

**HARAMAYA UNIVERSITY
SCHOOL OF GRADUATE STUDY`**

**PERSONAL HYGIENE AND IT'S ASSOCIATED FACTORS AMONG
WOMEN IN RURAL KEBELES OF DIRE TEYERA WOREDA, HARARI
REGIONAL STATE, EASTERN ETHIOPIA**

MSc THESIS

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WOMEN IN RURAL KEBELES OF DIRE TEYERA WOREDA, HARARI
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**A research thesis to be submitted to the school of graduate studies of
Haramaya University College of health and medical science department of
Environmental Health in partial fulfillment of the requirement for the
bachelor degree of master in Water supply, Sanitation and Hygiene
management**

**May, 2021
Harar, Ethiopia**

STATEMENT OF THE AUTHOR

By my signature below, I declare and affirm that this thesis is my work and has followed all ethical principles of scholarship in the preparation, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in the document. Every serious effort has been made to avoid any plagiarism in the preparation of this thesis.

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ABBREVIATIONS/ACRONYMS

AOR	Adjusted Odd Ratio
C I	Confidence Interval
COR	Crude Odd Ratio
CSA	Central Statistical Agency
EDHS	Ethiopia Demographic and Health Survey
EPA	Environmental Protection Agency
FMOH	Federal Ministry of Health
HHs	House Holds
IHRERC	Institutional Health Research Ethical Review Committee
JMP	Joint Monitoring Program
NGOs	Non-Governmental Organizations
SPSS	Statistical Program For Social Science
TWD	Total Women of Dire
UNICEF	United Nation International Children's Education Fund
WASH	Water Sanitation and Hygiene
W H O	World Health Organization

ABSTRACT

Background: Poor personal hygiene could be a major problem in developing countries and numerous high-risk behavior among women and young children. In Ethiopia, significant number of women have poor hygienic practices due to multifaceted reasons. It is little comprehend about hygiene practice in Ethiopia. However, evidence in Eastern Ethiopia particularly in Dire teyera, Harari Regional State is limited.

Objective: This study was intended to assess the personal hygiene and its associated factors among women in rural kebeles of Dire Teyera Woreda, Harari Regional State, Eastern Ethiopia, August 15, 2021 to September 15, 2021.

Method: A community based cross-sectional study was conducted in rural Kebeles of Dire Teyera, Harari Regional State. A total of 362 women were selected using simple random sampling technique. Data were collected using pretested structured questionnaire through face to face interview. The collected data were checked, coded, entered and cleaned using Epi-Data version 3.1 Software and exported to SPSS version 20 for analysis using descriptive statistics and analytical methods. Multivariable logistic regression was used to determine predictors of the outcome and declared as statistically significant at the p-value less than 0.05 at 95% Confidence Interval.

Results: The overall personal hygiene practices was 53% (95% CI: 48.8-59.3). The odds of women with college and above education were 3.52 times higher to practice of personal hygiene compared to those women who cannot read and write (AOR=3.52, 95% CI; 1.05, 8.03). The odds of women with clean household were 3.64 times higher to practice of personal hygiene compared to those women who cannot clean household (AOR=3.64, 95%; CI: 2.37, 9.75). The odds of women with government employer occupation were 2.97times higher to compare to those women who house wife (AOR=2.97, 95%; CI: 1.56, 7.82). were statistically significant associated with women hygiene practice.

Conclusions: The study concluded that nearly half of the study participants had good personal hygiene practice Education status, Occupational status and clean of household were significantly related to personal hygiene practice among women. Therefore, tailored health education and promotion on personal hygiene is suggested as intervention within the rural community.

Keywords: Factors, personal hygiene practice, women, Rural, Kebeles, Ethiopia.

1. INTRODUCTION

1.1. Background.

Personal hygiene is a personal care includes bathing, hand washing, cleaning of teeth, washing of the hair and clothes, finger nail trimming and washing foot, (Asha Rai et al.2016). Personal Hygiene helps to prevent the spread of germs and is also fundamental to the prevention of many diseases particularly contagious diseases (Mwirigi et al.,2014). Personal Hygiene is a public health tool that is used for disease prevention and health promotion in individuals, families and communities the most important measure in any infection control program is hand hygiene, (Mercy et al.,2014). Most of the infections disease occurred among women in developing countries were due to poor sanitation and hygiene practice, (Gawai et al., 2016).

Poor personal hygiene is a major problem in developing countries and a high-risk behavior among women and children (UNICEF, 2018a, UNICEF, 2018b). Personal hygiene practice with soap, safe practice, and community they are most important because changing a single key personal hygiene practice can make an enormous difference impact on women and are the easiest to change at the lowest costs (Monney and Antwi-Agyei et al.,2018). Over 50 infections are potentially transmitted from an infected person to a healthy one by various routes involving excreta. Worldwide, lack of hygiene results a significant pathological state. It affects billions of individuals especially the poor (Farley et al., 2001). Cases of cholera had been estimated as 3 million yearly and 500 million people are at risk of suffering from blindness from trachoma globally (Gilles, et al., 2015).

The disease burden from personal hygiene is estimated at the global level taking into account various disease outcomes, principally personal hygiene related of diarrhoeal diseases interventions of hygiene and sanitation. Simple handwashing could save up to 1 million lives every year (Hossain et al., 2015b). However, hygiene promotion programs can only be successful if they are practiced based on the current level of practice and perceptions of hygiene behaviors of women (Ju et al., 2020).

Approximately 90% of women mortality due to diarrhea and pneumonia occur in the most populated and poor countries: India, Nigeria, Ethiopia, Pakistan, and the Democratic Republic of Congo (Gawai et al., 2016). Personal hygiene practice also improves promotion programs processes by reducing poor personal hygiene due to illness (Monse et al., 2013). Personal hygiene as evidenced by researches conducted around the world; for instance 54% (China), 40% (Egypt), 35% (Kenya), 27% (Philippines) and 20% in (Colombia) (Monse et al., 2013). Further more about 443 million women are lost each year due to water-related illnesses, making it a leading factor in the developing world (WASH, 2012).

Diarrhea accounts for the biggest share of hygiene-related morbidity and mortality, causing an estimated 1.4 million deaths (Budhathoki et al., 2017). These deaths especially children and women occur principally Personal hygiene related to diarrheal diseases, schistosomiasis, trachoma, ascariasis, trichuriasis, and hookworm infection (Schmiege et al.,2016). Personal hygiene and self-care, particularly access to regular showering and clean clothing, might also increase likelihood of transitioning out of homelessness, through obtaining employment or a housing placement (Leibler et al., 2017)..Personal hygiene in relation to preventing epidemics or even pandemic outbreaks is very significant (Lucas, et al., 2016).

Most of the communicable disease occurred among women in developing countries were poor sanitation and hygiene practice (Curtis et al., 2009). In developing countries, 47% of the population has living in unhygienic environment, while in developed countries the proportion is just is only 1 % (Yulyani and Kurnia et al., 2019). socio-economic impact on the households without access and people living in communities where access to sanitation is low, while it's clear that access to latrines in Ethiopia continues to be low, trends show a slow increase in those people adopting fixed place defecation however the practice of open defecation (37%) lead to a seamless disease burden, (Cronk et al., 2015).

In Nigeria, five common health problems of women are fever / typhoid (56%), headache (43%), stomach ache (29%), cough 3catarrh (38%) and malaria (40%) (Federal Ministry of Education), (FMOE, 2015),. 0.2% of women have lice on their heads, 3% of women have skin rashes, about 20% of women do not have normal visual acuity, dental plaque was observed in more than 10% of women, 0.4% of women have sores on their tongue, about 19% of women do not have normal hearing (FMOE, 2015). Personal hygiene is recognized as a major way of preventing diarrheal disease by up to 50 % and respiratory tract infection by about one-third third (Jennifer and Param, 2015).

The Ethiopian demographic health survey report indicated that only 57% the households (HHs). in rural areas obtain 39% haven't any bathroom, (Cronk et al., 2015). The prevalence of diarrhea episodes within the community was reported to be 12% and 60% of disease burden is said to poor WASH, and over 250,000, children die per annual from WASH-related diseases. Thus, they are considered as major causes of diarrhea illness, death, and disability in Ethiopia, (Kumie et al., 2020).

In general, since women are agents for behavioral change (Jores et al., 2018). Personal hygiene practice must be routine habit through life, Therefore this study is aimed to assess personal hygiene practice among rural community women and associated factors in Harar Regional State, Eastern Ethiopia in 2021.

1.2. Statement of the Problem.

The global health burden related to these conditions is poor personal hygiene could be a major problem in with an estimated 4,000–6,000, children dying day after day from diseases related to lack of access to sanitation and hygiene (Awoke and Muche et al., 2013). worldwide, the disease burden related to poor water, sanitation, and hygiene is estimated to account for 4.0% of all deaths and 5.7% of the whole disease burden in disability-adjusted life year in cases had been estimated as 2.6 billion women is die lack access to proper hygienic practices with most living in developing countries, (“Water, sanitation and hygiene statistics” 2013). Nowadays, globally 80% users of unhygienic and 85.7% who practice open defecation were live in rural areas (Mwirigi et al., 2019).

The global population now uses an improved hygiene and sanitation facility the only 700 million people and 68% and developing region to meet the personal hygiene target were the consequence, Central Asia, Eastern Asia, Northern Africa and western Asia, (Bartram et al., 2017). About 2.1, billion people have low personal hygiene since 1990 and 82% of the global urban population and 47% of the rural population uses of hygiene respectively, (UNICEF 2017).

According to the 17 sustainable development goals, indicated that nearly 1.3 billion citizens in the developing world poor of personal hygiene enough, and almost 3 billion people do not have reasonable of toilet. (SDGs) (Hutton & Bartram et al., 2014-Olarinmoye Esther et al., 2013). An estimated 10,000 people are dying from water, sanitation and hygiene -related diseases every day, and thousands more suffer from a variety of chronic diseases. (Bosch, Hommann, Rubio, Sadoff et al., 2014). The burden of inadequate personal hygiene facilities primarily falls on the poor, (Cairncross et al., 2017).

