Latrine Utilization and Associated Factors in Rural Community of Aneded District, North West Ethiopia, 2014

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Abstracts

Background: Proper disposal of human excreta remains a challenge especially in low income countries including Ethiopia. About 80% of the disease burden is related to poor sanitation and hygiene in the country. Cognizant of challenges, health extension program has been widely implemented longer. Latrine facility coverage of study area was higher but its utilization remained lower. Level of latrine utilization and factors associated with latrine utilization of the study area were not known. Therefore, evidences were required to show the current situation of latrine utilization in the study area.

Objective: The main objective of this study was to assess level of latrine utilization by households and associated factors in Aneded District, East Gojam Zone, Northwest Ethiopia.

Methods: A community based cross-sectional study was conducted from March 8 to April 9 /2014. Semi-structured questionnaires and simple structured observation checklist to confirm evidences were data collection tools. Data was analyzed using SPSS version 16. Possible associations were assessed using logistic regression, and strength of association was measured using odds ratio at p-value <0.05 and 95% confidence interval.

Result: The response rate was 99.8%, and the mean age of head of households was 39.25($\pm$ 12.56 SD). The level of latrine utilization in rural community of Aneded district was 63%. Significantly associated factors for latrine utilization in the district were the following:

Clean latrine facility (AOR: 4.1, 95%CI [1.7,10.0], bad latrine facility (AOR: 0.2, 95% CI[0.5,0.9]), presence of children in the household (AOR: 2.5, 95%CI [1.0,6.0]), traditional hat latrine facility (AOR: 7.4, 95%CI [1.1, 49.0]), and age of families (AOR: 9.1, 95%CI [1.8,45]).

Conclusion and recommendation: Latrine utilization in the study area was far from expected national target of 100% in MDGs. Not all constructed latrine facilities were used. Factors such as bad latrine facility and cleanliness of latrine facilities still need additional efforts. Health education should be given intensively to communities focusing on behavioral change communication, and good status and cleanliness of latrine facilities to improve its utilization.

Introduction

Pit latrines are one of the most common human excreta disposal systems in low-income countries, and their use is on the rise as countries aim to meet the sanitation-related target of the Millennium Development Goals. About 80% of the disease burden is related to poor sanitation and hygiene in the country. Over 50 infections are potentially transmitted from an infected person to a healthy one by various routes involving excreta [1].

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 contamination of water and soil [2].

Human excreta are the source of many infectious disease agents. As a result of open field defecation practices, human excreta contaminate the surface soil/field, food and water sources. The exposed excreta provide breeding places for flies and other insects. Such diseases are wide spread in Ethiopia. The major reason for this is that majority of the population especially in rural areas do not use safe and decent latrine system rather practice open field defecation [2].

Globally, poor sanitation results a serious health problem particularly to the poor and disadvantaged people. Lack of sanitation facilities compels people to practice open defecation and this increases the risk of transmission of diseases [3]. The disease burden associated with poor water, sanitation, and hygiene is estimated to account for 4.0% of all deaths and 5.7% of total disease burden in disability-adjusted life years (DALYs) worldwide [4]. Excreta borne diseases such as Typhoid fever, shigellosis, Amoebiasis, Helminthic infections are very common and serious in the country. These diseases can easily be controlled if everybody uses latrine facility. In Ethiopia, even though progress was made in reducing child mortality from 123 deaths of under five years of children per 1,000 live births in 2005 to 88 deaths per 1,000 live births in 2011, children in the country still suffer from

diarrheal diseases, respiratory problems, and malnutrition. The two week prevalence of diarrheal diseases was 13% among children under five years of age [4-6].

Over 50 infections are potentially transmitted from an infected person to a healthy one by various routes involving excreta. World-wide, lack of sanitation results a serious health problem. It affects billions of people especially the poor [1]. Lack of sanitation compels people to practice open defecation which increases transmit ion of diseases [2]. About 1.8 million people die every year due to diarrheal diseases of which 90% is under five children [3].

In Africa, 60% population has access to improve sanitation facility but 40% of the population has not access to improved sanitation. In other words, 20% of rural areas in developing country has access to improve sanitation facility where as 80% has not [2]. In Sub-Saharan-Africa about 88% of diarrheal diseases are attributed to unsafe supply, inadequate sanitation and poor hygiene [4].

