation. In 2010, 15 per cent of the world population still practised open defecation (UNICEF, 2012a). In developing countries, almost half the population does not have access to sanitary facilities; an estimated 1.1 billion people practice open defecation, exposing themselves and their communities to major health risks (UNICEF, 2012b). Diarrhea and water-borne diseases are leading causes of mortality and morbidity in developing countries (UNICEF, 2014). Approximately 88% of diarrheal diseases are attributed to unsafe water supply, inadequate sanitation and hygiene (Srilaxmi & Solomon, 2011). The proportion of the population in rural areas with access to safe drinking water and sanitary latrines directly impacts the health of the masses. This means water sources and sanitation facilities have an important influence on the health of household members, especially children (Haddis, 2009).

A total of 1.8 billion people have gained access to adequate sanitation since 1990. The number of people resorting to open defecation - the riskiest sanitation practise - has decreased by 271 million since 1990. But 1.1 billion people, or 15% of the global population, still practice open defecation. Mostly twenty countries in South Asia and sub-Saharan Africa account for over 80% of open defecation in the world (Srilaxmi & Solomon, 2011). A recent publication of WHO/UNICEF indicated Africa is lagging much to attain MDG goals in sanitation that aims to achieve improving coverage of 38% (in 2006) to a level of 66% (UNICEF, 2012b).

Ensuring adequate sanitation facilities is one of the Millennium Development Goal that Ethiopia shares with other countries. At the household level, adequate sanitation facilities include an improved toilet and disposal that separates waste from human contact. A household is classified as having an improved toilet if it is used only by members of one household (that is, it is not shared) and if the facility used by the household separates the waste from human contact (UNICEF, 2012a).

About 62% of households have toilet facilities, 84% urban and 55% rural households. The majority of households, 82% (91% rural and 54% urban) use non-improved latrine facilities. The coverage falls short of meeting the Millennium Development Goal target (CSA, 2012). In addition to that, the level of handling and utilisation status of existing latrines is not known (DoRHC & MRD, 2010). Latrine access in Ethiopia ranges from 9% in rural to 72 per cent in urban. This gives a national average of 18 per cent (FMOH, 2005). The effects of poor latrine coverage and utilisation are serious, leading to open defecation and leading to water resource pollution and contamination of agricultural products. It affects the groundwater and remains one of the essential causes of diseases like bilharzia, tuberculosis, and other respiratory diseases (UNICEF, 2012a).

The result of a study in India Orissa on latrine coverage and use in 2013 shows that 28% of participants did not have a latrine in which all members of the households practice open defecation. About 72% of households had latrines, of which 62% stated that at least one member of the households was using the latrines (Barnard *et al.*, 2013). In Ethiopia, 8% of households use improved toilet facilities that are not shared with other households, 14% in urban and 7% in rural areas. One in ten households uses shared toilet facilities. Also, most households (82%) use non-improved toilets facilities are pit latrines or pit latrines without slabs, used by 45% of households in rural areas and 37% in urban areas. Overall, 38% of households have no toilet facilities, 16% in urban and 45% in rural areas (CSA, 2012). A study in Bahir Dar Zuria in Ethiopia showed that 58.4% of the households had latrines, and 41.6% of the households lacked pit latrines. Among households who have Latrine, 62% were functional, 56.9% were in need of maintenance either to superstructure or floor, 27.3% of Latrine had sealed slabs, and only 2% of the latrines had a cover for the squatting hole. Of the available Latrine, 32.1% were located at a distance of less than 6m from home. Also, among households with Latrine, 93.8% had no type of handwashing facilities, 22 households with handwashing facilities, and 3 households used either soap or ash (Awoke & Muche, 2013).