In developing countries, personal hygiene, is one amongst the for most important felt needs publically health However, about 842,000, people die as a results of inadequate hygiene, annually representing 58% of the whole diarrheal death (Yimam et al., 2020). the poor hygienic coverage of rural and urban was 71% and 39% respectively in developing countries (Cairncross et al., 2005). Practice of Personal hygiene among india survey report some primary components Clothes, 14% Skin, 60% Foot, 48% Nails, 46% Ears, 40% Armpit, 40% Oral, 40% Hand, 36% Hairs, 32% Face, 16% , (Rani J, et al., 2017).

Personal hygiene practices among women in india, and both depends on individual’s socioeconomic status, personal preferences, local traditions and beliefs. In India, between 45% and 87% of girls re-use cotton cloths rather than using disposable pads. Re-usable materials aren't sanitized properly; Cleaning is usually avoided soap usually with unclean water. because of poor menstrual and sexual hygienic practices reusable clothes are dried off from outdoors and sunlight a few years, (Patil and Rao et al., 2018).

Personal hygiene practice among women from Nigeria was poor various critical times for hand washing like before cooking food, before serving food, after using the toilet after cleaning child stool before eating, 55% before serving food, 35.5% before feeding their child, 50.3% after defecation, and 43.1% after cleaning child stool. Among all, only 47% used soap and water for hand washing after defecation, (Asekun-Olarinmoye Esther et al., 2014).

The Ethiopian DHS survey in 2014, estimated that 82.5% of the urban and 97.5% of the rural population had no access to improved personal hygiene and that 8.7% of urban and 37.5% of the rural population practiced open defecation poor personal hygiene has great impact on public health because it facilitates transmission of infectious pathogens in the human excreta (Bartram and Cairncross, 2010).

According to a recent report by the JMP (Farah et al., 2015), Ethiopia is among the 45 countries within the world with personal hygiene coverage of under 50% and one in every of 27 countries within the world where quite 1/4 of the population still practice open defecation (SWAp, 2013). Generally the Ethiopia population major reason behind public health problems practicing open defecation 44.3% Ethiopia in 1990 to twenty-eight.3 million in 2015, or a mean reduction of over 4 mathematical notation p.a. over 25 years (Supply et al., 2015).

Most studies conducted have focused on established personal hygiene level there's a transparent gap within the investigation of underlying factors resulting in the low personal hygiene especially in rural community this studies was conducted different a part of Ethiopia showed that personal hygiene level different from region to region of the country and from district to district (Sah et al., 2013). However, there have been few recently conducted researches in Ethiopia, the up-to-date knowledge of investigator studies on personal hygiene practice among women in rural kebeles and associated factors in Eastern Ethiopia particularly in Dire teyera, Harari Regional State is limited. Therefore, this study is conducted to determine the magnitude and factors that have impact on women personal hygiene practice, aimed at assessing the magnitude of personal hygiene practice among women and associated factors in Dire Teyera, Harari Regional State.

1. 3. Significance of the Study.

The current study was designed to assess on personal hygiene and Its associated factors among women in rural dire teyera woreda, Harari Region. Thus will help Harari Regional Health Bureau to plan and implement appropriate intervention strategies by identifying their gaps on personal hygiene promotion. Based on the findings was this study, dire teyera health care provider could develop specific intervention programs in collaboration with community. Moreover, finding of this study dire teyera woreda health office, dire health facility workers and local health care providers in identifying gaps and develop intervention to halt current COVID-19 pandemic through promoting effective on personal hygiene among women in rural dire teyera woreda, were get more insight on the level of the problems and it will also help as an important literature in addition to the existing one in the determination of factors associated with personal hygiene.

1.4. Objectives.

1.4.1. General objective

To assess on personal hygiene and its associated factors among women in rural kebeles of Dire Teyera Woreda, Harari Regional State, Eastern Ethiopia from August 15, September 15, 2021.

1.4.2. Specific objectives

- 1) To assess level of personal hygiene among women in rural Kebeles of Dire Teyera Woreda, Harari Regional State, Eastern Ethiopia.
- 2) To identify factors associated with personal hygiene among women in Rural Kebeles of Dire Teyera Woreda, Harari Regional State, and Eastern Ethiopia.

2. LITERATURE REVIEW

2.1. Level of Personal Hygiene Among Women

An community-based survey conducted rural India, level of women practice ranged from 25% to 50% across the three studies. Compared with open defecation, household access to toilet facility was associated with a 30–39% reduced odds of women among aged 15–19 years old, poor practice (AOR=0.84, 95% CI 0.71 to 0.99); clen of foot (AOR=0.84, 95% CI 0.78 to 0.91); washed of cloth (AOR=0.61, 95% CI 0.44 to 0.85)).women of Household personal hygiene practices are associated with women, (Rah JH, et al., 2015).

Studies showed that hand washing before eating is more common than after visiting or defecation (John V, et al., 2014). For example, in Peru only 11% of people were observed to wash hands after defecation (Sakisaka K, et al., 2012). and similar study in Burkina Faso also showed that only 4% of mothers used soap to wash their hands after cleaning a child's bottom (Curtis V, et al., 2013). and another study in Bangladesh showed the hand washing practice by households' before taking meals was only 10% and after defecation was only 8% and 25% used to cut their finger nails regularly (Horan N et al., 2015). Literature reviews 5 indicated that hand washing with soap can reduce diarrhoea morbidity in the range of 30% to 47% even it is higher than diarrhoea reduction by providing clean water (27%) (Curtis V, et al., 2013, Ejemot RI, et al., 2016).

A cross sectional study level of practice personal hygiene among rural India majority 51% of had poor personal hygiene practice a crucial role in assessing rural women's hygienic also demonstrated were positively affected with women's personal hygiene practice scores report showed that Clothes 14%, Skin 60%, Foot 48%, Nails 46%, Ears 40%, Armpit 40%, Oral 40%, Hand 36%, Hairs 32%, Face 16%, respectively (Rani J, et al., 2017).

A Study in Selected Slums of Dhaka City level practice of personal hygiene showed 475 respondents, more than fifty percent slum resided in tin shaded room while 21.7% in kacha houses the study revealed that near 59% of the respondents used sanitary latrine. About 67% slum dwellers regularly practiced hand washing before taking meal and 59.2% respondents used soap after defecation. About fifty percent respondents brushed their teeth regularly with tooth paste. Regarding personal cleanliness, 81% subjects took bath regularly while 78% washed clothes irregularly. (Sah et al., 2013, Farah et al., 2015).

A study conducted in Punjab, Pakistan revealed all women of districts within Punjab, Pakistan. Out of the total, 93% of respondents said lack of education responsible for practising poor personal hygiene. The outcome of another study by, (Mahami et al., 2019). suggested lower education was the most important obstacle to personal/individual cleanliness from the point of view women of the respondent. This is followed by lethargy and has no time for such activities. (Ahamadu et al., 2013).observed that personal hygiene can be improved in educating individual in communities. . (Vivas et al., 2010).

According to the study conducted in Rural Community of District, northwest Ethiopia showed that 52percent Ethiopia, of the the community be addressed when creating health and hygiene promotion programs. through education it can be improved. Secondly, proper resources should be arranged for hygiene practice. Well -planned and well -situated hand washing amenities and toilets that include adequate amounts of soap and water, are essential in promoting hygiene. the problem of unhygienic can be tackled to a great extent (Khalid et al., 2019).

2.2. Factors related with personal hygiene among women

2.2.1. Sociodemographic factors.

Sociodemographic factors of women in rural community District, Southern Ethiopia there was associated with educational status of the women (AOR (95% CI, 3.393 (1.969-5.509). income (AOR (95% CI, 0.646(0.340-1.226) and family size (AOR (95% CI, 1.363(0.839, 2.214), marital status (AOR (95% CI, 6.480(2.772-15.379), family occupation (AOR (95% CI, 3.111(1.4706, 5.84), toialty facility (AOR (95% CI, 0.219(0.133-0.362), we did find significant association (Belachew et al., 2018).

Studies showed was Ginci twon, west Shoa, Oromia, Ethiopia, the factors associated with personal hygiene practice the showed was 54.2% had poor personal hygiene practice. Factors significantly associated with personal hygiene practice at p-value <0.05 were age(COR=2.53 (95% CI,1.63, 3.93), family occupation (COR =2.07(95% CI,1.12,3.84). maternal education status (AOR =2.74(95% CI,1.47,5.13), being member of hygiene and sanitation club(COR=1.83 (95 % CI,1.01, 3.35), availabilities of hygiene facilities (AOR=2.44(95% CI,1.35,4.42) and knowledge about personal hygiene (AOR=2.76(95%(CI,1.48,5.17) (Fantaye, 2016).

Across-sectional done Mareko District, Southern Ethiopia showed that hygiene practice was 252 (30.4%) with 95% CI (27.3–33.5%). Practices of hand washing, and In multivariate analysis, factors associated with hygiene practice were women of the education status (AOR 5.1, 95% CI 2.86–9.1) and family occupation (AOR = 1.99, 95% CI 1.06– 3.75); knowledge about personal hygiene (AOR 2.44, 95% CI 1.28–4.64); being 20–29 years old (AOR 1.42; 95% CI 1.3–1.88); and cleanliness of toilets (AOR 3.4; 95% CI 1.77–6.55) (Curtis et al., 2009).

A study conducted in northwest Ethiopia by reveals that majority of personal hygiene (77.5%) were using homemade cloth and 22.5% were using sanitary pad during. they indicated that (86.1%) of body clean and only (21.5%) of them used both soap and water. Among the respondents (48.9%) changed their cloth twice a day, (26.5%) of them did change once a day and (24.6%) change three times and more. According only (29.8%) of the respondents practiced whereas (70.2%) practiced poor personal hygiene regarding the level of practice. (Fisseha et al., 2017b).

According to the study showed was Gotu Keble Wondogenet Woreda Oromia, 251 women participated in the study. With mean age was 26.48 (± 4.51 SD) years. The majority of the respondents wre family size < 3 (53%), 3-5 98 (39%), and > 6 (5.6%) religion followers. Personal hygiene compared to those (Sambata et al., 2015).

2.2.2. Environmental factors

There are cultural, educational, economic, institutional, environmental and psycho-social factors that could motivate people to adopt safe hygienic practices. Regular water supply, provision of sanitation facilities, stakeholder participation and improvement of consumer sanitation and knowledge are factors which can motivate people to adopt safe hygienic practices (Phaswana-Mafuya and Shukla, 2005).

