

**PRACTICE OF MENSTRUAL HYGIENE MANAGEMENT AND
ASSOCIATED FACTORS AMONG HIGH SCHOOL FEMALE
STUDENTS IN META DISTRICT, EASTERN ETHIOPIA**

MPH THESIS

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**Practice of Menstrual Hygiene Management and Associated Factors
among High School Female Students in Meta District, Eastern
Ethiopia**

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STATEMENT OF THE AUTHOR

By my signature below, I declare and affirm that this Thesis is my own work. I have followed all ethical and technical principles of scholarship in the preparation, data collection, data analysis and compilation of this Thesis. Any scholarly matter that is included in the Thesis has been given recognition through citation. This Thesis is submitted in partial fulfillment of the requirements for a master degree at the Haramaya University. The Thesis is deposited in the Haramaya University Library and is made available to borrowers under the rules of the Library. I declare that this Thesis has not been submitted to any other institution anywhere for the award of an academic degree, diploma or certificate. Brief quotations from this Thesis may be made without special permission provided that accurate and complete acknowledgment of the source is made. Requests for permission for extended quotations from or reproduction of this Thesis in whole or in part may be granted by the Head of the School or Department when in his or her judgment the proposed use of the material is in the interest of scholarship. In all other instances, however, permission must be obtained from the author of the Thesis.

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DEDICATION

I dedicated this thesis work to my beloved family my wife W/ro Sofia Mohammed, my mother Hawa Hassen, my father Jemal Mohammed and lastly my brother Zekaria Jemal for their unlimited effort in the success of my research.

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ABBREVIATIONS/ACRONYMS

AIDS	Acquired Immune Deficiency Virus
AOR	Adjusted Odds Ratio
AYR	Adolescent Youth Reproductive
CI	Confidence Interval
COR	Crudes Odds Ratio
IHRERC	Institution Health Research Ethical Review Committee
FGM	Female Genital Mutilation
HIV	Human Immune Deficiency Virus
ICPD	International Conference on Population Development
IPV	Intimate Partner Violence
MDG	Millennium Development Goals
MHM	Menstrual Hygiene Management
MOH	Ministry of Health
MMR	Maternal Mortality Ratio
PI	Principal Investigator
SDG	Sustainable Development Goal
STI	Sexually Transmitted Infection
UN	United Nations
WHO	World Health Organization

ABSTRACT

Background: Good practice of menstrual hygiene management among adolescent and youth girls would be essential to keep and maintain their menstrual hygiene. Unhygienic menstrual practice affect the health of adolescent and youth girls that can increased the risks of morbidity, disability and deaths due to reproductive tract infections, pelvic inflammatory diseases and other reproductive health illness. However, menstrual hygiene has received low attention and inadequately addressed especially in Ethiopia educational institutions. **Objective:** To assess practice of menstrual hygiene management and associated factors among high school female students in Meta district in Eastern Ethiopia from September 1-octomber 21/ 2019

Methods: School-based cross-sectional study was conducted among 723 high school female students in Meta District using multistage stratified sampling technique. Self-administered pretested structured questionnaires were used to collect data from participants. Data were entered to EpiData version 3.1 and analyzed using SPSS Version 24. Descriptive statistics were used to describe participants. Bivariable and multivariable logistic regression analyses were used to identify factors associated with good practice of menstrual hygiene management. AOR with 95% CI were used to report association and significance was declared at $P < 0.05$.

Results: The prevalence of good practice of menstrual hygiene management was 299 (42.0%) (95% CI: 38.3%, 45.7%). Maternal formal education (AOR=5.05, 95% CI: 3.52, 7.24), being in grade 10th (AOR=1.61; 95% CI: 1.10, 2.36), having employed mothers (AOR=1.66; 95% CI: 1.02, 2.71), being from rich family (AOR=2.45; 95% CI: 1.56, 3.84 and good knowledge about menstrual hygiene management (AOR=2.26; 95% CI: 1.56, 3.27) were significantly associated with good practice of menstrual hygiene management.

Conclusions: According to this study 42% of the participants had good practice of menstrual hygiene management. Therefore, good practice of menstrual hygiene management was significantly positive associated with being in grade 10th, maternal formal education, employed mothers, being rich family and good knowledge about menstrual hygiene management.

Keywords: Practice, menstrual hygiene management, associated factors, adolescents, female students, Meta district.

1. INTRODUCTION

1.1. Background

World Health organization (WHO) define adolescent as individual age between 10 to 19 years (WHO., 2002). Adolescence is time of physical ,intellectual ,emotion and social development during this stage ,Girls exhibit physical and on set of sexual maturation, it is a period under the influence of hormones, transitions period marked by the onset of menarche and also called woman hood (Keerti and Pravin, 2011), when girls experience physical and sexual changes and confront questions like, self-concept and social relationship(Gultie T., 2014, Boosey et al., 2014). Globally,adolescent constitute 16% of world's population (Ghongdemath et al., 2016).Adolescent girls are vulnerable population in relation to their health not only with respect to their social status and gender equality (Dasgupta and Sarkar, 2008).

Menarche ,the first menstruation at pubertal age or first menstrual experience of adolescent girls that usually begin to occur between the age of 9 and 16 years with a mean of 13 years (Bhattacharjee et al., 2013, Gultie et al., 2014). For girls, menarche is one clear physical indication, among several and at these time, due to lack of premenstrual information, culture and taboo with menstruation the girls feels shame, stress, confusion sadness at the first experience(UNFPA., 2017). In Ethiopia, girls reached puberty and start menstruating without adequate information and readiness to manage it(Gultie T., 2014). Menstruation,a female unique phenomenon, is natural physiological process that begins at pubertal age to menopausal age.It is flow of blood and tissue lining the uterus through that usually follows for 5 days (range 3-7 days),every 28 days (range 21-35 days)(Tegegne and Sisay, 2014).

Duration and heaviness of menstruation or period influence its management ,menstrual products used and frequency of change(UNFPA., 2017).However, it is linked to with several misconceptions and malpractices that may result in adverse health outcomes. Menstrual hygiene management has not received adequate attention by professional in the health and education sectors (Sarah et al., 2012).

Menstrual hygiene is a personal hygiene during menstruation that include :bathing at least once a day, using proper absorbent materials like pads and Tampons which are also changed regularly (every three to four hours) (Alexander et al., 2018)

Around the world ,women have developed their own personal strategies to cope with menstruation ,which vary from country to country,based on their economy ,personal perferences, local traditions and cultures,knowledge of menstrual hygeine and education status .The onset of menstruation presents multiple challenges for school girls due to multiple factors like lack of knowledge,support and resources to manage menstruation in the school (Caruso et al., 2013).

However,menstrual can place significant obstacles in the way of girls access to education gender equality health and future prospects, if they are not equipped for effective menstrual hygiene management schools, particularly those in developing countries, often completely lack of drinking water and sanitation and hand washing facilities; even where such facilities exist they are often inadequate in both quality and quantity. Girls are likely to be affected in different ways from inadequate water ,sanitation and hygiene conditions in schools, (WHO., 2009).

In Ethiopia,public investment in institution sanitation,especially in school and health facilities in urban and rural areas are limited.Available sanitation facilities in most secondary school are poor in construction design, not convenient for girls.This in turn results in significant un wanted impacts on health ,economic activity and education (FMoH, 2016).

1.2. Statement of Problem

During menstruation, adolescent girls face numerous challenges related to MHM in schools. Many school girls throughout the world, especially those in developing countries, do not have the resources, knowledge, or ability to handle their monthly cycles. Not providing adolescent girls with an opportunity to manage their menstrual cycle well has been shown to negatively affect their educational attainment and health, in addition to their overall well-being (Gashaw et al., 2018, Coverson, 2018, Usman et al., 2016).