In 2010, open defecation was practiced by 8 and 35% of urban and rural population respectively in sub-Saharan Africa but in Ethiopia there was more than 50% open defecation rate from 2005-2010 [7].

Regarding hygiene and sanitation was planned to increase number of households with latrines from 12, 673,106 (75.0% of latrine coverage) in 2010 to 14, 730,588 (86% of latrine coverage) in 2011 [9]. However, in 2011, cumulative number of households with latrine was 14, 993,248 (87.5%), achieving the target set for the year in the Core Plan [8].

About 8% of HHs in Ethiopia use improved toilet facilities that are not shared with other HHs, 14% in urban areas and 7% in rural areas. One in ten HHs (32 and 3% in urban and rural areas respectively) use shared toilet facilities. The large majority of HHs, 82%, use non-improved toilet facilities (91 and 54% in rural and urban areas respectively). The most common type of non-improved toilet facility is an open pit latrine or pit latrine without slabs, used by 45 and 37% of HHs in rural and urban areas respectively [6].

Overall child mortality could be reduced by 55% with the provision of safe water, sanitation and hygiene [9]. The prevalence of trachoma is still increasing due to poor environmental sanitation and personal hygiene. Ending of open field defecation is not just a matter of access to sanitation facilities: It also involves motivational drivers such as prestige, well-being, and situational goals. There is increasing value placed on motivating people to end open field defecation [10].

In Aneded district, diarrheal diseases are among ten top killer diseases especially among under-5 years (District Annual Report of 2013/2014). Poor use of latrines and excreta disposal might be contributing to morbidity caused by these sanitation related conditions. Such information related to poor use of latrines has never been documented well in the study area. Factors associated with latrine utilization at home have never been documented in the study area. Thus, the district health management team (HMT) thinks it necessary to carry out this study so as to establish baseline information about latrine utilization and associated factors at home there by applying community led total sanitation (CLTS) and achieving open defecation free strategies. The study will be aimed at assessment of latrine utilization and associated factors in rural community of Aneded District.

Significance of Study

Construction of latrine facility has been widely started in all parts of Ethiopia particularly by giving due attention to rural community since the start of health extension program. Child mortality could be reduced by 55% with the provision of safe water, sanitation and hygiene.

Thus this study would play its part on reduction of child mortality by providing information about level of human excreta disposal through latrine. The prevalence of diarrhea in Ethiopia had wider variation, from 11% to 38%, that mainly depends on season, ecology, and water and sanitation coverage. This study would inform about associated factors on latrine utilization including the above facts. It would also ensure that level of latrine utilization comes from the proper use of sanitation facilities, not simply because of their merely physical presence.

Rural community in developing countries face health problems related to sanitation and hygiene. This is not naturally given to the poor but due to associated factors. The problem cannot be basically reduced unless all community members utilize latrine facility. But the challenge is on identifying factors that make people to/not to utilize latrine. Thus this study will contribute its part on identifying such factors. Latrine utilization in Amhara region is about 65% but unknown in the study area.

This study will help to show how to maximize benefits of latrine utilization for health of community so that the policy makers and concerned bodies could take appropriate measures considering gaps. This study will therefore, be vital to identify level of latrine utilization and associated factors in the study area. It will also provide baseline information to other researchers, programmers, and HCWs and HEWs to intervene for the health of community. It will provide evidences for the District to take action in reducing open defecation through different strategies.

Methods

Study design and area

A community-based cross-sectional study was conducted. The study was conducted in Aneded District which is located 282 Kms Northwest of Addis Ababa, 283 km North of Bahir Dar and 18 km from Southwest of Debre Markos According to population projection of the 2007 national census conducted by CSA, there is an estimated population of 101735, of whom 50664 were males and 51070 females. Total population of the town and rural area was 2386 and 99348 respectively. The area had the total under-five children and households of 13775 and 20124 respectively. The area had 4 public health centers, 3 private clinics and 20 health posts. There are 40 HEWs evenly distributed in the 20 kebeles and 72 and 86 health care workers and supportive staffs respectively in the district. By the end of 2012, latrine coverage was 99.8% but utilization not known. It has a climatic condition of Weyna Dega and Kolla.