The study conducted on knowledge, attitude and practice by the ministry of health in Ethiopia in 2005/05 indicated that the major reasons for poor utilisation of latrines among individuals and families in some communities in Ethiopia were lack of latrines, bad smell of the Latrine, lack of privacy, behavioural, demographic, geographic, climatic, social and cultural reasons that deter families from using latrines (FMOH, 2005). A study carried out in East Gojjam in Ethiopia on latrine utilisation, and diarrhea in 2010 indicated that 96.5% of respondents explained that all family members of >5 years old were using Latrine. It also stated that latrine utilisation was 93% among respondents. Among those who utilise Latrine, there were observable faeces in the compound of 14.7% of households and observable presence of fresh faeces inside the pit of the Latrine (an indication of utilisation) in 92% of households (Andualem & Aberam, 2010). The study indicated that the extent of latrine utilisation among 60.7% of households with latrines was satisfactory, of which 86.7% latrines were functional. It also stated that the occurrence of childhood diarrhea was associated with the extent of latrine utilisation, the presence of faeces in the back yard, and the neighbourhood's yard. Open defecation is a primary practice to easily acquire diarrhea-related infections in combination with improper sanitation. Unsafe water supply and poor hygiene are estimated to cause almost 2000 child deaths per year (Andualem & Aberam, 2010).

In Ethiopia, the researcher observed that households have pit latrines and yet not using them, while others have them but in poor hygienic condition, yet others do not have them at all. As a result, there is a high incidence of diseases caused by poor sanitary conditions, especially worm infestation and diarrheal disease. This, according to Ashebir, Rai Sharma, Alemu and Kebede (2013), might contribute to a high morbidity and mortality rate of infants and under five years of age. Little information related to the poor use of Latrine has documented in Ethiopia, and there is no information around the study area concerning the utilisation of Latrine. Therefore, this was carryout to establish baseline information on the coverage and utilisation of Latrine among households in Holte town in southern Ethiopia. The study was aimed at accessing the availability of Latrine and the use of Latrine. The result of the study could assist environmental health workers and other health and health-related practitioners, and the municipal authority in developing different intervention strategies for improving the sanitary condition of the society in the district. It also acts as a baseline or reference for policymakers. In lieu of the above, this study access latrine

utilisation and associated factors among households in Holte town of Derashe, especial Woreda in southern Ethiopia, from June 1- June 30, 2018.

1.1 Objectives of the study

Based on the above lacuna, the following objectives were raised to pilot the study;

- To assess latrine utilisation status among households in Holte town in southern Ethiopia from June 1- June 30, 2018.
- To identify factors affecting latrine utilisation among households in Holte town in southern Ethiopia from June 1- June 30, 2018.

2. Research Methodology

2.1 Study area

This study was conducted in Holte town, which was established at the time it got its own municipality on March 3, 2010, GC. It was bordered with Gato in the South, Gomayide in the East, Wozeka in the North and Gidole in the West. It is located around 566 Km South West of Addis Ababa, capital of Ethiopia and 288 Km from Hawassa, capital of SNNPR and Sidamo regional state. The town covers an area of 381 hectares (3.81km2). The town has Kola weather conditions and an elevation of 1132m/3713.91feet above sea level. It is a town in the Great Rift Valley, and it is 14Km away from lake Chamo in the south-east. Based on the 2014 population count of the town for the purpose of the town's basic plan, the town has a total population of 18,560. Among these, 9,553 are male, and 9,007 are females. There are around 4,683 households found in the town. The town has 7 kebeles. The majority of the residents in the town are farmers and merchants. Based on the 2018 report of the Holte health centre; Typhoid fever, Amoebiasis, Bacillary dysentery, Giardiasis, and Heliminthiasis are the most common waterborne diseases among adults and non-bloody diarrhoea among under-five children. Based on the town's health centre report of the town there are around 4,224 households with Latrine and around 459 households without Latrine that practice open defecation. The people of the town use groundwater wells and unprotected springs for domestic purposes.