Studies in Africa have found out menstrual-related absenteeism prevalence to be 61.7% school at least one day per month also Sixty-three percent of the respondents connected their absenteeism with lack of private place to change sanitary pad , for washing their hand and bathing(Boosey et al., 2014). The use of sanitary pads as low as amongst Tanzanian women with the remainder using cloth or toilet paper(Gultie, 2014, Alexander et al., 2018 ,Oster and Thornton, 2011, Sarah et al., 2012, Srinivasa and Manasa, 2017).

A few study conducted in Ethiopia showed large number of students used sanitary napkins and the rest of them used homemade cloth and underwear as menstrual soak-up during their last menstrual period. Most girls in Ethiopia are at risk of getting genitourinary tract infections due to their unhygienic practices during their menstruation period which may lead to further complication if left untreated (Gultie et al., 2014).Challenges girls face in managing menstruation at school is determined by multiple preventable factors: Inability to practice personal hygiene effectively in the school setting is due to need to have a clean space water, soap, absorbent materials and places to change,disposal facilities (Gultie T., 2014).

School based studies conducted in Ethiopia showed schoolgirls described many challenges faced in managing their menstrual cycles. Some of the challenges included a code of silence that did not allow them to feel comfortable asking teachers for assistance, especially in the company of schoolboys. Schoolgirls described not feeling comfortable using toilet facilities and not having sanitary supplies to use throughout the school day. They identified a lack of soap, clean toilets, clean water, privacy, and sanitary supplies as the main challenges at school (Gultie et al., 2014, Tegegne and Sisay, 2014, Upashe et al., 2015). Due to its direct effect on -school

absenteeism, increased susceptibility to RTIs, infections of the perineum, increased potential risk of contracting blood-borne diseases such as HIV or HBV and gender discrepancy(Ugander, 2014, Alexander et al., 2018).

However, little information was available on practice of MHM and associated factors among female students in Ethiopia in general and study area in particular. There are no studies made regards to practice of menstrual hygiene management and associated factors among high school female students in Meta district in Eastern Ethiopia.

1.3. Significances of the Study

Due to its direct effect on -school absenteeism, increased susceptibility to RTIs, infections of the perineum, increased potential risk of contracting blood-borne diseases such as HIV or HBV and gender discrepancy. The findings of this study could help for planning and implementation of interventions designed to improve practice of menstrual hygiene management among high school female students of Meta district. In addition, identifying factors affecting practice of MHM among high school female students would be essential to guide Meta district health, education and women and child affairs offices with planners, implementers and of health and education facilities in the district and participants themselves to reduce the impacts. Moreover, the findings of the study could provide baseline information for healthcare workers, high school managers and workers/teacher was be the ultimate beneficiaries of this study finding.

1.4. Objectives of the Study

1.4.1. General Objective

To assess practice of menstrual hygiene management and associated factors among high school female students in Meta district in Eastern Ethiopia from September 1-30, 2019.

1.4.2. Specific Objectives

To determine practice of menstrual hygiene management.

To identify factors associated with practice of menstrual hygiene management.

2. LITERATURES REVIEW

2.1. Practice of Menstrual Hygiene Management

A cross sectional study done in four selected High Schools in rural areas in three districts of Bangalore Urban, Bangalore Rural and Kolar around Bangalore city shows that personal practices and hygiene play a very important role during menstruation. It was seen that during menstruation 34.7% of the study population used cloth, 44.1% used sanitary pad and 21.2% used both cloth and sanitary pad. The queries on the frequency of change during the time of menstruation revealed that 39.8% changed sanitary pad or cloth twice a day, 29.5% three times a day and 21.7% once a day. About 56.8% of the study population used soap and water to clean their private parts while the rest used only water. 88.8% of the girls took bath every day during menstruation(Shanbhag D, 2012).

School based cross-sectional study design was employed in Nekemte, Western Ethiopia hygienic practices during menstruation as to the data obtained 39.9% of the respondents had good practice on menstrual hygiene. Majority 82.2% of girls were using absorbent material during menstruation and two-third of girls was using commercial made sanitary pads as absorbent material during menstruation. Out of girls who were using clothes 52.9% of students were washing clothes with soap and water. Half of girls change their pads or clothes three and above times per day 20.2% of the respondents were disposing their used sanitary pads in dust bin 67.3% of students were taking bath daily with soap during menstruation. About 83.5 % of the girls clean their external genitalia during menstruation with soap and water (Upashe et al., 2015).

Community based cross-sectional survey conducted in Nepal in 2010 shows that, all participants used disposable absorbency products. About half of the girls 51.5% changed sanitary pads every 8 to 10 hours; 40.4%, every 3 to 4 hours; and 8.7%, once every 24 hours. The majority of the adolescents did not shower until after the third day of menstruation 66.9%. Most adolescent girls 95.4% said they washed their genitalia after urination during menstruation, with 42.2% using soap and water so as to remove impure blood and 40.9% using water only (Wavare et al., 2013, Santra, 2017).

A cross sectional study on practice of menstrual hygiene management and associated factors among 770 adolescent school girls in Addis Ababa Ethiopia in 2017 indicated that 388(51.3%) of respondents had good practice of menstrual hygiene (Ephrem et al., 2018).

Research conducted in the Northeast Ethiopia Menstruation and its hygienic management only 35% of students used sanitary napkins and the rest 55% and 9% of them used homemade cloth and underwear as menstrual soak-up during their last menstrual period respectively. Among students who had used soak-ups other than sanitary napkins, 91.84% of them reused the material. Around 58.24% and 20.88% of girls reported that they changed their menstrual soak up twice and more than twice a day (Tegegne and Sisay, 2014).

Regarding disposal of the used material at school, home or everywhere 77.6% girls disposed the cloth pieces or sanitary napkins used into latrines and 33.4% dispose in the open field and also in Ethiopia, Amhara region place of disposal for used menstrual hygiene management, 69.3% and 6.3% participants reported that they disposed used pad in school latrine and open field respectively (Tegegne and Sisay, 2014).

A cross sectional study conducted in Nekemte Town in western Ethiopia in 2015 indicated that about 39.9% of the respondents had good practice of menstrual hygiene (Upashe et al., 2015). Another cross sectional study conducted in Mehalmeda High school in Amhara Regional State of Ethiopia indicated that about 90.9% of respondents practiced good menstrual hygiene (Gultie, 2014). A cross section study conducted on 398 female students elsewhere in Ethiopia indicated that 57% of total respondents had good menstrual hygiene management (Anchebi et al., 2017).

A cross sectional study conducted in Iran in 2018 indicated that about 19% of the respondents had good MHM practice (Siabani S, 2018). A cross-sectional study done in Doti district, Nepal indicated that 40% of respondents had good practice about menstrual hygiene management (Ram et al., 2018). According to study done on Nekemte Town, western Ethiopia in 2015 shows 39.9% of them had good practice of menstrual hygiene management (Upashe et al., 2015). But, similar study not found in the study area that can be answered by this study.

2.2. Factors Associated with Practice of Menstrual Hygiene Management

2.2.1 Socio-demographic characteristics

A cross sectional survey conducted in Iran in 2018 indicated that 19.0% of the respondents had good practice toward menstruation. Practice of menstrual hygiene management was significantly associated with age and mother's education ($P \leq 0.05$) (Siabani S, 2018).

Girls whose mothers have secondary and above education were 2 times more likely to have good practice of menstrual hygiene management (AOR=2.03, 95% CI: 1.38–2.97) and mother occupation type was associated with MHM practice [AOR=0.66, 95% CI: 0.47–0.91] (Upashe et al., 2015). Girls who earn permanent pocket money from their families were almost three times more likely to have good practice of menstrual hygiene compared to those who don't earn permanent pocket money from families (AOR= 2.73, 95 % CI: 1.76, 4.26) (Upashe et al., 2015).

A cross sectional study on practice of menstrual hygiene management and associated factors among 770 adolescent school girls in Addis Ababa Ethiopia in 2017 revealed significant association between practice of menstrual hygiene management and wealth quintile five (AOR = 9.038, 95 % CI = 3.728-21.909) (Ephrem et al., 2018). Poor menstrual hygiene management practices were associated with rural residence (AOR=1.73, 95% CI=1.13–2.64) and lower school grade (AOR=1.69, 95% CI=1.05–2.74) (Davis J et al, 2018).