Study period

The study was conducted from March 8 to April 9/2014.

Population

Source population: All households with latrine facilities in the rural communities of Aneded District.

Study population: Selected households with latrine facilities in the five selected kebeles of rural communities in Aneded district were included in the study.

Inclusion criteria

All households with their own functional latrine facility at the time of data collection.

Sample size

The required sample was calculated using population proportion formula with assumption of p value-50% to maximize sample size, and marginal error (w), a standard Z score of 1.96 corresponding to 95% confidence interval (Za/2), design effect of 1.5% which could be determined by its own formula or number of stages but in this study, it had been taken from similar study done in Bahr Dar to provide correction for the loss of sampling efficiency resulting from the use of stratified sampling, and 10% non-response rate:

$n=[(Z(a/2))^2 p(1-p)]/W^2$

where=allowable error which is 5%

n=estimated minimum sample size

Z=level of confidence interval, in this study it is set at a=0.05, therefore z=1.96 $n=[(Z(a/2))^2 p(1-p)]/W^2=[(1.96)^2 0.5(1-0.5)]/(0.05)^2=384$

Accordingly, the required sample size was 384 × 1.5+10% (384 × 1.5)=634

Sampling technique and procedure

The study area was stratified by climatic condition in to 'Kolla' and 'Woyna Dega' assuming that latrine utilization varies with climatic zones. Five (25% of 19 rural kebeles) kebeles of the district were selected. From the 16 rural kebeles, four (25% of 16) kebeles were randomly selected. Similarly, one (25% of 3) kola kebeles was also randomly selected. Accordingly, the four Weyna Dega selected kebeles were Jama (K1=2078 HHs), Wenganifasam (K2=1763 HHs), Misleawash (K3=1219 HHs) and Chendefo (K4=991 HHs), and Kola kebele was Zengoba (K1$_c$=849 HHs). Once the study kebeles were identified, 634 households with latrine facilities were selected by using proportional allocation to size.

$ni = n \times N_i/N$

Where, n is required sample size; Ni is total households with functional latrines in each five selected kebeles; N is total households with latrines in the five selected kebeles; Using the above formula, the number of selected households were k1=191, K2=162, k3=112 and k4=91 in the Weyna Dega, and K1$_c$=78 in Kolla. Finally the required sample size were found; 634 HHs with functional latrines.

For example, K1(633 × 2078)/6900=191

Variables

Dependent variable: Level of latrine utilization/utilized/not utilized

Independent variables:

Socio-demographic factors: Included age, sex, residence, religion, marital status and neighbors

Socio-economic factors: Included occupation, level of education, Family income, and latrine condition

Environmental factors: Distance from health center/post and water source

Behavioral and cultural factors: included practice and hand washing behavior and Cultural taboos/beliefs

Operational definition

- Pit latrine: This is a hole that have superstructure which has been designed for defecation.
- Status of latrine: condition of latrine at the time of data collection whether it needs or no needs of reconstruction or maintenance.
- Good latrine: a pit latrine having superstructure with a door (any cover) and possibility of maintaining privacy during defecation.
- Fair latrine: a pit latrine having superstructure, without a door (any cover) but with a leaking roof and sagging walls.
- Bad latrine: a pit latrine without superstructure and lack of privacy during defecation
- Functional latrine: a latrine that can provide service at the time of data collection even it needs maintenance.
- Level of latrine utilization: latrine is utilized when households had functional latrines, no observable faces in the compound, observable feces through the squat hole, and the foot-path to the latrine is uncovered with grasses.
- Clean latrine: no fecal matter in and around the pit latrine, properly swept.
- Dirty latrine: Feacal matter littered in or around the pit latrine not swept.
- Critical time for hand washing practice – hand washing practices mainly after visiting latrines or cleaning bottoms of children, before preparing food and before feeding children.
- Irregular shape of latrine facility: facility made of plastics, deformed shape, difficult to say hat and rectangular grass & metal sheet.

Data collection

The questionnaire was prepared by the investigator. Data was collected using a pre-tested semi-structured questionnaire. Face to face interview and observation were applied during data collection. The questionnaire was first prepared in English and then translated into Amharic version and finally retranslated into English by the principal investigator and checked by two persons graduated in English and Amharic languages respectively. Ten health care workers and ten malaria surveillance assistants from Aneded District were data collectors.