2.2 Study design, sample size and technique

A cross-sectional study design with simple observation was conducted to assess utilisation of Latrine and associated factors. Both the factors and prevalence were studied once within a short period of time (from June 1- June 30, 2018), so a cross-sectional study design was used in this study. Sample size calculation was done using a single proportion formula, and 356 households were used as the total sample size. A systematic random sampling technique was used to select the study population from the target. After the K^{th} -value was determined as an interval; the study households were systematically selected by starting from one household (selected by random sampling method) and continued by $K^{th}\ an$ interval that was calculated.

2.3 Data collection tool and procedure

Data was collected using pretested English version questionnaire that was developed from related published researches. It was translated to the language the respondents knew. Before data collection, respondents were identified whether they were a volunteer or not to participate in the study. Where household leaders/spouses were absent during the time of data collection, members from the house who have full information to the house or members who can respond to the question were assigned as respondents. Data was collected from the sampled population by using Standard English version questioners by interviewing method. Data was collected from sampled households without considering ethnicity, religion, and other socio-demographic variables and data collection. In order to ensure the quality of the data collection tool, pre-test was done at 5% of the sample at randomly selected households outside of study area in Arba Minch city. After data collection was started, the data were cross-checked for its completeness & consistency.

2.4 Data processing and ethical consideration

Data were collected and entered into a statistical package for social sciences (SPSS) version 23 for data analysis. Descriptive statistics like tables and charts were used to describe study variables. The association between dependent and independent variables was checked by using the chi-

square test. Finally, the variables that have significant association were identified on the basis of 95% CI and p< 0.05. An official/permission letter was obtained from Arba Minch University College of Medicine and Health Science, department of public health, to ensure that I am formal/legal and assigned in that locality. In addition to this, the leaders of the selected study area provided a letter to the community members. The participants were clearly informed about the purpose of the study and why they were selected. At the same time, their right to participate or refuse was clearly explained and was respected; as a result, only those who consented to participate were included in the study. The privacy and confidentiality of the respondents relating to their information were kept.

3. Result and discussion

The result of the study was presented below in descriptive writing, charts and tables. The results displayed here in this document are the general socio-demographic characteristics of respondents, latrine utilisation status of households, and factors associated with latrine utilisation. The result on latrine utilisation status and associated factors under specific objectives of this study were discussed in detail after socio-demographic characteristics of the respondents.

3.1 Socio-demographic characteristics

Out of the total 356 respondents selected, 107 (30.1%) were mothers, 72 (20.2 %) were fathers, 50 (14%) were elder brothers, and 73 (20.5%) were elder sisters. At the same time, the remaining 34(9.6%) and 20(5.6%) were other relatives & non-relatives, respectively. From the total of 356 samples or respondents, 219(61.5%) were females, while the remaining 135 (37.9%) were males.

Table 1: *Sex distribution of respondents*

Respondent status	Sex					
	Male	Percent	female	Per cent	Total	Per cent
Mother	-	-	107	30.1	107	30.1
Father	72	20.3	-		72	20.3
Elder brother	50	14	-	-	50	14
Elder sister	-		73	20.5	73	20.5
Other relative	13	3.65	21	5.9	34	9.57
Non-relative	7	1.96	13	3.65	20	5.61
Total	142	39.83	214	60.17	356	100

The dominant group in the age categorisation ranges 18 to 24, which accounts for 148 (41.6%). Concerning the respondent's marital status, out of 356 respondents, 171 (48.0%) are single, and 167 (46.9%) are married. At the same time, the remaining 8(2.2%) and10 (2.8%) were divorced & widowed, respectively.

Out of the total 356 respondents, 328 (92.1 %) of the respondents have some educational background even if their level of education & knowledge varies. At the same time, the remaining 28 (7.9%) were illiterate.

The average annual income was found majorly in the range between 801-1000 Ethiopian birr. The respondent's average monthly income was calculated as 1200 birr & the overall income classification was shown below.