A case-control study conducted in India in 2014 shows women who used reusable cloths were 2 times more likely to be a case than women using disposable absorbents. Washing (bath or vaginal wash) with water only as compared with water and soap during menstruation was associated with symptomatic cases (95% CI: 1.01–5.7, $p= 0.045$). Other practices such as number of absorbent material changes, the place where the absorbent material was changed and washing practices during menstruation (only vagina or body or both) did not differ significantly between cases and controls (Davis J et al, 2018).

2.2.2. Knowledge about menstrual hygiene management

A cross sectional study conducted in Mehalmeda High school in Amhara Regional State of Ethiopia revealed 90.9% of good practice of menstrual hygiene. It also indicated practice of menstrual hygiene was significantly higher among school girls who have good knowledge about menstrual hygiene (AOR=5.78: 95% CI=2.15-15.51) (Gultie T., 2014).

A cross sectional study on knowledge of menstrual hygiene management and associated factors among 770 adolescent school girls in Addis Ababa Ethiopia in 2017 indicated that 530 (70.1%) of respondents had good knowledge about menstrual hygiene management . It also indicated significant association between knowledge of MHM and girls whose mother's have secondary education (AOR = 10.012, 95 % CI = 3.628-27.629)(Ephrem et al., 2018). A study done Oromia and SPNN regions of Ethiopia show that practice of MHM is related to lack of knowledge and grade level of girls(UNICEF et al., 2012). A Cross-sectional study done in 2016 in Doti distrit, Nepal show 26.4% of students had good knowledge (Ram et al., 2018).

Knowledge of MHM was good for 60.9% of respondents in cross-sectional study conducted in Nekemte Town, Ethiopia (Upashe et al., 2015). Girls whose mother's had secondary and above education were 1.51 times more likely had good knowledge of MHM compared with illiterate (AOR=1.51, 95 % CI: 1.03–2.22)(Upashe et al., 2015). Girls whose mothers educated diploma and above were 5.94 times more likely know about MHM compared with illiterate mothers (AOR=5.94, 95% CI (1.47-23.95), p= 0.012) (Bacha Kitesa, 2016).

A cross-sectional study done among 422 school girls indicated that age (AOR=3.57, 95%CI=1.44, 8.86) and being informed on menstruation before menarche (AOR=0.32, 95% CI:0.14, 0.78) were significantly associated with good knowledge of MHM (Bacha Kitesa, 2016).A cross sectional study done in 2016 in Boset district, eastern Ethiopia show that school girls in grade 11 was 1.5 times more likely know about MHM than grade 9 students (AOR=1.5, 95% C.I: 3.7-6.8)(Bacha Kitesa, 2016).

A cross sectional study done in Amhara region, Ethiopia revealed that urban residence (AOR=1.8, 95% CI: [1.42– 1.52]) and mother education[(AOR=95% CI: 1.15–13.95) were

independent predictors of knowledge of MHM, so does for practice (Gultie T., 2014). On the other hand, students who were living in rural areas were 0.41 times less likely know about MHM than their counterparts [AOR=0.41, 95% C.I (0.22-0.76), P=0.004] (Bacha Kitesa, 2016).

As per study conducted by (Upashe et al., 2015), knowledge about MHM was good for 60.9% of the respondents. Girls whose mother's education of secondary school and above were 1.51 times more likely to know about MHM [AOR=1.51, 95 % CI: 1.03–2.22](Upashe et al., 2015).

A cross-sectional study done on 422 randomly selected female students indicated age of Students (AOR=3.57, 95% CI=1.44, 8.86) and being informed about menstruation before menarche (AOR= 0.33, 95% CI: 0.14, 0.78) were significantly associated with good knowledge toward menstruation (Bacha Kitesa, 2016).

Another cross sectional study indicated that school girls at higher level of education was 1.5 times more likely know about menstrual hygiene management compared with grade nine (AOR=1.5, 95% C.I (3.7-6.8)]. Students who were living in rural areas were 0.41 times less likely know about menstrual hygiene management than their counterparts [AOR=0.41, 95% C.I (0.22-0.76) (Bacha Kitesa, 2016). Girls whose mothers educated diploma and above were 5.94 times more likely know about menstrual hygiene management compared with illiterate mothers [AOR=5.94, 95% CI (1.47-23.95) (Bacha Kitesa, 2016).

A cross sectional study done in Amhara regional state in Ethiopia revealed that urban residence (AOR=1.8, 95% CI: [1.42– 1.52]) and mother educational status [(AOR= 1.2 95% CI: 1.15– 13.95) were independent predictors of knowledge about menstrual hygiene management (Gultie T., 2014). A study done on Nekemte Town, Ethiopia in 2015 shows 60.9% of respondents had good knowledge of MHM. It indicated significant association between good knowledge of MHM and education of mothers (AOR=1.51, 95% CI=1.02–2.22),) (Upashe et al., 2015).

According to study done a total of 398 female students were involved in the study giving a response rate of 94.3%. Of the total respondents about 57% had good level of menstrual hygiene practice. Mothers education status (AOR=0.608; 95% CI=0.374-0.990) (Anchebi et al., 2017).

source of money for sanitary materials (AOR=2.267; 95% CI=1.076, 4.772) respondents feeling respondents feeling :on comfort ability of the school (AOR=0.557; 95% CI=0.366-0.846) were significantly associated with level of knowledge about menstrual hygienic practice (Anchebi et al., 2017). Poor MHM practice was associated with low knowledge of menstruation (AOR=3.49, 95% CI=1.61–7.58)(Davis J et al, 2018)

A mixed-method research combining quantitative and qualitative methods conducted in Northeast Ethiopia shows adolescent school girls' knowledge about MHM that the majority of the girls, 86.75% had heard about menstruation before they had menarche. Girls from families with radio and/or TV were more likely to have good knowledge about menstruation and menstrual hygiene when compared to those who had no radio/ TV (Gultie T., 2014). Girls whose mother's education was secondary school and above were 1.51 times more likely to know about MHM than their counterparts (Gultie T., 2014).

2.2.3. School related factors

A cross sectional study conducted in Mehalmeda High school in Amhara Regional State of Ethiopia indicated 90.9% of respondents had practiced good practice of menstrual hygiene management which significantly higher among those students who heard information on menstruation from teacher (AOR=7.64: 95% CI=2.16-27.03) and had access to water (AOR=6.5: 95% CI, 2.08-20.32) (Gultie T., 2014).

A cross-sectional section study indicated significant association between access to water and practice of MHM (AOR=6.504). Students who had access for water were good practiced about MHM (Bacha Kitesa, 2016). It also showed significant relationship between practice of MHM and WASH facilities [AOR=2.54, 95% CI=1.35-5.97] (Bacha Kitesa, 2016).

According to study done Oromia and SPNN regions of Ethiopia indicated that the menstrual hygiene management practice gap is mainly related to lack of knowledge and poor WASH facilities in the school environments such as commercial sanitary pads are expensive for most of the schools girls to buy, economic status, place of residence and grade level significantly

associated with use commercial sanitary pads and knowledge of girls, critical shortage of water, poor sanitation, offensive smelling of toilets, and poor WASH facility management have been the other serious problems and poor MHM in school setting has also affected girls' performance in school (UNICEF, 2012, UNICEF et al., 2012).

A cross sectional study indicated that school girls in grade 11 was 1.5 times more likely to know MHM compared with those in grade nine (AOR=1.5, 95% C.I (3.7-6.8), P=0.001]. Availability of WASH facilities in school compounds had significant association with good practice of MHM [AOR=2.54, 95% CI=(1.355-5.97) (Bacha Kitesa, 2016) .