Quality control

Training was given to members of data collectors and supervisors about objectives and contents of data collection tools of the study. The investigator and two HCWs supervised data collection process. Prior to two weeks of actual field work, pre-test was given to 5% of the sample size in Awabal District kebeles which is similar with study area.

The experience from pre- test area was shared to refine this research tools.

Data processing and analysis

Data was cleaned, coded and entered by using Epi-data v. 3.1 and exported to spss version 16. Descriptive summary using frequencies, percentages, graphs, mean and standard deviation were used for socio-demographic and other relevant variables.

Data was compiled and finally analyzed using binary and multivariable logistic regression model. Binary logistic regression was done for COR and multiple logistic regression was applied to calculate AOR for variables that met the p-value<0.05. The crude and adjusted odds ratios with their corresponding 95% confidence intervals were computed. A p-value<0.05 was considered to declare a statistically significant association with dependent and selected independent variables. The results were presented in text and tables based on the type of data.

Ethical consideration

Ethical clearance was obtained from the institutional research ethical review committee of Debre Markos University, College of Medicine and Health Sciences, Department of Public Health. Letters of permission was obtained from East Gojam Zone Health office, District health office and health institutions. Verbal informed consent was obtained from each respondent prior to face to face interview after they had been oriented about its purposes. Confidentiality of the information and privacy of the respondents was assured and maintained.

Dissemination of the result

The result of this study will be submitted and presented to joint MPH program of Debre Markos University and GAMBY College of Medical Sciences. It will provide baseline information for other studies. It will also be disseminated to Debre Markos University, East Gojam Zone Health Department and respective health institution. Findings of this research will be communicated to the district health office. In addition, it will also be communicated to different scientific communities through reports, seminars, symposiums or workshops. It could be published in one of the national and international journals.

Results

Socio-demographic characteristics

The response rate was 99.8% and the mean age of participants was 39.25 (± 12.56 SD). Most, 392 (61.9%) were males. Majority, 392 (88%) were Woyena Dega dwellers whereas the rest were in kola climatic zone. The dominant religion was Orthodox Christiane. Out of heads of households, 551 (87%) were married, and five hundred ninety-six heads of households (94.2%) claimed that they had neighbors (Table 1).

Socio-demographic characteristics	Number	Percent
Age (Category based on a research{Gutters I, 2013})		
18-35	63	9.9
36-60	261	41.2
61-75	133	21
76-80	117	18.5
81	59	9.3
Sex		
Male	392	61.9
Female	241	38
Residence		
Weyna Dega	392	87.7
Kolla	241	12.3
Religion		
Orthodox	625	98.7
Muslims	8	1.2
Marital status		
Married	551	87
Divorced	45	7.1
Widowed	18	2.8
Unmarried	19	3

Table 1: Selected socio-demographic characteristics of respondents in rural community of Aneded District, Amhara, Northwest Ethiopia, 2014.

Socio-economic characteristics

By occupation, majority, 546 (86.3%) were farmers. About 509 (80.4%) of households had no additional source of income. The heads of households, 406 (64.1%) were unable to read and write. In educational status of children, 127 (20.1%) were unable to read and write, 265 (41.9%) were able to read and write, 196(31%) attended primary school. Majority of partners, 456 (72%) were able to read and write. Most of households, 420 (66.3%) had 1-4 family members that were able to read and write. In addition, majority of households, 545 (86.5%) had an average of 3 hectares farming lands (Table 2).

Socio-economic characteristics	Number	Percentage
Job		
Farmer	546	86.3
Merchant	47	7.4
Daily labor	20	3.2
Government employee	20	3.2
Heads of households level of education		
Unable to read and write	406	64.1
Able to read and write	203	32.1
Grade one and above	24	3.8
Number of family able to read and write		

01-Apr	420	66.4
05-Aug	140	22.1
>8	73	11.5
Domestic animals type		
Yes	473	74.7
No	160	25.3
Which domestic animals (n=473)		
Cattle	330	69.8
Sheep	94	19.9
Horse	27	5.7
Goats	22	4.6
Types of crop products		
Crops	450	71.1
Corns	140	21.1
Cereals	43	6.8
Land holding		
0-6 hectare	545	86.1
>6 hectare	88	13.9

Table 2: Socio-economic characteristics of respondents of level of latrine utilization and associated factors in rural community of Aneded District, Amhara Regional State, Northwest Ethiopia, 2014.