A study done in Gulomekada district Tigray Region, North Ethiopia in 2013 revealed that husbands educational status of primary and above (AOR=3.71, 95%CI: 1.52-9.09) and environmental factors.(AOR=2.85, 95%CI: 1.09-7.44) were factors significantly associated, (Budhathoki et al., 2017). The use of bare hands to cleanse the bottom of a child after it has defecated is common practice in much of the world and provides an easy route for faecal pathogens to reach the environment(25).

A study done in dembia district northwest Ethiopia ,in 2014 Factors Associated with Hygiene Practice Age group ≥ 18 years 557 (67.2%) <14 years 272 (32.8%) Sex 370 (44.6%) Educational level Higher (Grade 9–10) 342 (41.3%) Lower (Grade 10–12) 487 (58.7%) 265 environmental hygiene practice, (32%) Rural 564 (68%) Family size >5 553 (66.7%) ≤ 5 276 (33.3%) were factors significantly associated, (Shehmolo et al., 2018).

A Study in Selected Slums of Dhaka City Practice of Personal Hygiene showed 475 respondents, more than fifty percent slum dwellers resided in tin shaded room while 21.7% in kacha houses. Sixty six percent of the respondents lack of environmental hygiene practice. 59% of the respondents used sanitary latrine. About 67% regularly practiced hand washing before taking meal and 59.2% respondents used soap after defecation. About fifty percent respondents brushed their teeth regularly with tooth paste. Regarding personal cleanliness, 81% subjects took bath regularly while 78% washed clothes irregularly. A statistically significant relation was found between washing of, (Sah et al., 2013, Farah et al., 2015).

Status of hygienic practices and its associated factors of personal hygiene practice in Mekelle town, northern Ethiopia. Personal hygienic practices of were 53.1%. have an behavioral hygiene [AOR=2.89, 95%CI: 1.43-5.87] and have environmental hygiene,[AOR=3.81, 95%CI: 1.88-7.73] were strongly associated with poor hygienic practices (Jores et al., 2018).

A study done in Nigeria rural area had poor practice scores related to personal hygiene among the women showed were 74.6 % and 54.9 % respectively. practices of personal hygiene as 29.4 %, 37.0 % and 46.3 % of them washed their hands after using the toilet, wash their hair daily and wash their hands after toilet respectively. The result personal hygiene that 17.9 %, 45.2 % and 57.4 % of them had dirty hair, and dirty nails respectively. It was concluded that although a sizeable number of the women studied their practices related to same was poor (Kamath et al., 2014).

Across-sectional done Mareko District, Southern Ethiopia showed that hygiene practice was 252 (30.4%) with 95% CI (27.3–33.5%). Practices of hand washing, and water In multivariate analysis, factors associated with hygiene practice were found to be knowledge on hand washing (AOR = 5.1, 95% CI 2.86–9.1) and latrine use (AOR = 1.99, 95% CI 1.06– 3.75); ever visited toilet. (AOR = 2.44, 95% CI 1.28–4.64); being 15–19 years old women, (AOR = 1.42; 95% CI 1.3–1.88); and cleanliness of toilets (AOR = 3.4; 95% CI 1.77–6.55) (Curtis et al., 2009).

Its Associated Factors in among women in Rural Settings of Dangla District, Northwest Ethiopia 525 participants were interviewed making the response rate 95.45%. The prevalence of environmental hygiene was 9.9% in ODF and 36.1% in OD kebeles. In ODF kebeles, latrine presence (AOR = 0.036; 0.006–0.233),) have statistically significant association with diarrhea occurrence. While in OD kebeles practice of breast feeding (AOR = 0.032; 95 CI: 0.008–0.123), behaviorial hygiene, (AOR = 18.478; 95% CI: 4.692–72.760), and hand washing, (AOR = 0.023; 95% CI: 0.005–0.117) have significant association, (Tsegaye and Kassa, 2018).

2.2.3. Behaviorial factors.

A study conducted a survey in Mirzapur, Bangladesh where hand washing practices among caretakers of case and control children < 5 years of age were characterized and analyzed for association with moderate-to-severe diarrhea. It was found that Soap or detergent ownership was common, yet 48% of case and 47.7% of control caretakers also kept ashes for hand washing, including 36.8% of the wealthiest households. Soap, detergent, and ash were used for multiple hygiene purposes and were kept together at hand washing areas (Organization, 2015a).

Prevalence and determinants of chewing khat among women in Ethiopia: data from Ethiopian demographic and health survey, current khat use among women in this study, at 8.4%, was lower as the rate reported in Yemen (29.6%) cultural factors underlying use may differ between the two countries, but differences may also be due to variation in survey design, and other, (Sutan et al, 2016).

Practices of women Kumbungu District, Ghana showed about 55.3% of the women reportedly, women hand washing behaviors with soap after defecation [AOR = 0.32 (95% C.I: 0.19, 0.52)] and before feeding [AOR = 0.50 (95% C.I: 0.30, 0.84)] as well as washing the child's hands with or without soap before feeding [AOR = 0.21 (95% C.I: 0.04, 1.01)] were associated with personal hygiene practice. The main determinants hand washing with or without soap after defecation [AOR = 0.29 (95% C.I: 0.10, 0.81)] and washing of the child's hands with soap before feeding [AOR = 0.60 (95% C.I: 0.37, 0.99)] However, association between women behavioral practice, (Hulu et al., 2020).

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Prevalence of cigarette smoking and associated factors among residents of Hossana town, southern Ethiopia in total, 591 people responded to the survey, resulting in a 98.2% response rate. Among the study participants, cigarette smokers were 183 (31.0%). Educational status, alcohol use, and parental smoking were all found to have a significant relationship with cigarette smoking among research participants in Hosanna town. When compared to people with a college education or above, illiterates are approximately nine times more likely to consume cigarettes (95% CI = 9:058 (3.52, 22.469).

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2.4. Conceptual Frame Work

This conceptual framework is developed after reviewing of different related literatures in order to visualize the association of factors with the outcome variable as well as their relationship with each other. The factors contributing to the outcome variable were categorized into Proximal factors, Intermediate factors and Distal factors/basic factors (Figure 1).

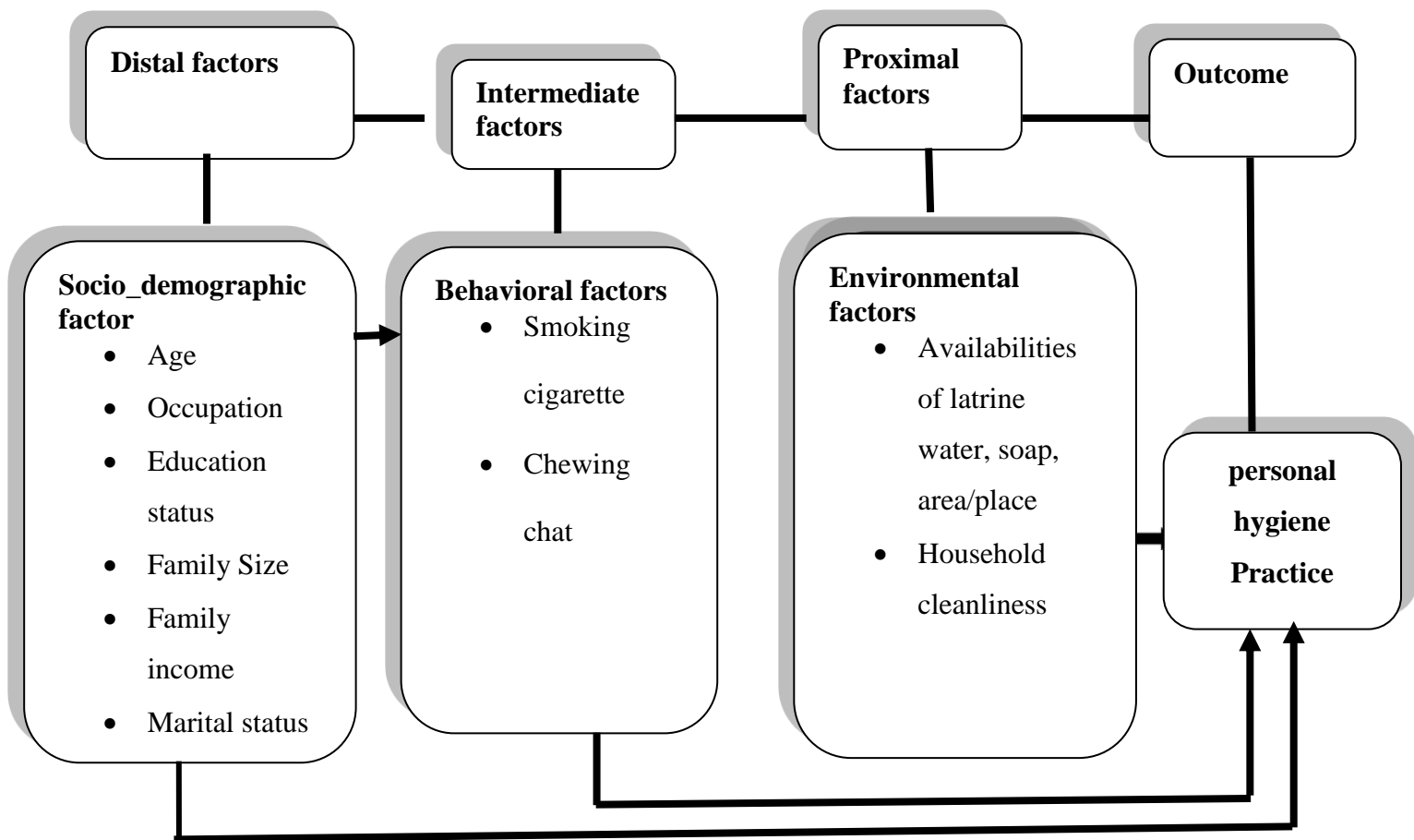


Figure 1. Conceptual framework of factors associated with personal hygiene practice among women rural rural kebeles of Dire Teyera Woreda, Harari Regional State, Eastern Ethiopia from August 15, September 15, 2021.