A case-control study conducted in India in 2014 shows women who used reusable cloths were 2 times more likely to be a case than women using disposable absorbents. Washing (bath or vaginal wash) with water only as compared with water and soap during menstruation was associated with symptomatic cases (95% CI 1.01–5.7, p = 0.045). Other practices such as number of absorbent material changes, staying at home when menstruating, the place where the absorbent material was changed and washing practices during menstruation (only vagina or body or both) did not differ significantly between cases and controls (Das P, 2015).

2.3. Conceptual frame work

The conceptual framework in this study illustrated multiple factors affecting practice of MHM; socio-demographic factors, knowledge about MHM and school factors (Figure 1).

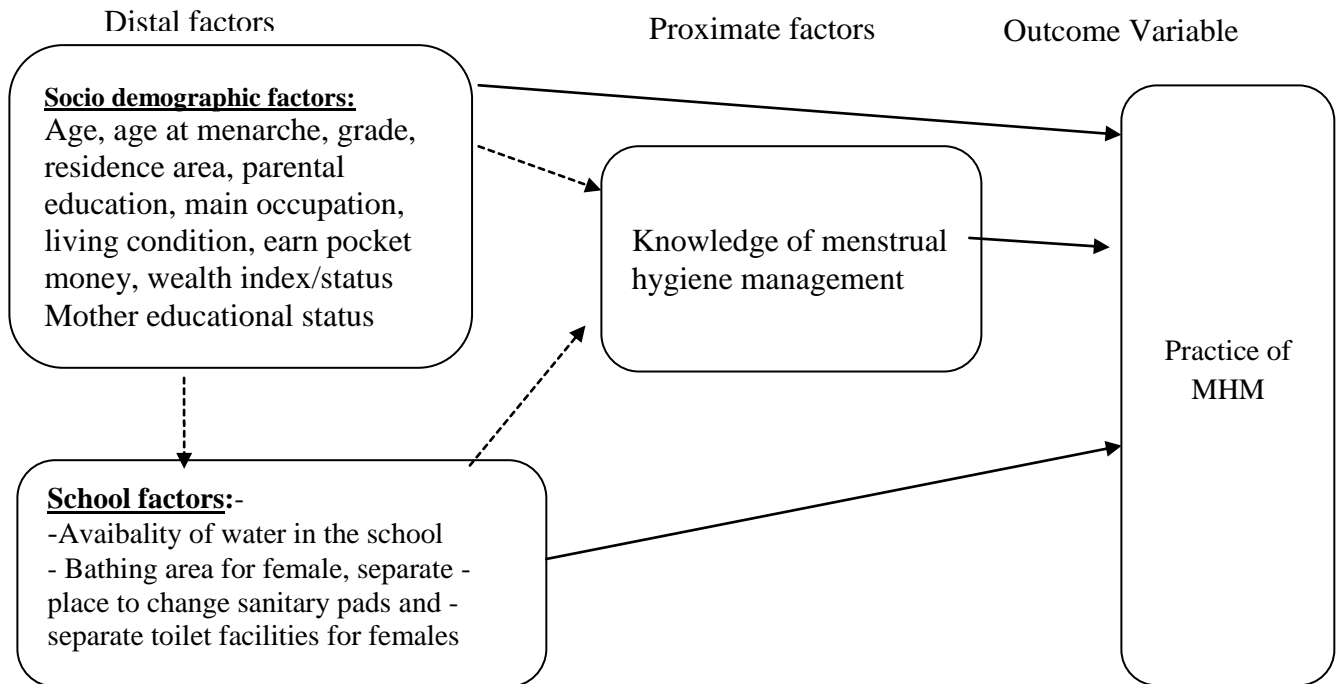


Figure 1: Conceptual framework for the study on practice of menstrual hygiene management and associated factors among high school female students (developed from literature)

3. METHODS AND MATERIALS

3.1. Study Area and Period

The study was conducted in Meta district which was located in East Hararge Zone, and is located at 456 KM from the capital city of Addis Ababa. Meta district is one of the 20 districts in East Hararge. The district is bordered with Somali administrative region in the north, Kersa district in the east, Deder in the west and Bedeno and Goromuti districts in the south.

The district has three urban kebeles and 41 rural kebeles in 2019. Based on the 2007 national population projection, the district has 280,989 total populations (51% are female and 49% are male) (CSA, 2011). Meta district has one Primary Hospital, seven Health Centers and 42 Health Posts to provide curative and preventive health care service.

The district has two preparatory schools and three high schools, 75 primary schools of second cycles (grade 5-8), 33 primary schools of first cycles (grade 1-4), four kindergartens and two technical education vocational training (TEVT) colleges in 2019. In the same year, there are 4806 total high school students and 1318 high school female students registered at three high schools in 2019. The study was conducted from September 01 - October 21, 2019.

3.2. Study Design

School based cross sectional quantitative study was conducted.

3.3. Population

3.3.1. Source Population

All High schools female students in Meta district.

3.3.2. Study Population

Female students in selected high school in Meta district during the study period

3.4. Inclusion and Exclusion Criteria

3.4.1 Inclusion Criteria

All high-school female students who attended their schools during data collection period

3.4.2. Exclusion Criteria

Critically sick and mentally ill students who could not respond to self-administration question .

3.5. Sample Size Determination

The sample size for the study was determined by *Stat-calc* module of Epi-Info version 7.2 using single population proportion formulas for the first objective and sample size determination techniques for analytic cross-sectional design. Then, the larger of two sample sizes was used.

For first objective: We used single population proportion formula with the assumptions: good MHM among high-school female students from three previous studies done in Ethiopia P =prevalence of good practice of MHM in Adama (Anchebi et al., 2017). with 5% margin of error, 1.5 design effect, 95% CI, 10% non-response rate and 1318 source population (Table 1). Mathematically: $n = (z\alpha^2) P*(1-P)/d^2 . = (1.96^2) 57%*(1-0.57)/(0.05)^2 = \text{Total sample size} = 484$

Table 1: Sample size for the study on practice of menstrual hygiene management among High school female students in Meta District, Eastern Ethiopia, 2019

Source population (N=1318)	Design effect	Good practice ofMHM (%)	Initial sample size	Non-response (10%)	Final sample sizes	References
1318	1.5	57.0	440	44	484	(Anchebi et al., 2017)
1318	1.5	39.9	432	44	476	(Upashe et al., 2015)
1318	1.5	70.2	387	39	426	(Bacha Kitesa, 2016)

Where: n = sample size, Z =Confidence level; 95% (1.96), α = 0.05, level of significance, d = margin of error (0.05) and P =prevalence of good practice of MHM in Adama (Anchebi et al., 2017). Accordingly, the largest sample size, 484 was a minimum required sample for first objective.

For second objective: we used sample size determination techniques for analytic cross-sectional/ design after reviewing several literatures, four proximal factors associated with menstrual hygiene management to compute minimum required sample size for the second objective. And certain parameters: 78.5% of proportion of good practice of MHM among unexposed group and AOR of 2.18 and 80% power of the study, 95% confidence level, 5% significance level, design effect of 1.5 and 10% non-response proportion (Table 2).

Table 2: Sample size for the study on factors associated with practice of menstrual hygiene management among High school female students in Meta District, Eastern Ethiopia in 2019

Predictors	P2	AOR	Initial sample sizes			Non-response (10%)	Final sample sizes			References
			Exposed	Unexposed	Total		Exposed	Unexposed	Total	
Knowledge about MHM	57.9	2.97	75	75	150	16	83	83	166	(Ray Sudeshna, 2012, Ray and Dasgupta, 2012)
Education of mother (\geq secondary)	68.71	2.03	189	189	378	38	208	208	416	(Upashe et al., 2015)
Age at menarche (>13 years)	25.35	2.53	92	92	184	20	102	102	204	(Ephrem et al., 2018)
Earn pocket money	78.55	2.18	219	219	438	44	241	241	482	(Ephrem et al., 2018)

Accordingly, after we compared sample sizes estimated by four predictors, the largest (Earn permanent pocket money) was selected and used as a minimum required sample size for the second objective with 1.5 design effect assumption Epi-Info 7 (ni=723).