Latrine condition and feces disposal system

Almost all households, 633 (100%) had functional latrine facility of which 412 (65%) and 146 (23%) were traditional hat and rectangular metal sheet respectively. More than half of latrine facilities, 506 (67.6%) were constructed between 1-3 years ago. Out of households, 403(63.7%) utilized their latrine facility. From the observed households, 215 (53.3%) had uncovered foot-path to latrine facility. From the heads of households, 259 (64.2%) utilized latrine from one to three years, and 117 (29%) utilized more than three years ago.

On the other hand, households of 309 (76.8%) always utilized latrine. Nearly fifty percent, 315 (49.8%) of households had under-five children. Of these, parents claimed that 223 (71%) of children utilized latrine facility. About 91 (28.9%) children who utilized latrine started at the age of three to five years. On the other hand parents, 220 (70%) claimed that their children utilize latrine by themselves at the age of five and above years. Out of families, 485 (76%) of latrine users were adult members of both sex.

Head of households claimed that only 70 (22%) of children ̓s feces were disposed into latrine facilities by their families before self-utilization. But others claimed that 38 (12%) of children did not utilize latrine because of unsuitable floor of latrine. In addition, 127 (39.8%) children openly defecated on the field. Households of 279 (69.2%) claimed that they had continual latrine utilization. One hundred (16%) of households had good latrine facilities (Table 3).

Latrine condition and feces disposal characteristics	Number	Percent
Duration of using latrine (n=403)		
1-3 years: Above 3 years	259	64.3
Below 1 year	117	29
Shape and structure of latrine facility	27	6.7
Traditional hat	412	65.1
Rectangular hat	60	19.5
Rectangular metal sheet	146	23.1
Irregularstructure and shape	15	2.4
Age of family members		
Age of males ≥ 5 years	33	5.4
Age of females ≥ 5 years	8	1.3
Both males & females age ≥ 5 years	485	75.9
Both males & females age ≥ 2 years	94	37.5
Age of 2-5 years children	13	2.05
Presence of children in the households		
Yes	315	49.8
No	318	50.2
Observation of any feces around the compound		
Yes	211	33.3
No	422	66.7
Observation of uncovered foot-path to latrine (n=542)		
Yes	289	53.3
No	253	46.7
Observation of latrine status		
Bad	123	19.4
Fair	410	64.8
Good	100	15.8
Status of latrine utilization		
Utilized	403	63.8
Not utilized	230	36.2
Cleanliness of latrine facility (n=403)		
Yes	199	49.4
No	204	50.6
Frequency (n=403)		
Regularly used	279	69.2

Irregularly used	124	30.8

Table 3: Latrine condition and feces disposal characteristics of respondents in rural community of Aneded District, Amhara, Northwest Ethiopia, 2014.

Socio-cultural Characteristics

Majority of households, 582 (91.9%) claimed that both male and female can utilize the same latrine together. Similarly, 471 (74.4%) of head of households responded that females are allowed to defecate in day time.

Behavioral and Environmental Factors

Majority of head of households, 596 (94.2%) claimed to wash their hands before eating. Of these, 303 (47.9%) and 126 (19.9%) washed after cleaning of children and at the four critical times respectively. Three hundred fifty households (55.6%) lived near to health center with a distance of below 5 kms. Some of the households, 112 (17.7%) had water well. Of these, 110 (98%) wells were constructed above 30 m distance from latrine facility (Table 4).

Environmental factors		Number	Percent
Distance between health center and village	Below 5 km	350	55.3
	Between 5-20 km	254	40.1
	Above 20 km	29	4.6
Distance between health post and village	Below 5 km	486	76.8
	Between 5-20 km	123	19.4
	Above 20 km	24	3.8
Having water well in compound	Yes	112	17.7

	No	521	82.3
Distance between water well and latrine facility (n=112)	Below 15 m	49	43.8
	Between 15 and 20 m	44	39.3
	Above 30 m	19	16.9
Distance between latrine and the house	Below 6 m	274	43.3
	Between 6 and 12 m	249	39.3
	Above 12 m	110	17.4

Table 4: Environmental factors of latrine utilization and associated factors in rural community of Aneded District, Amhara Regional State, Northwest Ethiopia, 2014.