3. MATERIALS AND METHODS.

3.1. Study Area and Period.

3.1.1. Study area.

Study was conducted in Dire Teyera Woreda, Harari Regional State, Eastern Ethiopia. In Harari region there are nine woredas of which six (Amir nur, Abadirs, Shankor, Aboker, Jinela and Hakim) are urban and three (Errer, Dire Teyera, and Sofi) are rural. Dire Teyera Woreda is located 533 km from the capital city of Ethiopia, and 526 km from Harari Region. The total population of Dire Teyera Woreda is 41,250 where 21,445 is male and 19,805 is female. The woreda contains 6 Kebeles and is bordered Harar city in the east, Kombolcha on the west, Aweday in the south and Ejgina in the north. There is one health centre and 6 health posts. Most of the residents are Oromo in ethnicity, Muslim in religion and farmer in occupation (HRHB, 2021).

3.1.2. Study Period.

The study was conducted from August 15, 2021 to September 15, 2021.

3.2. Study Design

A community based cross- sectional study design was used.

3.3. Population.

3.3.1. Source of Population.

The source population was all women who were residing in rural Kebeles of Dire Teyera woreda.

3.3.2. Study Population.

The study population was women in rural Kebeles of dire Tiyara during the study period in the six selected Kebeles.

3.4. Inclusion and Exclusion Criteria.

3.4.1. Inclusion criteria.

Women in the age group of 15-49 years in the selected Kebeles of the Dire Teyera Woreda were included in the study.

3.4.2. Exclusion criteria.

Women if illegible respondent is absent (due to illness or age) were Excluded from the study.

3.5. Sample Size Determination.

3.5.1. Sample Size Determination for the first Objective.

The required sample size for this study was determined by single population proportion formula with the following assumption.

$$n = \frac{z^2 pq}{d^2}$$

Where; Z = 1.96 with 95% of confidence interval.

P = proportion of personal hygiene women practice (0.31), (Fantaye, 2016).

q = 1-p = 1-0.31 = 0.69,

d = margin of sampling error tolerated

n = the required sample size=329. Considering 10% non-response rate (to compensate the study subjects who are not responding), the final sample size were $329 * 10\% = 33 = 329 + 33 = 362$.

3.5.2. Sample Size Determination for the Second Objective.

The sample size for associated factors was calculated by using double population proportion formula with the following assumption: power of the study to be 80%, two sided confidence level of 95% to be 1.96, and the ratio of unexposed: exposed is almost equivalent to 1.

Table 1. Sample size determination for a study on Personal Hygiene and Its Associated Factors among women in Rural Kebeles of Dire Teyera Woreda Harari Regional State, Eastern Ethiopia, August 15, 2021 to September 15, 2021.

Associated Factors	All women Personal Hygiene practice		AOR(95% CI)	Sample Size	
	Exposed	Non exposed			
Educational status	Can't read & write 53.1%	Can read & write 46.9%	2.29	319	(Fantaye, 2016).
Behavioral factors	Bad Behavioral 64.1%	Good Behavioral 35.9%	2.13	296	(Farah et al., 2015).

Finally, the required sample size for this particular study is decided by taking the maximum considering 10% non-response rate calculated sample size for practice among personal hygiene on women which is 362 was included in this study.

3.6. Sampling Procedure /Technique

Multi-stage sampling procedure with two stage was used to select study participants. In the first stage, six Kebeles were women in selected from dire teyera woreda using a simple random sampling technique. In the second stage, a total of three hundred sixty two women was selected by simple random sampling in proportion size to the head of house hold women from housband of wife from each kebeles. List of women was served as a sampling frame and study participant was selected using table of random number (Figure 2). Head of house hold women from housband of wife from each kebeles

$\frac{n*nf}{N}$ was used. where n = number of women in each Kebeles,

nf = total sample size and N = the total number of women in the six-Kebeles.

The proportion of the number of study subject for Dire was allocated as follows $1074*362/4725=82$.

The proportion of the number of study subject for Sigicha was allocated as follows $975*362/4725= 75$.

The proportion of the number of study subject for Aboker muxi was allocated as follows $1099*362/4725= 84$.

The proportion of the number of study subject for Hasenghy was allocated as follows $676 \times 362 / 4725 = 52$.

The proportion of the number of study subject for Suqul was allocated as follows $535 \times 362 / 4725 = 41$.

The proportion of the number of study subject for Miyay was allocated as follows $361 \times 362 / 4725 = 28$.

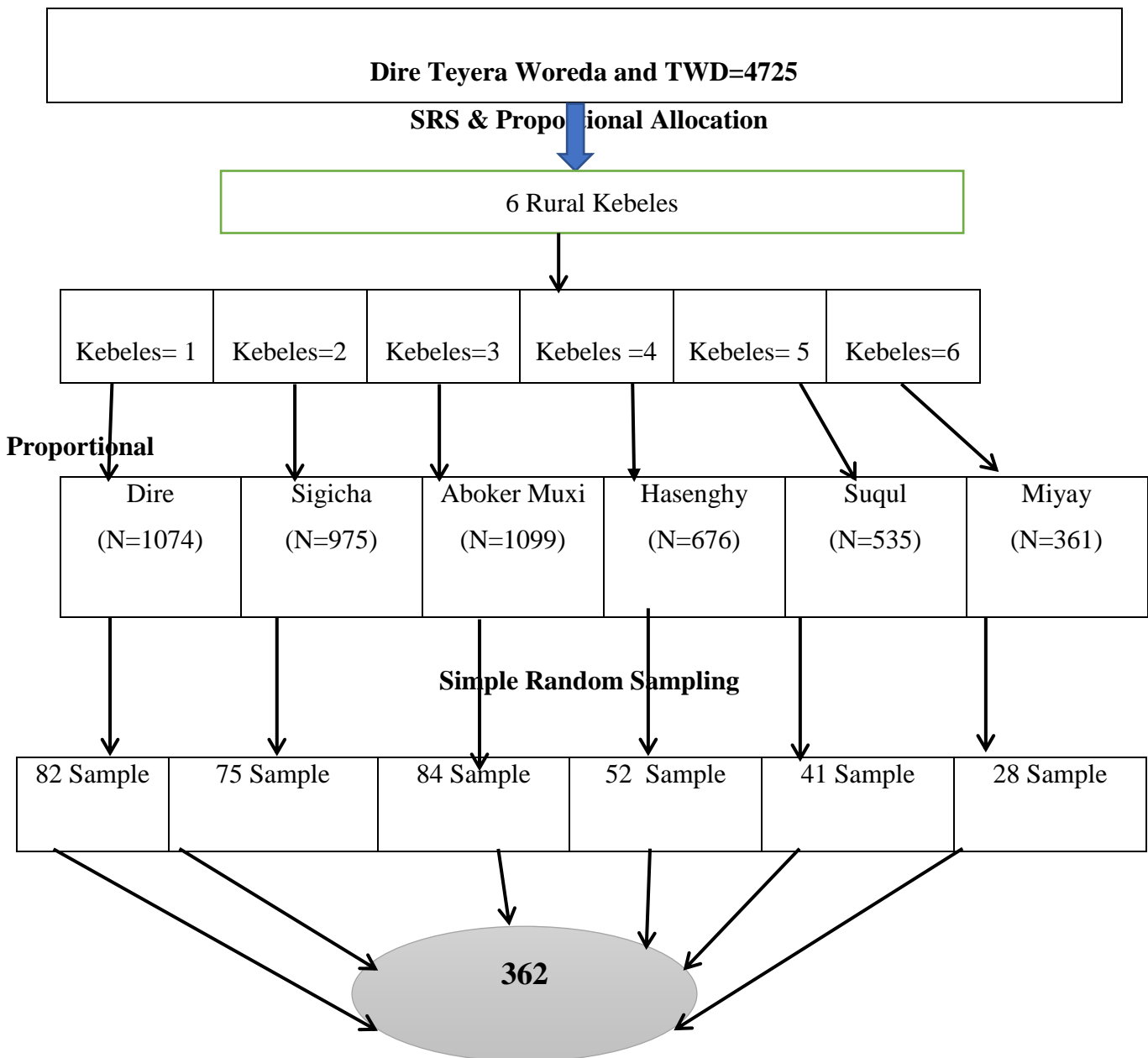


Figure 2: Schematic presentation of sampling procedure for study on personal hygiene among women in rural Kebeles, August 15, 2021 to September 15, 2021.

3.7. Data Collection Method.

3.7.1. Data Collectors and Supervisors

Four BSc Environmental Health data collectors and two BSc nurse supervisors with previous experience were recruited for the data collection. One day training was given by principal investigator on the objective, confidentiality of information and techniques of data collection of the study.

3.7.2. Data collection instruments

Data were collected by using pre-tested questionnaire with face-to-face interview technique. Data were also be collected by observation using observational checklist. The questionnaire was adapted from different literatures (Fantaye, 2016), (Farah et al., 2015) and WHO survey of WASH program. The English version questionnaire was translated to Afaan Oromo to check its consistency and ensure clarity for respondent and it was again translated back into English by language expert. The questionnaire consisted of four parts enquiring about women's personal hygiene practices and its associated factors.

3.8. Study Variables.

3.8.1. Dependent variable:

- personal hygiene practice

3.8.2. Independent variables:

Socio demographic factors

- Age
- Marital status
- Occupation status
- Family Size
- Family income
- Educational status

Environmental factors

- Availabilities of latrine, water, soap, area/place
- Household cleanliness

Behavioral factors

- Smooking cigarette
- Chewing khat

3.9. Operational Definition.

Women: were people who are between 15 to 49 years old (WHO., 2020).

Personal hygiene practice: Various self-care measures women performed to maintain the good health like regular bathing, hand washing before eating and after visiting toilets, cleaning of teeth, washing of the hair and clothes regularly, finger nail trimming and washing foot daily (Ju et al., 2020). To assess the level of Personal hygiene practice, respondents were asked 9 questions and those who scored mean or above of practice questions were considered as having good practices and those who scored less than mean were considered as having poor practices (Rani J, et al., 2017, Fantaye, 2016, Farah et al., 2015).

Hygiene: cleanliness or conditions and practices that serve to promote or preserve health (Ju et al., 2020).

Knowledge: Knowledge of individual about infectious diseases transmission of Personal hygiene and health outcome associated with Personal hygiene. Knowledge on Personal hygiene was assessed based on nine questions (Cronbach's alpha coefficient=0.69) related to infectious diseases transmission; critical Personal hygiene and health outcome associated with Personal hygiene. In each item those who answered correctly scored 1 and those who answered wrongly were scored 0. Those who scored mean or above were classified as having good knowledge and those who scored less than mean were classified as having poor knowledge (Kamath et al., 2014, Sah et al., 2013, Farah et al., 2015).