Finally, after we compared the sample sizes for the first and second objective, the larger of two sample size sample size for the second objective (n=723) was used in this study.

3.6. Sampling Procedure

Multistage stratified sampling technique was used to select the study participants. First, the number of female students in all three high-schools of Meta District (Chelenko High School (n=882), Kulubi High-school (n_K=341) and Koromi High-schools (n=95) were identified.. Minimum required sample sizes in this study (n=723) was proportionally allocated to each selected high school, based on their current actual number of female students attending their educations. After stratify the grade (9 and 10) in each high school into sections, minimum of 40% of section of each grade were randomly selected. Allocated samples were further proportionally distributed over their respective grades and section based on the actual number of female students in each grade and then selected section (Table 3).

Table 3: Sampling procedure for study on practice of menstrual hygiene management and associated factors among High school female students in Meta district, Eastern Ethiopia, 2019

School	Grade	Total section	Total students	Female students	Allocated female students	Selected sections
Chelenko	9	16	1280	511	280	6
	10	12	929	371	203	5
Qulubi	9	8	629	208	115	4
	10	5	374	133	73	2
Koromi	9	4	162	53	29	2
	10	3	114	42	23	2
Total	9	28	2071	772	423	12
	10	20	1417	546	300	9
Total=all	19	48	3488	1318	723	21

3.7. Data Collection Methods

3.7.1. Data Collection Instruments

Data were collected using pretested structured questionnaires taken and modified from similar published literatures. It covers socio-demographic, behavioral and school related factors. Data were collected from participants via interviewers' guided self-administered interview.

3.7.2. Data Collectors

Six female healthcare workers (BSc in nurses) who fluently speak local language (Afaan Oromo) were facilitating the collected data. Close supervision was conducted by principal investigator and two MPH in Public Health who are familiar with the study areas. A two-day intensive training was given for facilitators and Home room teachers of the randomly selected section. Data collectors and supervisors was given on ethics, tools and how to conduct follow up and monitoring the tools ,minimize the incompleteness before beginning data collection on daily basis.

3.7.3. Data Collection Procedures

Data were collected through interviewers' guided self-administered interview and observation. Participants in each class in each school was interviewed (by shifts) in a separate class to keep privacy. Interviewer explained how to keep confidentiality information prior interview after obtaining written informed consent from student and the school heads.

3.8. Study Variables

3.8.1. Dependent Variable

Practice of Menstrual Hygiene Management

3.8.2. Independent Variables

Socio-demographic factors (residence area, age, age at first menses, grade, ethnicity, living conditions, parents' education and occupations, pocket money and wealth status).

Knowledge about menstrual hygiene .

School related factors (available water supply, separate place of changing sanitary pads, female bathing area during menstruation, separate toilet facilities for female students).

3.9. Operational Definitions

Practice of Menstrual Hygiene Management: Female students using clean menstrual management material to absorb or collect blood that can be changed in privacy and necessary for duration of menstruation , using soap and water for washing as required and accessed to facilities to dispose of used menstrual management materials (UNICEF et al., 2012). It was measured by 12 questions in which each correct response was recorded to one point while wrong response and don't know recorded to zero point. Overall sum score of MHM practice was computed from the 12 points. Those who scored mean score and above considered as good MHM practice and poor otherwise (Upashe et al., 2015, Ephrem et al., 2018).

Knowledge about Menstrual Hygiene Management: It was measured by 10 questions in which each correct response recorded to one point while wrong response and don't know recorded to zero point. Overall sum score of knowledge of MHM was computed from the 10 points. Knowledge on MHM was considered good when a participant scored the mean and above and poor otherwise (Upashe et al., 2015, Ephrem et al., 2018).

Access to water supply: sufficient water-collection and use points in school to allow convenient access to, and use of, water for drinking and personal hygiene (WHO., 2009).

Physically separate toilet facilities: Physically separated facilities that provided for girls, spaced sufficiently apart to ensure that girls do not feel embarrassed but secure when approaching and using facilities. Separate hand-washing areas should also be provided, affording privacy for girls who may need to wash and dry menstrual cloths (UNICEF et al., 2012).

Wealth index: It was measured by standard questioner with 33 yes/no items arranged under 3 domains. We used principal component analysis (PCA) by varimax rotation method to compute composite index score by estimated factor score using PCA and wealth status of student family(CSA, 2016).

3.10. Data Quality Control

Three days training that focus on relevance and objective of the study, ethical issues and informed consent prior to data collection and interviewing technique was given for data collectors and supervisors. Questionnaires was be prepared first in English language and then, translated into Afaan Oromo and back to English for consistency by two independent translators. Data collectors were informed how to avoid challenges during data collection particularly on duplication and incomplete recording. Close supervision was conducted on daily basis during data collection. Pre-testing of tool was conducted on 25(5%) female students in GoroMuti High School a week prior to data collection and the findings were used to modify and update tool.

3.11. Data Processing and Analysis

Collected data were checked first manually for any incompleteness and inconsistencies. Data were entered into Epi-Data version 3.1 and analyzed by SPSS version 24. Descriptive statistics; frequency and percentage for categorical predictors and mean and standard deviation for normally distributed continuous covariates and median and IQR for skewed covariates) were conducted to describe the desired characteristics of participants and determine the level of practice of MHM. Principal Component Analysis was used to compute the wealth index using varimax rotation method. Association between dependent and each independent variable was observed using cross tabulation and bivariable logistic regression. During bivariable analysis, a predictor associated with practice of MHM at $P < 0.25$ was be selected as a candidate variable for multivariate model. Multivariable logistic regression analysis was conducted to identify

significantly associated factors with practice of MHM.AOR with its 95% CI were used to determine association and p-value<5% was used to declare the significance level.

3.12. Ethical Consideration

Ethical clearance was obtained from Institutional Health Research Ethics Review Committee (IHRERC) of Haramaya University CHMS prior to conduct this study. Official permission letters was written from East Hararghe Zonal Education Office to Meta District and similar circular letters was written from Meta education office to three High schools. Written, informed, voluntary and signed consent was obtained from each school directors, each participant aged ≥ 18 years and from parents or guardians for age <18 years and assents was secured for those in the age range of 15-18years before interview. High school head was notified on the purpose of the study and their right to refuse or to participate in the study. Participant was interviewed in a separate class to keep privacy and was informed as their information was not shared to third persons without your permission.

3.13. Dissemination of Findings

The result of this study will be submitted and presented for Haramaya University School of graduate study as partial fulfillment of master's degree thesis in General public Health specialty. The results of this study will also be communicated to Meta district education and Health, , women and child affairs offices. An attempt will be made to present the findings of this study in the scientific conferences and publish manuscript on national or international peer reviewed journals.

4. RESULTS

4.1. Characteristics of Participants

4.1.1. Socio-demographic Characteristics of participant.

A total of 712 (98.5%) students were involved in the study. Around two third, 477(67.0%), 185 (26.0%) and 50(17.0%) of students were from Chelenko, Kulubi and Koromi high schools respectively .The majority, 577(81.0%) of students were aged under 18 years and their median age was 16 years (IQR=2 years).Nearly three-fourth, 519(72.9%) of participants were less than 15 years of age at menarche and mean \pm SDage at menarchewas 13.64 \pm 1.32. More than half, 405(56.9) students were grade 9 students. Half (50.4%) of students' mothers and 297(41.7%) of students'fathers had no formal education, respectively. Nearly one-third, 228 (32.0%) of the participants were from poor family (Table 5).