Multivariate Analysis

In order to identify significant variables that were associated with the outcome variable, all significant variables with p-value less than 0.05 in bivariate analysis were fitted into the model. The model showed that clean latrine facility (AOR: 4.1, 95%CI [1.7, 10.0]), and bad latrine facility (AOR: 0.2, 95%CI [0.5, 0.9]), presence of children in the household (AOR: 2.5, 95%CI [1.0, 6.0]), traditional hat latrine facility (AOR: 7.4, 95%CI [1.1, 49.0]), and age of families (AOR: 9.1, 95%CI [1.8, 45.0]).

Households that had clean latrine facilities were 4 times more likely to use latrine than households that had dirty latrine facilities. Households that had bad latrine facilities were 5 times less likely to utilize latrine than those who had good latrine facilities. Households that had children were 2.5 times more likely to utilize latrine than households that did not have children. Households that had traditional hat latrine facility were 7.4 times more likely to utilize latrine than those who had irregular shape and structure of latrine facility. Households whose family age was five and above years were 9 times more likely to utilize latrine than households with 2-5 years of family members (Table 5).

Variables	Latrine utilization					
	Utilized	Not Utilized	p-value	COR (95%CI)	p-value	AOR (95%CI)
Cleanliness of latrine						
Clean	300	12	0.003	2.7(1.3,5.4)	0.02	4.1(1.7,10.0)
Dirty	289	32		1		1
Latrine status						
Bad	101	22	0.002	0.14(0.04,0.5)	0.03	0.2(0.05,0.9)
Fair	391	19	0.47	0.6(0.18,2.1)	0.89	0.9(0.2,3.6)
Good	97	3		1		1
Presence of children in households						
Yes	301	14	0.016	2.2(1.1,4.3)	0.04	2.5(1.0,6.5)
No	288	30		1		1
Shape and structure of latrine facility						

Traditional hat	394	18	0.014	5.4(1.4,21)	0.04	7.4(1.1,49.0)
Rectangular hat	48	12		1(0.24,4.1)	0.5	0.5(0.07,3.6)
Rectangular metal sheet	135	11	0.118	3(0.75,12)	0.49	2(0.2,14.0)
Irregular	12	3		1		1
Age of families						
Male age 5-90 years	24	9	0.224	2.2(0.6,8.6)	0.31	2.5(0.4,16.0)
Female age 5-90 years	5	3	0.69	1.4(0.23,8.6)	0.97	1(0.03,33.0)
Age of both male and female 5-90 years	465	20	0.00	19(6.1,64)	0.007	9.1(1.8,45.0)
Age of both male and female						
2-90 years	88	6	0.00	12(3.1,49)	0.20	3.1(0.5,18.0)
Age of 2-5 years children	7	6		1		1

Table 5: Logistic regression result for level of latrine utilization and associated factors in rural community of Aneded District, Amhara Regional State, Northwest Ethiopia, 2014.

Discussion

The main objective of this study was to assess level of latrine utilization and its associated factors in rural community of Aneded district. Accordingly, the present study revealed that level of latrine utilization in the rural community of study area was 63%. According to the study district end of 2013, and eight months of 1014 report, the utilization rate of latrine facility was not known but its physical coverage was 99.8%.

The result of this study was a little bit more than the result of community based cross-sectional study in Hulet Ejju Enessie [11]. This difference could be attributed to the study period (2006 *vs.* 2014). According to the annual report of Amhara Regional health bureau by the end of 2012, out of 95% households with latrine facilities, only 65% were in use. This was almost similar as compared to this study.

A study done in SNNPRS, Sousern Ethiopia, and latrine facility utilization rate was 74 percent. The present study is much more less than as compared to this study. The reason could be attributed to the method (the previous study used FGDs unlike this study in addition to questionnaires and observation) and areas of the study (Amhara and SNNPRS).

Ethiopia, one of three largest Sub-Saharan Africa countries, had latrine utilization rate of 62 percent. Likewise, In Sub-Saharan Africa, the other largest two countries (Nigeria, and the Democratic Republic of Congo) level of latrine utilization `was 69 and 88 percent respectively [12].