Family Income: Those women who get Likewise study participants were bifurcated into two categories. scores below mean and above or equal to mean score were categorized as 'Good' and 'Poor' practice, respectively. (Farah et al., 2015).

Tool and Techniques: the investigator first explained the nature and purpose of the study and then interviewed the eligible candidates who agreed participate in this study after getting written informed consent. The questionnaire was administered in local language, Afaan Oromo for their easy understanding.

Practice: It is a way of doing something in an expected way in a particular situation. Likewise study participants were bifurcated into two categories. Practice scores below mean and above or equal to mean score were categorized as 'Good' and 'Poor' practice, respectively.

Poor practice: those women who get practice below the mean of the availabilities of practice community questions.

Good practice: those women who get practice above the mean of the availabilities of practice community questions.

Literate: who completed grade 8 and above.

3.10. Data Quality Control.

The questionnaire was first prepared in English and then translated in to Afaan Oromo (local language) and back translated to English to maintain the consistency. Before data collection, all data collection instruments were checked for mistake. The data collectors and supervisors were trained for two days, mainly on the procedure of data collection, interviewing skills, content of the questionnaire, data quality and handling of ethical issues. Data collectors submitted the collected data to the supervisors on daily basis and the supervisor checked daily the consistency and completeness of the collected questionnaires. Pre-test was done to check the data collection tools before the actual study was conduct. Pre-test was done in Sofi Woreda. Data were double entered and cleaned properly.

3.11. Data Processing and Analysis

Data were entered, and cleaned using Epi-Data version 3.1 and SPSS statistical software version 20.0. The frequency distribution of all variables was checked for completeness and internal consistency by cross checking was coded and doubled data entry errors. Also to identify independent variables and dependent which statistically significant association with the personal hygiene practice, bivariate and multivariable analysis using logistic regression. Then, a variables with a p-value < 0.25 in the binary were included in the final model multi-variable analysis to identify the affecting factors and to control possible confounders. The model goodness of fit was checked by using Hosmer-Lemeshow statistic test. Multi co-linearity among two or more independent variables was checked using variance inflation factor and tolerance test. Reliability of knowledge and attitude responses was checked using a cronbach's alpha coefficient. The direction and strength of statistical association was measured by odds ratio along with 95% confidence interval. Finally, a p-value < 0.05 in multi-variable analysis were taken as statistically significant association.

3.12. Ethical Consideration

The ethical clearance was obtained from the Institutional Health Research Ethics Review Committee (IHRERC) of the College of Health and Medical Sciences, Haramaya University. An official letter was written from Haramaya University communicated to Dire Teyera Woreda. Informed, voluntary, written and signed consent were obtained from each participant after explaining the purpose and benefits of the study. Confidentiality of the study participants' information was ensured. During data collection, 2 meter distance and wearing of mask were maintained for prevention of COVID-19 transmission. Confidentiality of responses were maintained throughout the research process by giving code for participant. Personal privacy and cultural norms was respected.

3.13. Dissemination of Results

The study finding was copied and disseminated to rural Kebeles of dire Teyera Woreda, Harari Region, Haramaya University Department of Environmental health science, school of Graduate studies and other concerned bodies.

4. RESULTS

4.1. Socio-Demographic Characteristics With Study Participants

A total of 362 study participants were enrolled during this study women showed that the mean age and standard deviation were 30.5 ± 6.87 and therefore the age range from 15-49 years of the respondents was $30.5 \pm$ years. Among 362 respondents, majority 294(81.2%) Were Married 23(5.8%) was Single Majority, 201(55.5%) were can't read & write 34(9.3%) were Sacondery School 21(6%) Were Graduated Majority, family size > 5 201(55.5%) and 76(21.0%) were < 3 majority 172(48) of the respondents was housewife followed by 69(19%) Farmer 21(6%) was Government Employee involved other (**Table 2**).

Table: 2. Socio- demographic charactrestices of the participant's in rural kebeles of Dire Teyera Woreda, Harari Regional State, and Eastern Ethiopia 2021 (n=362)

Variable	Frequency	Percentage (%)
Age (Years) of respondent (n=362)		
15-19	19	5.2
20-29	135	37.2
30-39	171	47.2
40-49	37	10
Marital status of respondents (n=362)		
Single	23	5.8
Married	294	81.2
Divorced	25	7
Widowed	21	6
Educational level (n=362)		
Can't read & write	201	55.5
Can read & write	79	21.7
Primary school	27	7.5
Sacondery school	34	9.3
College and above	21	6
Family Size (n=362)		
< 3	76	21.0
3-5	85	23.5
≥ 5	201	55.5
Occupational status (n=362)		
House wife	172	48
Student	51	14
Daily laborer	22	6
Merchant	27	7
Government Employee	21	6
Farmer	69	19

4.2. Personal hygiene practice among women

Among 362 of the women, 192 53% (95% CI: 48.8-59.3). had good practice and 170 (47%) had poor practice in personal hygiene. Also, 261 (73.7%) were take bath within 7-14 days and 177(50%) of the women were wash or change their clothes within 7-14 days. Among 362 women, about 256 (70.7%) of the women were not brush their teeth, 128 (35.3%) due to have no material to brush. (**Table: 3**)

Table: 3. Personal hygiene practice among women in rural kebeles of Dire Teyera Woreda, Harari Regional State, and Eastern Ethiopia 2021 (n=362).

Variable	Frequency	Percent (%)
Material used for hand washing		
Water only	264	72.9
Water and soap	98	27.1
Do you Taking bath?		
No	0	0
Yes	362	100
How often do you Taking bath?		
1-7 days	73	20.6
7-14 days	261	73.7
>14 days	20	5.6
Do you brush your teeth?		
No	256	70.7
Yes	106	29.3
How often do you brush your teeth?		
1-7 days	79	22.3
7-14 days	8	2.3
What do you use to brush your teeth?		
Water only	44	22.7
Tooth paste	20	10.3
Twigs	129	66.8
Why did not brush your teeth?		
No material	128	46
Not important	19	9.9
Do y wash your hair?		
No	0	0
Yes	362	100
Material used for clean your hair?		
Water only	119	33
Water and soap	243	67
How often do you wash your hair?		
1-7 days	265	73.7
7-14 days	88	25.7
>14 days	9	0.6
How often do you wash or change your clothes?		
1-7 days	165	46.3
7-14 days	182	50
>14 days	15	3.7
Reported of personal hygiene practice		
Good practice	192	53
Poor practice	170	47

4.3. Environmental factor of personal hygiene practice among women

Majority of them were 335 (92.5%) in there latrine 27 (7.4%) there no latrine and 206 (60.3%) of study subjects get is feces seen around the pit hole of followed by latrine 206 (56.9%). Almost all of the study participants had soap for hand washing near toilets 5 (1.4). (Table 4).

Table 4. Environmental factor of personal hygiene practice among women in rural kebeles of Dire Teyera Woreda, Harari Regional State, and Eastern Ethiopia 2021 (n=362).

Variables	Frequency	Percentage (%)
Is there latrine (n=362)		
No	27	7.4
Yes	335	92.5
Is available of latrine (n=362)		
No	98	27.1
Yes	237	65.9
How far is the distance between the latrine and the living house (n=362)		
1 <6	115	31.7
2 ≥6	220	60.3
Is feces seen around the pit-hole (n=362)		
No	129	35.6
Yes	206	56.9
Do you clean household condition (n=362)		
No	118	67.4
Yes	244	32.6
Availabilities of latrine, water, soap, area/place (n=362)		
Adequate	327	90.
Inadequate	35	10
Do animals (dogs, hens, sheep, etc.) live in the same house where the members of the family live (n=362)		
No	343	94.8
Yes	19	5.2

4.4. Behavioral factor of personal hygiene practice among women

Among 362 of the women majority of them were 251(69.3%). The women knew that washing the hair regularly is part of personal hygiene 209 (57.7%), knew that taking bath is part of personal hygiene 332 (91.7%), knew that personal hygiene is about general body cleanliness 49 (13.5). Women were know that cleaning your teeth with toothpaste and brush prevents tooth decay 189 (52.2%), (**Table 5**).

Table 5. Behavioral factor of personal hygiene practice among women in rural kebeles of Dire Teyera Woreda, Harari Regional State, and Eastern Ethiopia 2021 (n =362)

Variable	Frequency	Percentage (%)
Personal hygiene is about general body cleanliness		
No	30	8.3
Yes	332	91.7
Hand washing before eating and after defecation can Prevent disease.		
No	136	37.6
Yes	226	62.4
Washing hands with both water and soap		
No	104	28.7
Yes	25	71.3
Washing the hair regularly is Part of personal hygiene		
No	111	30.7
Yes	251	69.3
Taking bath is part of personal hygiene		
No	153	42.3
Yes	209	57.7
Do you chewing chat		
No	329	91
Yes	33	9
Rinsing your mouth with water after meal is healthy for your teeth		
No	180	49.7
Yes	182	50.3
Cleaning your teeth with toothpaste and brush prevents tooth decay		
No	173	47.8
Yes	189	52.2
Do you Smoking cigarette		
No	335	93
Yes	27	7
Washing the breast before and after feeding child		
No	221	61.0
Yes	141	39.0

A bivariate logistic regression analysis were identified a significant association personal hygiene practices among women, age of women, educational level of women, family size, chewing chat of the women, clean of household, availabilities of latrine, water, soap, area/place, smooking cigarette, occupational status, (Table: 6).