Table4: Socio-demographic characteristics of high school female students in Meta district, Eastern Ethiopia, 2019 (n=712)

Characteristics		Frequency	Percent
Age (in years)	<18	577	81.0
	≥18	135	19.0
Age at menarche (in years)	<15	519	72.9
	≥15	193	27.1.
Residence area	Rural	312	43.8
	Urban	400	56.2
Ethnicity	Oromo	541	76.0
	Amhara	98	13.8
	Gurage	60	8.4
	Other	13	1.8
Religion	Orthodox	192	27.0
	Muslim	453	63.6
	Protestant	54	7.6
	Other(specify)	13	1.8
mother's educational level	No formal education	359	50.4
	Primary education (1-8)	232	32.6
	Secondary education (8-12)	96	13.5
	College and above	25	3.5
Educational level of father	No formal education	297	41.7
	Primary education	243	34.1
	Secondary education	116	16.3
	College and above	56	7.9
Main mother's occupation	House wife	230	32.3
	Farmer	194	27.2
	Merchant	181	25.4
	Employee (Gov't/private)	102	14.3
	Other (specify)	5	0.7
Main father's occupation	Farmer	339	47.6
	Merchant	228	32.0
	Employee (Gov't/private)	110	15.4
	Other (specify)	354	4.9
Family size	≥5	498	69.9
	<5	214	30.1
Living condition (live with)	Both parents	525	73.7
	Mother only	49	6.9
	Father only	41	5.8
	Other(specify)	97	13.6
Monthly pocket money possession	Yes	184	25.8
	No	528	74.2
Wealth status of the	Poor	228	32.0
	Medium	246	34.6
	Rich	238	33.4

4.1.2. Knowledge Menstrual Hygiene Management

The mean score \pm SD of knowledge about MHM was 7.64 ± 1.47 . Three hundred ninety six (55.6%) participants had good knowledge about MHM (Table 5).

Table 5: Knowledge of high school female students about MHM in Meta district, Eastern Ethiopia (n=712)

Characteristics	Good (%)	Poor (%)
Overall knowledge about MHM (scored from 10 items)	396(55.6)	316 (44.4)
Did you ever learn about MHM in the school?	460(64.6)	252(35.4)
Did you ever discuss on menstruation with parents/friends/peers?	491(69.0)	221(31.0)
What is average duration of normal menstrual fluid discharging days?	662(93.0)	50(7.0)
What is the average menstrual cycle?	449(63.06)	263(46.04)
Did you ever heard about MHM before attending menarche?	453(63.6)	259(36.4)
What does menstruation means?	542(76.0)	170(24.0)
What is a cause of menstruation	615(86.4)	97(13.6)
From which organ (s) does menstruation fluid come originate?	568(79.8)	144(20.2)
During menstruation girls/women/ should take more nutrition	576(80.9)	136(19.1)
Menstruation is a lifelong process.	496(69.7)	216(30.3)

Notes: MHM=Menstrual Hygiene Management

4.1.3. School related factors

All high schools have a water supply and gender separated toilet facilities as well as the place of changing sanitary pads for female students. In addition, there were reproductive health and gender clubs and mini media in all high schools. However, none of them had female bathing area that used during menstruation in the study area.

4.2. Practice of Menstrual Hygiene Management

The mean score (\pm SD) of MHM was 7.96 ± 1.61 . The prevalence of good MHM was found to be 299 (42% , (95% CI: 37.84%, 48.08%) in the study area (Table 5).

Table 6: Practice of MHM among high school female students in Meta district, Eastern Ethiopia, 2019 (n=712)

Characteristics	Good (%)	Poor (%)
Overall practice of MHM	299(42.00)	413(58.00)
Did you use menstrual fluid absorbents during menstruation?	561(78.8)	151(21.2)
Did you use disposable sanitary pads during menstruation?	685(96.2)	27(4.8)
What type of materials do you used during last menstruation?	665(93.4)	47(6.6)
Did you change sanitary pads or materials at least 3 times a day?	208(29.2)	504(70.8)
Did you wash hands after you change pads/sanitary materials?	561(78.8)	151(21.2)
Did you clean the genital area during menstruation?	579(81.3)	133(18.7)
Did you cleaning your external genitalia during menstruation?	593(83.3)	119(16.7)
Did you use soap for cleaning external genitalia in menstruation?	472(66.3)	240(33.7)
Did you take bathing during menstruation?	513(72.1)	199(27.9)
Did you start bathing from first day up to stop the menses?	165(23.2)	547(76.8)
Did you properly dispose used sanitary pads/materials?	7(1.0)	705(99.0)
Did you Keep sanitary pads in clean plastics between use?	659(92.6)	53(7.4)

4.3. Factors Associated with Practice of MHM

In bivariable analysis, school, grade, education of father and mother, occupation of mother, wealth status, pocket money and knowledge about MHM were significantly associated with practice of MHM at $P < 0.001$; residence area and age were significantly associated with practice of MHM at $P < 0.01$; while age at menarche, religion, ethnicity, paternal occupation, family size and living condition were not significant at $P < 0.05$ (Table 5).

Table 7: Bivariable logistic regression of factors associated with Practice of MHM among High school students in Meta district, Eastern Ethiopia (n=712)

Associated Factors		Practice of MHM		COR (95% CI)	P
		Good(%)	Poor(%)		
Residence area	Urban	189(47.3)	211(52.7)	1.65(1.21,2.30) ^{***}	0.001
	Rural	110(35.3)	202(64.7)	1	
Grade	Grade 10	167(54.4)	140(45.6)	2.47(1.82,3.35) ^{***}	0.000
	Grade 9	132(32.6)	273(67.4)	1	
Age (in years)	≥18	72(53.3)	63(46.7)	1.76(1.21, 2.57)	0.003
	<18	227(39.3)	350(60.7)	1	
Age at menarche (in years)	<15	226(53.3)	293(46.7)	1.27(0.90, 1.78)	0.169
	≥15	73(37.8)	120(62.2)	1	
Education of father	Formal education	195(47.0)	220(53.0)	1.65(1.21,2.24) ^{***}	0.001
	No education	104(35.0)	193(65.0)	1	
Education of mother	Formal education	209(59.2)	144(40.8)	4.34(3.15,5.97) ^{***}	0.000
	No education	90(25.1)	269(74.9)	1	
Occupation of mother	Employed	62(60.8)	40(39.2)	2.44(1.59,3.75) ^{***}	0.000
	Unemployed	237(38.9)	373(61.1)	1	
Occupation of father	Employed	50(45.0)	60(55.0)	1.16(0.77, 1.74)	0.478
	Unemployed	249(41.4)	352(58.6)	1	
Wealth status	Rich	133(55.9)	105(44.1)	2.86(1.95,4.18) ^{***}	0.000
	Medium	96(39.0)	150(61.0)	1.45(0.99, 2.11)	0.058
	Poor	70(30.7)	158(69.3)	1	
Family size	≤5	93(43.5)	121(56.5)	1.09(0.78, 1.51)	0.604
	>5	206(41.4)	292(58.6)	1	
Average monthly pocket money	Yes	101(54.9)	83(45.1)	2.03(1.44,2.85) ^{***}	0.000
	No	198(37.5)	330(62.5)	1	
Living condition	Both parents	212(40.4)	313(59.6)	1	
	Mother only	23(46.9)	26(53.1)	1.30(0.73, 2.35)	0.373
	Father only	16(39.0)	25(51.0)	0.95(0.49, 1.81)	0.865
	Other(specify)	48(49.5)	49(50.5)	1.45(0.94, 2.24)	0.096
Knowledge about MHM	Good	210(53.0)	186(47.0)	2.88(2.10,3.95) ^{***}	0.000
	Poor	89(28.2)	227(71.8)	1	

Significant at $P < 0.001 = ***$; at $P < 0.01 = **$ and $P < 0.05 = *$, COR=Crude Odds Ratio; CI=Confidence Interval

In multivariable analysis, the odds of good practice of MHM was 1.57 (AOR=1.57; 95% CI: 1.03, 2.384) times more likely to occur among students in Kulubi high school and 2.14 times more likely to occur among students in Koromi High school (AOR=2.14; 95% CI: 1.090, 4.204) compared to students in Chelenko high school. The odds of good MHM practice was 1.61 (AOR=1.61; 95% CI: 1.10, 2.34) times more likely to occur among grade 10 students compared to grade 9. The odds of good practice of MHM was 5.05 (AOR=5.05; 95% CI: 3.52, 7.24) times more likely to occur among students whose mothers had formal education compared to students whose mothers had no formal education. The odds of good MHM practice was 1.66 times more likely to occur among students whose mothers were employed (AOR=1.66; 95% CI: 1.02, 2.71) compared to those whose mothers were unemployed. The odds of good practice of MHM was 2.45 (AOR=2.45; 95% CI: 1.56, 3.85) times more likely to occur among students from rich family compared to poor. The odds of good practice about MHM was 2.6 (AOR= 2.26; 95% CI: 1.56, 3.27) times more likely to occur among students who had good knowledge about MHM compared to those who had poor knowledge about MHM (Table 8).