Table 2: *Monthly income distribution of the respondents*

Income range	Frequency	Per cent	Comparative income labelling
400-600	44	12.4	Very low
601-800	52	14.6	Medium low
801-1000	101	28.4	Low
1001-2000	68	19.1	High
2000+	91	25.6	Very high

With respect to Communication media, out of 356 households or respondents, 315 (88.5%) have communication media like radio and television, while the remaining 41 (11.5%) did not have any type of communication media. Of those households/respondents that have communication media (n=315), 197(55.3%) have television & 25 (7%) have radio, while the remaining 92 (25.8%) of the respondents have both radio & television.

Regarding the occupational status of households fathers, the major category were farmers, which accounts for 116(34.5%) (n=336). When I see the mother's occupational status, the majority of mothers are housewives accounting for 205 (57.6%) (n=352).

3.2 Excreta disposal system of respondents households

Concerning the excreta disposal system of the respondents, 224 (62.9%) households or respondents use pit latrine, 92(25.8%) VIP latrine and 40(%11.2) water carriage type of Latrine. Almost the majority of 351 (98.6%) of latrines were functional currently at time data collection, of which 95 (26.7%) latrines required maintenance. The remaining non-functional (1.4%) latrines required reconstruction, and 20 (5.6%) latrines had no superstructure. The majority of 326 (91.6 %) of latrine slabs were sealed or cemented. About 191(53.7%) of latrines were located >6 meters far away from the house, and only 68 (19.1%) households have handwashing facilities at Latrine.

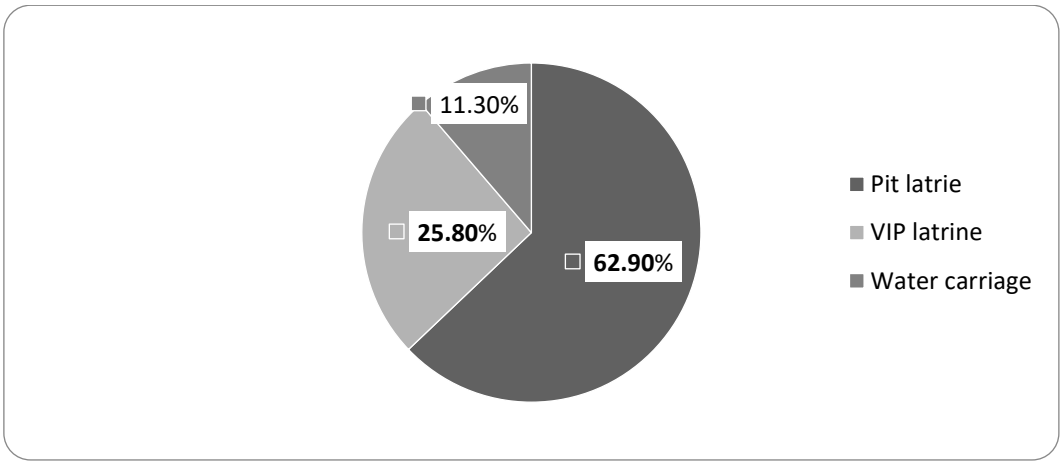

***Figure 1**: Distribution of the type of Latrine available in the study area*

3.3 Latrine utilisation status

From the 356 households included in my study, 316(88.76%) were using Latrine 24 hours (good utilisation), 29(8.1%) daily and the remaining 11(3.0%) rarely (poor utilisation), and in all households, all family members used the Latrine together. From the study respondents who have under-five children, 189(53.1%) of the households do not allow their children to use Latrine. Of the households which do make Latrine accessible for their under-five children, 68(36%) were due to fear of accidents, 75 (39.7%) not comfortable to child and 46(24.3%) were due to improper use. Among the households which have under-five children, 172(84.3%) were providing material to their children for deification, 10(4.9%) go to open field in the compound, and 18(8.8%) dispose in the pit latrine manually, and among the respondents who have under five children 38(16.74%) allow their children to use Latrine; 34(89.5%) at four years old and 4(10.5%) at three years old, Among the households which are using Latrine rarely, 9(81.82%) were due to stay out for work and 2(18.18%) due to bad smell of their Latrine. The latrine utilisation of the respondents is summarised in the table below.