Table: 6. Bivariate analysis of personal hygiene practices among women in rural kebeles of Dire Teyera Woreda, Harari Regional State, and Eastern Ethiopia 2021.(n=362)

Independent Variable	Persenol hygiene practice		COR (95% CI)
	Good (%)	Poor (%)	
Age of the women			
15-19	11 (52%)	10 (48%)	2.6 (1.15, 8.44)*
20-29	86 (65%)	47 (35%)	4.3 (0.59, 13.87)
30-39	95 (56%)	76 (44%)	2.9 (1.29, 7.49)
40-49	11 (29%)	26 (71%)	1.00
Marital status			
Married	87 (30%)	207 (70%)	2.59 (1.05, 4.71)*
Divorce	11 (44%)	14 (56%)	1.38 (0.87, 4.78)
Window	10 (48%)	11 (52%)	1.2 (0.60, 3.81)
Single	12 (52%)	11 (49%)	1.00
Family Size			
< 3	29 (38%)	47 (62%)	1.38 (0.97, 15.32) **
≤ 3-5	41(48%)	44 (52%)	2.08 (1.07, 4.72)
> 6	62 (31%)	139 (69%)	1.00
Educational level			
Can read & write	20 (25%)	59 (75%)	1.02 (0.82, 4.21)
Primary school	10 (37%)	17 (63%)	1.7 (0.10, 2.44)
Secondary school	19 (56%)	15 (44%)	3.82 (1.09, 5.95)
College and above	10 (48%)	11 (52%)	2.74 (1.15, 4.56) *
Can't read & write	50 (25%)	151 (62%)	1.00
Chewing chat of the women			
Yes	14 (42%)	19 (58 %)	1.95 (0.99, 3.59) **
No	194 (59%)	135 (41%)	1.00
Occupational status			
Student	10 (43%)	39 (57%)	0.74 (0.15, 2.65)**
Daily labor	12 (55%)	10 (45%)	3.49 (0.99, 5.09)
Merchant	14 (52%)	13 (48%)	3.13 (2.79, 11.07)
Farmer	23 (33%)	46 (67%)	1.45 (0.57, 1.82)
Government employ	11 (52%)	10 (48%)	3.2 (1.38, 13.12) **
House wife	44 (26%)	128 (74%)	1.00
Family Incomes			
>5000	19 (37%)	32 (63%)	1.36 (0.95, 5.18)*
1501-4999	48 (39%)	76 (61%)	1.45 (0.28, 4.95)
<1500	87 (30%)	200 (70%)	1.00

Clean of household	Adequate	110 (56%)	86 (44%)	4.16 (1.27,9.17)**
	Inadequate	39 (23%)	127 (77%)	1.00
Smooking cigarette	Yes	15 (56%)	12 (44%)	2.09 (1.99, 7.53)
	No	217 (65%)	118 (35%)	1.00
Availabilities of latrine, water, soap, area/place	Adequate	13(37%)	22 (63%)	2.99 (1.87, 4.78)
	Inadequate	126(39%)	201(61%)	1.00

Note: COR: Crude Odds Ratio; CI: Confidence Interval; *p-value<0.25, **p-value<0.01,

4.5. Factors associated with personal hygiene practices.

In the bivariate analysis variables with p-value ≤ 0.25 were age, educational status, occupation, chewing chat and clean household. Multivariate logistic regression analysis revealed that educational status, clean household and occupation status were shows statically significant association with personal hygiene practices.

The odds of women with college and above education were 3.52 times higher to practice a personal hygiene compared to those women who cannot read and write (AOR=3.52, 95% ;CI 1.05, 8.03). The odds of women with those clean household were 3.64times higher to practice of personal hygiene compared to those women who not clean household(AOR=3.64, 95%; CI: 2.37, 9.75). The odds of women with govenement empoleyer occupation were 3.39times higher to practice of personal hygiene compared to those women who house wife (AOR=3.39, 95%; CI: 2.5, 7.41). (**Table: 7**).

Table 7. Factors associated with personal hygiene practices among women in rural Kebeles of Dire Teyera Woreda, Harari Regional State, and Eastern Ethiopia 2021.

Independent Variable	Personal hygiene Practice		COR (95% CI)	P-Val	AOR (95% CI)
	Good (%)	Poor (%)			
Age of the women					
15-19	11 (52%)	10 (48%)	2.6 (1.15, 8.44)	0.2	3.15 (1.0, 9.03)
20-29	86 (65%)	47 (35%)	4.3 (0.59, 13.87)	0.4	2.6 (0.3, 11.89)
30-39	95 (56%)	76 (44%)	2.9 (1.29, 7.49)	0.7	1.9 (0.6, 6.95)
40-49	11 (29%)	26 (71%)	1		1.00
Marital status					
Married	87 (30%)	207 (70%)	2.59 (1.05, 4.71)	0.7	0.5 (0.0, 6.06)
Divorce	11 (44%)	14 (56%)	1.38 (0.87, 4.78)	0.5	2.21 (1.20, 4.06) **
Window	10 (48%)	11 (52%)	1.2 (0.60, 3.81)	0.3	1.8 (0.5, 6.37)
Single	12 (52%)	11 (49%)	1		1.00
Family Size					
< 3	29 (38%)	47 (62%)	1.38 (0.97, 15.32)	0.5	2.0 (0.9, 13.01)
≤ 3-5	41(48%)	44 (52%)	2.08 (1.07, 4.72)	0.3	1.2 (0.4, 3.20)
> 6	62 (31%)	139 (69%)	1		1.00
Educational level					
Can read & write	20 (25%)	59 (75%)	1.02 (0.82, 4.21)	0.7	2.57 (0.3, 7.95)
Primary school	10 (37%)	17 (63%)	1.7 (0.10, 2.44)	0.3	1.2 (0.8, 6.63)
Secondary school	19 (56%)	15 (44%)	3.82 (1.09, 5.95)	0.5	2.6 (0.95, 7.20)
College and above	10 (48%)	11 (52%)	2.74 (1.15, 4.56)	0.00	3.5 (1.05, 8.03)*
Can't read & write	50 (25%)	151 (62%)	1		1.00
Chewing chat of the women					
Yes	14 (42%)	19 (58 %)	1.95 (0.99, 3.59)	0.2	4.09 (2.7, 8.29)
No	194 (59%)	135 (41%)	1		1.00

Occupational status

Student	10 (43%)	39 (57%)	0.74 (0.15, 2.65)	0.3	0.2 (0.0, 5.12)
Daily labor	12 (55%)	10 (45%)	3.49 (0.99, 5.09)	0.5	1.53 (0.95, 2.37)
Merchant	14 (52%)	13 (48%)	3.13 (2.79, 11.07)	0.3	2.97 (1.56, 7.82)
Farmer	23 (33%)	46 (67%)	1.45 (0.57, 1.82)	0.9	1.01 (0.42, 3.09)
Government employ	11 (52%)	10 (48%)	3.2 (1.38, 13.12)	0.00	3.39 (2.5, 7.41)**
House wife	44 (26%)	128 (74%)	1		1.00

Family Incomes

>5000	19 (37%)	32 (63%)	1.36 (0.95, 5.18)	0.95	1.25 (1.19, 5.45)
1501-4999	48 (39%)	76 (61%)	1.45 (0.28, 4.95)	0.3	2.7 (1.5, 7.9)
<1500	87 (30%)	200 (70%)	1		1.00

Clean of household

Adequate	110 (56%)	86 (44%)	4.16 (1.27, 9.17)	0.03	3.64 (2.3, 9.75) *
Inadequate	39 (23%)	127 (77%)	1		1.00

Key: Significant at p -value <0.05 ; *COR*: crude odds ratio; *AOR*: adjusted odds ratio; *CI*: confidence interval. those with p value 0.25 and less than were entered into the multivariate regression.

5. DISCUSSION

Personal hygiene is remarkably essential element for controlling the infections and rural community are considered as the right place to initiate this practice starting from in childhood. The result from this study revealed that about (53.0%), women had good personal hygiene practice in rural kebeles of dire teyera woreda, Harari Regional State, and Eastern Ethiopia.

The finding, 53% of women had good personal hygiene, this finding is higher than a study finding from Nigeria that shows 39.4 % had poor practices (Kamath et al., 2014). But, comparable with the study findings within Ethiopia (Fisseha et al., 2017), (Farah et al., 2015) and in other country (Jorse et al., 2018). The reason for inconsistency could be because of this might be due to difference in sample size and the socio-demographic of study areas.

On the other hand, the current result of 47% of women in the study area poorly practiced personal hygiene is higher than the WHO 2018 report that shows that 37% of the women had poor practices (Sah et al., 2018). The reason for inconsistency could be because of poor personal hygiene practice is related with lack of awareness about personal hygiene.

The finding that personal hygiene of educated mother higher than those who could not read and write is consistent with a study finding from Nigeria that shows women with increasing educational level were more likely to adopt an practice of private hygiene (Curtis et al., 2015). The finding is also consistent with a study in Ghana that indicated personal hygiene was significantly influenced by the higher level of education (Hulu et al., 2020).

The finding that personal hygiene of occupational status with government employment women higher than those who could house wife is consistent with a study finding from Southern Ethiopia that shows women with government employment of occupational status were more likely to adopt an practice of personal hygiene (Belachew et al., 2018). The finding is also consistent with a study in slightly higher as compared with the findings in Nekemt town of Oromia zone that indicated personal hygiene was significantly influenced by the occupational status (Deboch et al., 2015). On the other hand of the reason for inconsistency could be because of the difference socio-demographic and environmental conditions variability in sample sizes.

The finding that personal hygiene of clean household of the women higher than those who could not clean household of the women is consistent with a study finding from Angola that shows women with increasing clean household were more likely to adopt an practice of personal hygiene (Kumie et al., 2014).

The finding is also consistent with a study in rural India that indicated personal hygiene was significantly influenced by the clean household (Ashutosh et al., 2014). On the other hand of the reason for inconsistency could be because of the difference lack of adequate water in this area is one factor that makes women not practice the personal hygiene and lack of social norms

On the other hand clean household of the women study of the women higher than those who could not clean household of the women is consistent with a study finding from Oromia, Ethiopia (Fantaye, et al. 2016). However, this finding is low than the findings in Tigray (cronk et al., 2018). But it is slightly higher as compared with the findings that indicated personal hygiene was significantly influenced by the clean household West Gojjam (Mercy et al., 2016). The difference in the socio demographic characteristics of study households, and the time of the study this point should be taken into account in comparing the findings.

Therefore, education on personal hygiene education and development of comprehensive personal hygiene intervention programs among rural community in Ethiopian is required so on stop the disease related to personal hygiene.

6. STRENGTH AND LIMITATION OF THE STUDY

6.1. Strength of the study

- ✓ Data was collected by professionals with prior experience asking them to respond the truth through informing the data collected be kept confidential via using anonymous questionnaire and carefully constructing the questionnaire by avoiding leading questions.
- ✓ The study assessed women of personal hygiene practices. Therefore, it is supportive for the health extension program at household level.
- ✓ The response rate was 100%.