Table 8: Multivariable logistic regression of factors associated with practice of MHM among High school students in Meta district, Eastern Ethiopia, 2019 (n=712)

Associated Factors		Practice of MHM		COR (95% CI)	AOR (95% CI)
		Good (%)	Poor (%)		
Residence area	Urban	189(47.3)	211(52.7)	1.65(1.21, 2.30) ^{***}	1.22 (0.85, 1.76)
	Rural	110(35.3)	202(64.7)	1	1
Grade	Grade 10	167(54.4)	140(45.6)	2.47(1.82, 3.35) ^{***}	1.61(1.10, 2.36) [*]
	Grade 9	132(32.6)	273(67.4)	1	1
Age (in years)	≥18	72(53.3)	63(46.7)	1.76(1.21, 2.57)	1.51(0.97, 2.34)
	<18	227(39.3)	350(60.7)	1	1
Education of father	No education	104(35.0)	193(65.0)	1	1
	Formal education	195(47.0)	220(53.0)	1.65(1.21, 2.24) ^{***}	0.74(0.50, 1.09)
Education of mother	No education	90(25.1)	269(74.9)	1	1
	Formal education	209(59.2)	144(40.8)	4.34(3.15, 5.97) ^{***}	5.05(3.520,7.24) ^{***}
Occupation of mother	Employed	62(60.8)	40(39.2)	2.44(1.59, 3.75) ^{***}	1.66(1.02, 2.71) [*]
	Unemployed	237(38.9)	373(61.1)	1	1
Wealth status	Rich	133(55.9)	105(44.1)	2.86(1.95, 4.18) ^{***}	2.45(1.56,3.85) ^{***}
	Medium	96(39.0)	150(61.0)	1.45(0.99, 2.11)	1.16(0.75, 1.80)
	Poor	70(30.7)	158(69.3)	1	1
Monthly pocket money	Yes	101(54.9)	83(45.1)	2.03(1.44, 2.85) ^{***}	1.23(0.61, 2.49)
	No	198(37.5)	330(62.5)	1	1
Knowledge about MHM	Good	210(53.)	186(47.0)	2.88(2.10,3.95) ^{***}	1.57(1.03, 2.38) [*]
	Poor	89(28.2)	227(71.8)	1	1

Significant at P<0.001=^{***}; at P<0.01=^{**} and P<0.05=^{*}, COR=Crude Odds Ratio;AOR=Adjusted Odds Ratio; CI=Confidence Interval

5. DISCUSSION

This study revealed that proportion of good practice of menstrual hygiene management was 42%. Good menstrual hygiene management practice of participants was significantly and positively associated with being in grade 10, maternal formal education, having employed mothers; being from rich family and good knowledge about menstrual hygiene management.

This study showed that the level of good practice of menstrual hygiene management was 42.0% in the study area. This finding is greater than studies conducted in Nekemte, western Ethiopia (39.9%) (Upashe et al., 2015), but lower than study done Amhara region, northern west Ethiopia (90.7%) (Gultie, 2014), Boset district, central Ethiopia (Bacha Kitesa, 2016) and Adama, central Ethiopia (57%) (Anchebi et al., 2017). This difference could be due to methodological difference. For instance, the study conducted in Boset district included students from grade 9 to grade 12 in the study while the observed difference may also be attributed to the difference in data collection instruments used between the studies as the study done in Amhara region in northern Ethiopia used a tool containing six yes/no items. Besides, the difference in socioeconomic status and the study settings may explain the observed differences.

Students in Kulubi and Koromi High schools have higher level of good MHM practice compared to students in Chelenko high school. This finding might be due to the fact that higher number of participants found in Chelenko high school might contributed the higher number of participants who failed in category of poor practice of MHM in that school than in others two high schools.

This study showed that grade 10 students have higher level of good MHM practice than grade 9 students. This finding is similar with study done in Indonesia (Davis J et al, 2018). This could also be explained by the fact that students in higher grade have more knowledge on MHM compared to lower grade which could increase level of good MHM as seen in studies done in south Ethiopia (UNICEF et al., 2012) and central Ethiopia (Bacha Kitesa, 2016).

Good MHM practice is higher among students whose mothers had formal education compared to those students whose mothers had no formal education. This finding is similar with studies done in western Ethiopia (Upashe et al., 2015) and Iran (Siabani S, 2018). In addition, this finding could also be explained by the fact the students whose mothers had formal education have higher knowledge about MHM and more likely to follow different media and understand better than uneducated counterparts which supported by the findings of studies conducted in Addis Ababa Ethiopia (Ephrem et al., 2018), Boset district, Ethiopia (Bacha Kitesa, 2016) and north Ethiopia (Gultie T., 2014).

In this study, students whose mothers were employed had higher level of good MHM practice than those whose mothers were unemployed. This finding is higher than with studies conducted in Nekemte, western Ethiopia (Upashe et al., 2015).

This study showed that students who came from rich family have higher practice of good MHM practice compared to those who came from poor family. This finding is similar with studies done in Addis Ababa Ethiopia (Ephrem et al., 2018) and southern Ethiopia (UNICEF, 2012, UNICEF et al., 2012). Moreover, this could also be explained by the fact that the students from rich family can offer permanent monthly pocket money for sanitary napkins of their students which in turns could increase the good practice of MHM (Upashe et al., 2015).

According to this study, good knowledge about MHM improves level of good MHM practice. This finding was in line with the findings of studies done in north Ethiopia (Gultie T., 2014) and southern Ethiopia (UNICEF et al., 2012), and Indonesia (Davis J et al, 2018).

As the strength, this study included multiple schools and large sample size that could make the study representative or generalized in general. In addition, the study addressed the most critical problem of the vulnerable population in education institutions. However, this study did not include the students from private high school.

Despite our efforts in using standard questionnaire, social desirability bias might occur in this study due to self-reported measures which depend on what students think desirable to respond to answer MHM practice items

6. CONCLUSIONS AND RECCOMENDATIONS

6.1. Conclusions

The prevalence of good practice menstrual hygiene management was found 299(42%). In this study, grade level, maternal formal education, maternal employment;rich wealth status and good knowledge about MHM were factors significantly associated with good practice of MHMof high school female students of Meta district.

6.2. Recommendations

Comprehensive and mult-sectoral collaboration is important to alleviate the current MHM challenges that school females are facing. Specially, education sector, WASH sectors, and health sectors bear the lion shares.

Woreda health office and Health facilities

Promote women education about menstrual hygiene through Health extension worker. Mainstreaming school health program focused on the importance of keeping personal hygiene and how to mitigate knowledge gap of menstrual hygiene by HW.

For District education and local partners

Local government and nongovernmental agencies and schools should give special emphasis on keeping cleanness of toilet , access of bathing area and where basket for dispose of used pads in the school.

That support gender equality and Maximize the knowledge of Menstrual hygiene in the starting from pre High school (pre-pubertal)district.

For Female students

keep personal hygiene specially during menstruation.

For researchers :Further studies are needed to do large scale Area on practice of menstrual hygiene by employing mixed (qualitative and quantitative) methods and on the type of sanitary pad that is preferable, accessible, socially acceptable, sustainable, and environmentally friendly.