Based on Indian government census of 2011, 31% of rural households had latrine utilization which is much more less than in this study [7]. The difference could be attributed to the time of study period (2011 *vs.* 2014), type of study (face to face interview and observation in this study and survey to the second) and place of study areas (India and Ethiopia).

The methods of handling feces of under-five children were differed from one household to another: For instance, 22% disposed in the latrine which is much more less than the findings from Kenyan study, 53 percent. The behavior of openly disposing is entirely unacceptable practice of handling feces [13]. The level of latrine utilization in study area was low as compared to expected national target of MDGs [9].

This study also revealed a number of factors associated with latrine utilization. These included unclean latrine facility, poorly constructed latrine, having children, traditional hat latrine facility and age of families.

As this study showed, households with clean latrine facilities were 4 times more likely to use than those with unclean ones. The reason could be attributed to the fact that participant's behavior will be motivated through attractive environment. Similarly, in a study done SNNPRS, participants who had clean latrine facility was 1.2 fold higher to use than those with unclean once. The reason claimed was attractiveness, prevention of various diseases, and even satisfaction [14].

This study revealed that households that had good latrine facilities were 5 times more likely to utilize latrine than those who had bad latrine facilities. This could be due to the reason that when a part of latrine particularly the pit and the slab was damaged, families could not utilize latrine as they felt fear of falling down and lack of privacy and dignity. A study conducted in Hulet Ejue showed that 80% of the households did not utilize latrine due to its non-functionality [11].

In this study, households with traditional hat latrine facilities were 7 times more likely to utilize latrine than those with irregular latrine facility. This could be attributed to being less attractiveness, inconvenient, easily disorganized and damaged as a result less attention/value given and finally it would deter families from utilization.

On the other hand, households having children were 2.5-fold higher to utilize latrine as compared to those without children. This could be attributed to easily informed, largely learnt, adopting from others soon thereby transferring information to families, and increment of due attention to personal and environmental sanitation thinking for the growing children The study done in SNNPRS in Southern region, showed that parents who had literate children were 1.6 times more likely to use latrine than parents with absence of children [15].

This study also revealed that households with family members of age five and above years were 9- fold higher to utilize latrine as compared to family members with age of two up to five years. This could be attributed to learning from experience, taking the higher responsibility of implementing duties and responsibilities and maturity to learn more. According to a study in Mtwara Rural District, Tanzania, the age of the head of household were factors found to be significantly associated with increased use of latrine by all household members with the adjusted odds ratio of 0.38 [16].

The result of a study in SNNPRS showed that household heads adopting latrines were 1.9 times more likely to have any education and 1.5 times more likely to have a larger family than non-adopting neighbors [17].

In conclusion, the result of this study showed factors that affect utilization of latrine either positively or negatively

Strengths and Limitations of Study

Strengths of the study

This study will be a clue to the Ministry of Health for the extension health package to develop strategies and even policies related with sanitation particularly among rural community having the following strengths:

- The study was community based particularly addressing the rural community
- Response rate was high (99.8%)

Limitation of the study

- The study was conducted in 5 rural kebeles within the district, so could not be generalize for all population of other districts and town population of the study area.
- Lack of documented information about latrine utilization in the district.
- Lack of information from researcher regarding to latrine utilization in Aneded district
- Behavior aspects of the community cannot be understood only by quantitative study
- Data collectors were health care workers so that data collector bias might be occurred.

Conclusion

Generally levels of latrine utilization in rural community of Aneded district were low as compared to national expected target of MDGs. Significant variables that were associated to latrine utilization were clean latrine facility, bad latrine facility, and presence of children in the household, traditional hat latrine and age of families.

Recommendations

To health institutions

- Information regarding latrine utilization should be provided to the public through available channels and practical models. Promotion

messages focusing on human proper feces disposal should be scale up into the community throughout.

- Providing enough information about latrine construction, cleanliness through health education, and promoting latrine use on regular basis by health care and extension workers.

To the community

Community-based HDAs and kebele cadres at community level should strengthen and enhance the agenda of latrine utilization closer to the community.

To research institutions

Further comprehensive research should be conducted on larine utilization and its associated factors in different settings.

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