6.2. Limitation of the study

- ✓ Due to the nature of the study design there may be social bias , which create different findings between women and house hold head
- ✓ The present study is limited in that it did not incorporate direct follow up observation of the hygiene practices of the women for long time.
- ✓ Cause and effect relationship cannot be established due to nature of cross-sectional study design.

7. CONCLUSION AND RECOMMENDATION

7.1. Conclusions

The current study concluded that practice of personal hygiene among the women of rural kabele in the study area was satisfactory. Nearly half of the study participants had good personal hygiene practice. Education status, clean of household practice and Occupational status of personal hygiene were significantly related to personal hygiene practice among women. Therefore, the people should be motivated regarding practices, tailored health education and promotion on personal hygiene is suggested as intervention within the rural community.

7.2. Recommendations

Based on finding study indicated the following recommendations

- 1. Harari Regional Health Bureau and Education Bureau:** should be organize the training that is that the motivation of reminding the to try and do the correct personal hygiene through health promotion and education about personal hygiene with in the rural women.
- 2. Dire Teyera Woreda Administration:** should be develop health intervention infrastructural community development program proper maintenance of personal hygiene along together with necessary resources and facilities and unitedly personal hygiene through forming and making actively participation of ladies in community hygiene club.
- 3. Dire Teyera Health Extension Workers:** should focus on personal hygiene among women rural community in collaboration with infrastructural of role models for women and their pressure plays a vital role in influencing women to adapt personal hygiene practice both in rural community and at home. Therefore, the women should be motivated regarding practices of fine personal hygiene by regular health education programme.
- 4. For researchers:** Finally, it is highly recommended for further studies with observational and qualitative design by involving hygiene among women in rural community.

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10. APPENDICES.

Appendix 10.1: Participant Information Sheet And Informed Voluntary Consent (English Version)

My name is _____ I am working as a data collector for the study being conducted in this Woreda by **Fuad Sham** who is studying for his Master's degree at Haramaya University, College of Health and medical Sciences. I kindly request you to lend me your attention to explain you about the study and being selected as the study participant.

1. The study title: Status on Personal Hygiene and Its Associated Factors among women in Rural Kebeles of Dire Teyera Woreda, Harari Region, Eastern Ethiopia.

2. Purpose of the study: The findings of this study can be of a paramount importance for Harari region and Dire Teyera Woreda to plan intervention programs to improve the practice of personal hygiene among women in Rural Kebeles and possible factors will be found in this study. Moreover, the aim of this study is to write a thesis as a partial requirement for the fulfillment of a Master's program in **Water Supply Sanitation and hygiene Management** for the principal investigator.

3. Procedure and duration: I will be interviewing you using a questionnaire to provide me with pertinent data that is helpful for the study. There are 36 questions to answer where I will fill the questionnaire by interviewing you. The interview will take about 15-20 minutes, so I kindly request you to spare me this time for the review.

4. Risks and benefits: The risk of being participated in this study is very minimal but only taking few minutes from your time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for your institution, Harar Region and Dire Teyera Woreda.

5. Confidentiality: The information you will provide us will be confidential. There will be no information that will identify you in particular. The findings of the study will be general for the study community and will not reflect anything particular of individual person or housing. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research.

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

7. Contact address: If there are any questions or enquires any time about the study or the procedures, please contact:

Fuad Sham: Mobile number (+251)-915-70-64-40 Email Address fuadsham40@gmail.com

Office of IHRERC: Tel. 0254662011. Fax: 0256668081

P.O.Box: 235, Harar, Ethiopia

8. Declaration of informed voluntary consent:

I have read/was read to me the participant information sheet. I have clearly understood the purpose of the research, the procedure, the risks and benefits, issues of confidentiality, the rights of participating and contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that participants have the right to withdraw from the study at any time or not to answer any question that they do not want. I am also informed that the institution has the right to stop this study from being conducted in the institution if any misdeeds and unethical procedures are observed during the data collection process in the institution promises. Therefore, I declare my voluntary consent to on behalf of Woreda for this study to be conducted with my initials (signature) as indicated below.

Name and Signature of Participant: _____

Date _____

Name and Signature of Data Collector: _____

Date _____

Appendix 10.2: Questionnaire, (English Version).

Code of Participant _____ Signature _____ Date _____

Name of Supervisor _____

Name of Woreda _____

Part: I. Socio- Demographic Characteristics of the Respondent.

No	Variable	Response	Skip
101	Age of the women	_____ in Years	
102	Marital Status of the Women	<ol style="list-style-type: none"> 1. Single 2. Married 3. Divorced 4. Widowed 5. Other :----- 	
103	Family Size	<ol style="list-style-type: none"> 1. < 3 2. 3-5 3. > 6 	
104	Educational level of the women	<ol style="list-style-type: none"> 1. Can't read & write 2. Can read and write 3. Primary school 4. Scondery school 5. College and above 	
105	Occupation of the women	<ol style="list-style-type: none"> 1. Housewife 2. Student 3. Daily laborer 4. Merchant 5. Government Employee 6. Farmer 7. Other:_____ 	
106	What is your average of monthly income	<ol style="list-style-type: none"> 1. < 1500 2. 1501-4999 3. > 5000 	

Part: II. Behavioral of Personal Hygiene Among Women Rural Kebeles Dire Teyera Woreda Related Question.

No	Variable	Response	Skip
201	Have you heard about personal hygiene?	1. Yes 2. No	204
202	If yes, What is your source of information about personal hygiene	1. Family 2. Teacher 3. Health worker 4. Radio 5. Others(specify)_____	
203	Personal hygiene is about general body cleanliness	1. Yes 2. No	
204	Hand washing before eating and after defecation can prevent disease	1. Yes 2. No	
205	Do you Chewing chat	1. Yes 2. No	
206	Do you Keeping your finger nails trimmed	1. Yes 2. No	
207	Washing hands with both water and soap is really helpful	1. Yes 2. No	
208	Taking bath is part of personal hygiene	1. Yes 2. No	

No	Variable	Response	Skip
209	Do you Smoking cigarette	1. Yes 2. No	
210	Cleaning your teeth with chewing tooth paste and brush prevents tooth decay	1. Yes 2. No	
211	Washing the hair regularly is Part of personal hygiene	1. Yes 2. No	
212	Washing the breast before and after feeding child	1. yes 2. No	

Part: III. Practice of Personal Hygiene Among Women Rural Kebeles Dire Teyera Woreda Related of Question

No	Variable	Response	Skip
301	Have you Washed your hands	1. Yes 2. No	304
302	When did you wash your hand?	1. Before eating	

		2. After eating 3. After using toilet	
303	What material you used for hand washing?	1. water only 2. water and soap	
304	Do you wash your general body cleanliness?	1. Yes 1. No	307
305	What material you used for general body cleanliness??	2. water only 3. water and soap	
306	How often do you wash your general body cleanliness??	1. 1.1-7 days 2. 7-14 days 3. >14 days	
307	Rinsing your mouth with water after meal is healthy for your teeth	1. Yes 2. No	

308	Do you clean your teeth?	1. Yes 2. No	310
309	What do you use to clean your teeth?	1. Water only 2. Tooth paste 3. Twings	
310	Do you wash your feet?	1. Yes 2. No	
311	What do you use to clean your feet?	1. water only 2. water and soap	
312	How often do you wash your feet?	1. 1.1-7 days 2. 7-14 days 3. >14 days	

Part: V. Environmental health conditions among women rural Kebeles Dire Teyera Woreda related question

No	Variable	Response	Skip
401	Is there latrine	1. Yes 2. No	405
402	Do you use a latrine?	1. Yes 2. No	
403	How far is the distance between the latrine and the living house?	_____meters	
404	Is feces seen around the pit-hole	1. Yes 2. No	
405	Do you clean household condition	1. Yes 2. No	
406	Do animals (dogs, hens, sheep, etc.) live in the same house where the members of the family live?	1. Yes 2. No	

ISKUULII QORANNOO EYBAA

ITOOPHIYAA BAHAA, NAANNOO HARARITTI, AANA DIRRE TEYYERA HAWAASA KEESSAATTI KABAJA QULQULLINA ARGATANI FI TAATEEWWAN ISAANI WAJJIN WAL QABATU FORMI HAYYAMAA FI WALI GALTE QULQULLINA HAAWWAANI

Seensa: Akkam ooltan/bultan ani maqaan Koo, obbo/adde..... Jedhama Dalagaan yookiin/hojiin kiyyaa qorannoo naannoo kanaati barataa digirii lammaffaa *Fu'aad Sham tin* waa'ee qabiinsa qulqullina haawwann baadiya kanaaf sababa ta'an ilaalchiisee, haawwaan Anaa dirre xiyyaara keessa jiraatan irratti gaggefamaa jiruuf yaada/odeeffannoon funaanudha. Kanaafuu akka fedhii keessaniin irratti hirmaattan kabajaan isin gaafadha.

1. Maqaa qorannoo: Itoophiyaa Bahaa, Naannoo Hararitti, Aana Dirre Teyyera Hawaasa Keessaatti kabaja qulqullina Argatani fi Taateewwan isaani wajjin wal Qabatu, qulqullina hawwanni baadiya kanaaf sababa ta'an ilaalchiisee, gocha kanaaf sabaaba ta'an irratti kan gaggefamaa jiruudha.

2. Kaayyoo qorannoo kanaa: Ragaan qorannoo kana irra argamu biiroo eegumsa fayyaa fi qaamoollee dhimmi Kun ilaalatu hundaaf, kana irratti hundaa'anii sagantaa haalaa qabiinsaa fi qulqullina tajaajila haawwanitti makamuu dandahu, akkasumas dhukkuba sababa qulqullina tajaajila hawwan irraa nama qaban ittisuuf rakkoowan jiran foyyeesuuf gargaaruu danda'a.