Table 3: *Shows the overall excreta disposal system in the study area*

Variable	Frequency	Per cent
Latrine use by children		
Yes	38	16.74
No	189	53.1
The reason behind accessibility for children		
Fear of accident	68	36
Improper use	46	24.3
Not comfortable to them	75	39.7
Excreta management of children(n=221)		
Pit latrine disposal	18	8.8
Provide material for defecation	172	84.3
Go to open field in the compound	10	4.9
Disposing faeces out of houses	4	2.0
Frequency of latrine use		
Rarely	11	3.0
Daily	9	8.1
24 hours	316	88.76
Currently functional Latrine		
Yes	351	98.6
No	5	1.4
Utility status of the Latrine by family		
Utilised by the family in good condition	304	85.4
It is not functional	4	1.1
Other	48	13.5
Critical time at which hand is washed		
After defecation	73	20.6
After cleaning children's bottom	17	4.8
Before handling food	41	11.6
After defecation and before handling food	118	33.3
After defecation, after cleaning children's bottom and before feeding children	76	21.5
At all four stages	29	8.2

Among respondents who have Latrine, 191 (53.7%) constructed their Latrine before two years, 28.3% within the 2 to 3 years and the remaining households constructed more than three years. Among respondents who have Latrine, 330 (92.7%) had constructed Latrine by their own self-

initiation. The study also shows 255 (71.6%) of the latrines are clean. In total, 326 (91.6%) of latrines are cemented/sealed. The detail about latrine status of respondents household is described below in table 4.

***Table 4**: Overall condition of latrine status in the study area*

Variable	Frequency	Per cent
Year since the Latrine was constructed		
<2 years	101	28.4
2-3 years	191	53.7
>3 years	64	18.0
Reasons to construct Latrine		
Advice from health worker	19	5.3
Self-initiation	330	92.7
Seeing others	5	1.4
Imposition from others	2	.6
The status of Latrine		
Need reconstruction	20	5.6
Need no maintenance	241	67.7
Need maintenance	95	26.7
Cleanliness status of the Latrine		
Filled	24	6.7
Structure needs repair/ maintenance	28	7.9
Surrounded with dirty	49	13.8
Clean	255	71.6
Parts of Latrine needing maintenance (n=96)		
Super structure	31	31.2
Slab	47	47.9
Wall	18	17.7
Sealed or cemented Latrine		
Yes	326	91.6
No	30	8.4

3.4 Factors associated with latrine utilisation

Factors affecting latrine utilisation of respondents was calculated at 95 %CI with (p-value < 0.005), and the variable which has association were income level of the family per month and educational level of the head of the house (95%CI, P < 0.005). The study shows that households with a higher educational level of household head probably greater than grade 8 were more likely to have good utilisation than those household heads who were illiterate and have a lower educational level. The variation might be attributed to the difference in the knowledge and awareness level of the two groups regarding human excreta management and related problems. Households with more income level, >800 per month, were more likely to have good utilisation than those with a low-income level. This might be due to ignorance and lack of knowledge for the two groups regarding latrine utilisation and related problems.

The association of educational level of the head of the household, and income level of the family per month with the proper management of children's excreta at 95%CI (p-value< 0.05), was calculated. Households with the higher educational level of households head are more likely to manage their children's excreta compared to illiterate and lower grade education at the same time, the household family who get >800 EB per month are more likely to manage their children's excreta than those who have lower income level, at 95% CI (p-value<0.005). The associations are tabulated in the table below.

Table 5: *Association of socio-demographic characteristics and latrine utilisation in the study area*

Variable	Utility status the Latrine by the family		X2 at Df=1	P-value
	Yes	**No**		
Income per month				
<800	93	32		
>=800	211	20	18.67	P<0.005
Educational level	**Yes**	**No**		
>=8 grade	191	21		
Illiterate & lower grade	113	31	9.26	<0.005

Educational level and income per month are among factors that have an association with the management of children excreta. There is a difference in the management of children's excreta among households who have a monthly income level below 800 Ethiopian birrs when compared to households who have an income level above 800 Ethiopian birr. Also, there is a difference in the management of children's excreta among literate respondents compared to illiterate households. The detail is described in table 6 below.