3. Akkaata qorannoon Kun itti gaggeefamuu fi dheerina yeeroo inni fudhatuu: Gaafiin ani hawwan keessa gaafadhu 36 oddeeffannoo gahaa akkan ani qorannoo kanaaf argadhu na gargaara. Walumaa galatti Gaaffii fi deebiin kun yoo baayattee daqiiqaa 15-20 fudhata. Kannaaf haawwan gaaffii kiyyaaf deebii naaf deebisanii fi yeroo isaanii akka naaf kennan akka naaf eeyyamtan kabajaan isin gaafadha

4. Bu'aa fi rakkoo qorannoo kana waliin wal qabate: Qorannoo kana irratti hirmaachuudhan rakkoon qulqullina keessan irrattis ta'e haawwan keessan mudatu hin jiru. Garuu yeeroo xiqqoo haawwan keessan irraa fudhachuun isaa hin oolu. Qorannoo kan irratti hirmaachuudhaf qarshiin/kafaltiin kennamu hin jiru. Haa ta'u malee bu'aan qorannoo kana irraa argamu ragaa Kan kennu waan ta'eef qaama karoora baasuufi dhimmichi ilaalatuu hundaaf fayidaa kennuu danda'a

5. Iccittii qorannoon Kun itti eegamu: Ragaan nuti qorannoo kanaaf funnaannu icitiin isaa ni eegama. Ragaan kammiyyuu maqaa ykn maqaa anaa yookiin hawwaan keessan waliin walitti hin qabamu. Ragaan qorannoo kanaas faayidaa qorannoo kana qofaaf oola. Akkasumas gaafillee kana hundaaf lakkoofsa adda addaatu kennamaaf.

6. Mirga: Qorannoo Kan irratti hirmaachuunis hirmaachuu dhabuunis fedhii keessan irratti hunda'a. Hirmaachuuf yoo murteesitanis yeeroo barbaaddan adda kutuu ni dandeessu.

7. Teessoo qorataa: Qorannoo kanaan wal qabatee yoo gaaffii qabattan gaggeessaa qorannoo kanaa Kan ta'an *Fu'aad shaam* bilbila fi email isaa kanaan argachuu dandeesan (0915706440,

fuadsham40@gmail.com). Akkasumas Yuuniveersiitii Haramayaa garee dhaabbata qorannoo fayyaa biratti bilbila **IHRERC: Tel. 0254662011. Fax: 0256668081 PO. Box: 235 Harar, Ethiopia.**

8. Qorannoo kana irratti fedhiin hirmaachuu: Barreefama kana dubbiseen/naaf dubbifamee jira. Waan barrefame hundi sirriti naaf galee jira Kaayyoon qorannoo kanaa, akkaataa ragaan itti funaanamu, bu'aa fi miidhaa qorannoo, ragaan Kun iccitii/dhoksaan qabamuu isaas, mirgi kiyyaas akkasumas yoon gaafii qabaadhe naman gaafadhu/qunnamu naaf himamee/dubbisee naaf galee jira Kana hunda hubachuudhan fedhii kiyyaan qorannoo kana irratti hirmachuu akka danada'u mallattoo kiyyaan nin ibsa.

Maqaa dura ta'a/Abbaa qabeenyaa _____ **Mallattoo** _____ **Guyyaa** _____
Maqaa yaada funaanaa (tuu): _____ **Mallattoo:** _____ **Guyyaa** _____

GAAFFII: Afaan Oromo

Lakkofsa hirmaata _____ maallatto _____ guyya _____

Maqa hordoofa _____

Maqa Aana _____

Kutaa I: odeeffannoo waa'ee hawaassummaa fi dhunfaa.

Lak	Safartuulee	Deebii	Isa itti aanutti darbi
101	Umriin ishee		
102	Heerumtee jirta	<ol style="list-style-type: none"> 1. Hin heerumnee 2. Heerume 3. Heerumettin bahe 4. Gursummaa 5. Kan biro 	
103	Baayyinni maatii keessanii meeqa?	<ol style="list-style-type: none"> 1. < 3 2. 3-5 3. > 6 	
104	Sadarkaan barnootaa keeti maali?	<ol style="list-style-type: none"> 1. Dubbissuu fi baarreessu hin daanda'u 2. Dubbissuu fi baarreessu nin daanda'a 3. Saderka 1ffa 4. Saderka 2ffa 5. Collage fi sana ol 	
105	Hojjin kee maali	<ol style="list-style-type: none"> 1. Mana keessa hojjaachu 2. Baarattu 3. Gaali guyya 4. Daaldala 5. Hojjaatu mootuumma 6. Qonnaan bula 7. Kaan bira 	
106	Wali galatti galin ji'a meeqa	<ol style="list-style-type: none"> 1. < 1500 2. 1501-4999 3. > 5000 	

Kutaa II: Gaaffii walitti dhufeenya fi waa'ee qulqullinaa ofii eeggaachuu irratii amaleeffanan haawwan qaban irraatti ilaalchisan badiyya, aradda fi aana dirre.

Lakk	Safartuulee	Deebii	Isa itti aanutti
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			darbi
201	Waa'ee qulqullinna ofii eeggaachuu irrattii odeeffannoo dhageechee jirta?	1. Eyyee 2. Lakki	203
202	Yoo eyyee jette, odeeffannoo kana eessaa argatte? (tokkoo ol deebisuun ni danda'ama)	1. Maatii koo irraa 2. Barsiisaa irraa 3. Hojjeettota fayyaa irraa 4. Raadiyoo 5. Gumii manaa barnootaa irraa 6. Kan biraa _____	
203	Qulqullinna ofii jechuun, qulqullinnaa qaama keenya hundumaa jechuudhaa?	1. Eyyee 2. Lakki	
204	Harka nyaata duraa boodaa, fi mana fincaaniti yoo deebinu dhiqachuudhaan dhukkuba ittisuu ni dandenyaa?	1. Eyyee 2. Lakki	
205	Jimaan ni qaamaatu	1. Eyyee 2. Lakki	
206	Quuba qeenssa ofi jaala quulqullessuu fi dhiqu barbaachisadha		
207	Harkaa dhiqaachuun bishaani fi saabunaan qaacellotii dhiqu jechudha	1. Eyyee 2. Lakki	
208	Saagara quulqulleffachun qaama dhiqaachuu keessaa issaa tokko	1. Eyyee 2. Lakki 3. hin beeku	
209	Sigaara ni arsitaa	1. Eyyee 2. Lakki 3. hin beeku	
210	Illkaan ofi dhiqaachuun dhukkubaaf akka ilkaan buuqaa'uuf namaa egaa	1. Eyyee 2. lakki 3. hin beeku	
211	Refeensaa ofi miccaachuun quulqullina qaama keessa issa tokko	1. Eyyee 2. Lakki	
212	Haarmaa ofi dhiqaachuun hossissun dura fi boodaattiis baye'e baarbaachisadha	1. Eyyee 2. Lakki	
Kutaa III, Gaaffii walitti dhufeenya fi waa'ee qulqullinaa ofii eggachuu irratti shaakaluu haawwan qaban ilaalchisan irraatti badiyya, aradda fi aana dirre.			
301	Harka kee ni dhiqaatta ?	1. Eyyee 2. Lakki	304
302	Yeroo akkam harka kee dhiqatta?	1. Nyaata nyaachuun dura 2. Erga nyaadhe booda 3. Mana fincaaniti yoon deebii'uu	

303	Harka kee yoo dhiqattuu maal fayyadamtaa?	1. Bishaan qofa 1. Bishaan fi saamunaa	
304	Qaama keessan guutumman guututti ni qulqullessittu	1. Bishaan qofa 2. Bishaan fi saamunaa	
305	Yeeroo Qaama keessaan qulqullessittu maal fayyadaamta	1. Bishaan qofa 2. Bishaan fi saamunaa	
306	Haangam takka takkatti qulqullessittu	1. 1.1-7 guyya 2. 7-14 guyya 3. >14 guyya	
307	Afaan yeero nyaate booda fi dura ni luluqaata?	1. Eyyee 2. Lakki	→ 306
308	Ilkaan kee ni qulqulleesitaa?	1. Eyyee 2. Lakki	
309	Ilkaan kee yommuu qulqulleesitu maal fayyadamtaa?	1. Bishaan qofa 2. Saamuunaa ilkaanii 3. Rigaa mukaa	
310	Miila/luka kee ni dhiqatta?	1. Eyyee 2. Lakki	
311	Miila/luka kee yommuu qulqulleesitu maal fayyadamtaa?	1. Bishaan qofa 2. Saamuunaa fi bishaan	
312	Haangam takka takkatti Miila/luka kee qulqullessittu	1. 1.1-7 guyya 2. 7-14 guyya 3. >14 guyya	

Kutaa IV, Gaaffii walitti dhufeenya fi qulqullina naannoo haawwan qaban ilaalchisan irraatti badiyya, aradda fi aana dirre.

Lak	Saafartuule	Deebii	Issa itti anutti darbii
401	Mana fincaani ni qaabda	1. Eyyee 2. Lakki	→ 405
402	Mana fincaani itti ni fayyadamta	1. Eyyee 2. Lakki	
403	Manni jirenyaatti fi manni fincaani hangaam adda fagodhaa?	_____	
404	Mana fincaani gubbaatti saagaran ni argama	1. Eyyee 2. Lakki	
405	Qulqullina mana keessani ni eggaattu	1. Eyyee 2. Lakki	
406	Hoori fi namni mana tokko kessaa waalin ni jiraatu?	1. Eyyee 2. Lakki	

Appendix10.5: Curriculum Vitae of Principal Investigator

1. Personal Details

Full Name:-Fuad Sham Baker

Sex: -Male

Date of Birth: -Feb17/1987E.c

Place of Birth: - Harar

Marital Status: - Married

Nationality: -Ethiopian

Address: -Mobile; +251915706440, E-mail: - fuadsham40@gmail.com

2. Educational Backgrounds

Level of Education Name of School

Primary School Dire Primary School

Secondary School Junior High School

Higher Education Harar Health Science College

3. Qualification

BSc Degree in clinical nurse from Harar health Science College

Work experience 6 years at Government organization at health center and Woreda health office.

4. Academic Achievements

CGPA 3.37 at BSc degree in nurse.

5. Language proficiency

Language	Listening skill	Speaking skill	Reading skill	Writing skill
English	Excellent	Excellent	Excellent	Excellent
Afan Oromo	Excellent	Excellent	Excellent	Excellent
Amharic	Excellent	Excellent	Excellent	Excellent

6. Hobbies

- Reading books
- Participating in social issues
- Helping people

7. Reference

Haramaya university Dept. of Environmental health +25125553062