Table 6: *Association of socio-demographic characteristics of management of children excreta*

Variable	Proper Management of children excreta		X2 at Df=1	P-value
	Yes	No		
Income per month				
<800	75	33		
>=800	97	16	9.56	<0.005
Educational level	**Yes**	**No**		
>=8 grade	108	20		
Illiterate	64	29	7.54	<0.05

4. Discussion of results

The study shows that only 19.1% of latrines have handwashing facilities. But this result is higher than the research done in Bahir dar Zuria Woreda, reported that 6.8% have handwashing facilities (Awoke & Muche, 2013), and this increment might be due to urban residence where the peoples are expected to have more knowledge, attitude and practice when compared to those living in rural or suburban. Out of 221 households with under-five children, 84.3% dispose of their children excreta by providing material for defecation and 4.3% dispose of faeces out of houses. This behaviour is an entirely unacceptable practice of handling faeces. This finding show improvement compared to the research done in Amhara Region, which is 65.9% and 31.8%, respectively (Andualem & Abera, 2010). This might be due to urban residence as there is good awareness of proper human excreta disposal in urban areas compared to those living in rural areas.

During data collection, 98.6% of latrines were functional (giving service). This figure is higher than the reported in the study conducted in Bahir dar Zuria Woreda, i.e. 62% (Awoke & Muche, 2013). This might be due to some behavioural change of the community about the use of Latrine and no other places for defecation with privacy.

Among the available Latrine, 20.7% required maintenance. This is good compared with 69% found in hawze in the district in Tigray. Out of the 356 households included in my study, 88.76% use 24 hours, 8.1% use daily, and 3.0% uses rarely; this 24 hours (good utilisation) practice of using Latrine is greater than the study done in Bahir dar Zuria Woreda which is 37.4% (Awoke & Muche, 2013). In my study finding, 80.9% had no handwashing facility. This figure shows that it is less than the study finding in Tigray, which is 84.8%. This might be due to urban residence, community ignorance and awareness for handwashing facilities.

In this study, only 5.3% of respondents explained that health extension workers advised them to construct latrines and most 92.7% are explained that they were constructed Latrine by self-initiation, and only 0.6% of respondents complained that other bodies imposed them; in the rural community of Hulet Ejju Enessie Woreda, East Gojjam Zone, Amhara Region, (76.1%) of the respondents who had latrines explained that they were advised by health extension workers to construct latrines (Andualem & Abera, 2010). Only 43 (5.2%) respondents complained that they were imposed by other bodies like local administrators. Hence, this study indicates that only 1.1% of latrines were not functional that is lower when compared to 13.3%, a result of a study carried out in the rural community of Amhara Region (Andualem & Abera, 2010).

5. Conclusion and recommendation

Progress in sanitation and improved hygiene has greatly improved health, but during this study, certain people are still having problems with the use of latrine facilities and proper utilisation of it due to ignorance and lack of awareness. So, continuous supervision and awareness creation by health extension workers is needed in the community to change their attitude towards Latrine and its utilisation. Even though most hand washing materials like water and ash are available, the community rarely used them for handwashing after visiting Latrine. To tackle the problem effectively, all concerned bodies like health extension workers and health and health-related institutions should always come up with efforts to change attitudes and behaviour around handwashing practice and proper management of children excreta. Strengthening the health information dissemination, appropriate technical support, and multi-sectorial collaboration are the key factors to improve the proper utilisation of latrines and handwashing practice and proper management of children's excreta. And health professionals should also have to create awareness on handwashing practice at a critical time, such as after cleaning children's bottom, before handling food, after visiting the toilet, etc.

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