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8. APPENDICES

8.1 Appendix A Participant Information Sheet and Informed Consent Form for Aged \geq 18 Years

My Name is------. I am working as a data collector for the study being conducted in this University by Abraham Jemalon _____ High school female students in Meta District, Easter Ethiopia in 2019, who is studying for his Master's degree at Haramaya University, the college of health and medical sciences. I kindly request you to give me your attention to explain for you about the study and being selected as a study participant.

The Study title: Practice of Menstrual Hygiene Management and associated factors among High school female students in Meta District, Eastern Ethiopia, 2019.

Purpose of the study: The finding of this study can be of a paramount importance for the district health office and health facilities, Educational office and high school, women and child affairs, water and energy office, micro and entrepreneurship office to plan intervention programs to prevent unhygienic management practices of menses in your community; thereby improve female student health and dignity in general. Moreover, the aim of the study is to write a thesis as a partial requirement for the fulfillment of a Master's program in General Public health for the principal investigator.

Procedure and duration: I was interviewing you using a questionnaire to provide me with pertinent data that is helpful for the study. There are 38 questions to answer where I was fill the questionnaire by interviewing you. The interview was take about 30-38 minutes, so I kindly request you to spare me this time for the interview.

Risks and benefits: The risk of being participating in this study is very minimal, but only taking 30 -35 minutes from your time. There was not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

Confidentiality: The information you was provided us was be confidential. There was no information that was identify you in particular. The findings of the study was be general for the

study community and was not reflect anything particular of individual person or housing. The questionnaire was coded to exclude showing names. No reference was be made in oral or written reports that could link participants to the research

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 withdrawfrom thestudyat any time and this wasnot label you for any loss of benefits which you otherwiseare entitled. You do not have to answer any question that youdo not want to answer.

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

Principal investigator:Abraham Jemal Email**brojamal123@gmail.com** or phone 0910199204, 0256666020/0256660231 , P.O.Box 036 Harar ,Ethiopia.

Institutional Research Ethics review Committee: office phone 0254662011,P.O.Box 235, Harar ,Ethiopia.

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 procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I was giving the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore,I declare my voluntary consent to participate in this study with my initials (signature) as indicated below. N.B this is to be signed face to face in the presence of the data collector. Please provide a copy of this signed consent to the participant. Identification code_____

Name and Signitureof theparticipant_____Signiture_____date_____

Name and sign of the date collector_____Signiture_____date_____

Thanks for your participation

8.2. Appendix B: Uunkaa hirmaannaa fi Gaaffiileef odeeffaanoo kennuu hirmatoota umriin isaani waggaa 18 oli tahaniif)

Unkaan kun kan irratti xiyyeeffatu shamarraan mana barumsa _____ jiran irraa odeeffannoo funaanuufi Gaaffilee dhiyaatani. Duraan dursee Nagaan koo isin haa ga'u maqaan koo obbo Abraahim Jamaal Yunivrsitii Haramaaya keessatti Fayyaa Hawaasaatiin Digrii lammaffaa ittiin eebbifamuuf waraqaa qorannoo irratti odeeffannoo walitii qabachuutti jira. Kanaafu har'akaniin dhufe shamarraan mana barumsa sadarkaa lammaffaa _____ irrattii halaa qabinsaa marsa lagu fi wantoota isaa walqabate irratti qorannoo gaggeesuufiin dhufe. Qorannoo koo gaggeessuun dura haala fi maaluumaa qorannoo kiyya ragaa tahu ibsuufiin yaala. **Mata duree Qorannicha:-**Haala qabinsa laguu fi rakkoolee wal qabatan shamarraan mana barumsaa sadarkaa lammaffaa (high school) keessa jiran irratti Aanaa Meettaa, Godina Harargee Bahaa, Naannoo Oromiyaa, Itoophiyaa.

Kaayyoo Qorannichaa:-Haala qabinsa laguu fi sababoota isaan wal qabatan addaan baasuuf, Shamarraan barumsaa irraa jiran irratti Aanaa Meettaa , Godina Harargee Bahaa, Naannoo Oromiyaa, Itoophiyaa.

Sababa Qorannichaa:-Kaayyoo qorannoo kanaa inni guddaa Fayyaa Hawaasatti Digrii 2^{ffaa} argachuu yoo ta'u, bu'ura qorannoo kanaa qabinsa qulqullina marsa laguu fi sababoota isaan wal qabatan addaan baasuuf, shamarraan barumsaa keessa jiran irratti Aanaa Meettaa Godina Harargee Bahaa, Naannoo Oromiyaa, Itoophiyaa.

Adeemsa qorannichaafi yeroo inni fudhate:

Qorannoon kun kan adeemsifamu Yunivarsiitii Haramayaa keessatti yoo ta'u shamaraan mana barumsa jiran irratti adeemsifama.

Qorannoo kana irratti ragaaan kan walitti qabamu shamarraan carraan ba'eef hunda irratti ni gaggefama .shamarraniif gaaffileen adda addaa ni dhiyaataf ofumaisaanitin deebi itti kenna deemu. inni biro bishaani fi manni fincaani addaati shamarraniif jirachu issaa ijaan ni ilaalama. qorannoo kanaaf filatamatan marti kan qorannoo kana gaggeessinu yoo hayyama issin irraa argannee fi isaan fedhii qabaataniidha. Gaaffii isin gaafannuuf daqiiqaa 20-30 qofa isin duraa fudhanna.

Bu'aa fi miidhaa Qorannicha

Qorannoo kana keessatti hirmaachuufi odeeffannoo keenuun midhaa tokkollee isin irraa waan ga'u hin qabu. Garu odeeffannoon isin kennitan haala qabinsa qulqullina mul'achuudanda'u saffisaan safarun shamarraan naannoo irratti haala kam irraa akka jiru beeku fi kallati fuldura kahuuf wal fakkatu gochuuf ni gargaara.

Kaffaltii Raawwatama

Qorannoo kana irratti hirmaachuun wanti kafalamu ykn kennamu tokkolleen hin jiru akkasumaas qorannoo kana irratti hirmaachuun bahiin baaftan tokkolleen hin jiru.

Iccitti Odeeffanichaa:Odeeffannoon qorannoo kanaaf funaanamu hundu iccittii isaa eegamuu qaba. Namoonni odeeffannoo kana yammuu kennitan maqaan keessan hin barreeffamu, garuu mallattoo addaan kenameefi taa'a. Itti dabaluun odeeffannoo kana nama qorannoo kana adeemsisu ala namni kamiyyuu akka hin-arginetin taa'a.

Mirga qorannoo irratti hirmaachu fi hirmachu dhisu.

Qorannoo kana irratti hirmachufi hirmaachu dhisuu mirgaa nama dhunfaa irratti hunda'a. Gadfegeenyaa hubannoo yoo barbaaddan teessoowwan armaan gadiitiin dubbisuu dandeessu.

Abbaa Qorannichaa

Maqaa: Abraahim Jamaal.Tessoo:-Email:-ibrojamal123@gmail.com

Bilbila:-0910199204,0256660231/0256666020,Lak.S.P036, Harar , Ethiopia

Koree Jiddu Galeessa Qorannoofi Qo'annaa Yuunivarsistii Haramayaa dame kollejii saayinsii fayyaa hawaasa fi Hakima

Bilbila: 0254662011Lak.S.P 235, Harar , Ethiopia.

Odefannoo Hayyamumma hirmatoota umriin isaani waggaa 18 oli tahaniif.

Ani Odefannoo Hayyamumma hirmatoota kana dubiseen ykn naaf dubifame qoranno kana irrati fedhii koo guutun akkan hirmaachun fedha kooti. Ani ifaan ifati fayyida qoranno hubadheen jira,adeemsa bu'aa fi miidha akkasumaas icciti ,mirgaa hirmatoota fi gaafi fedheefu Eessati fi Eenyu akka gaafachu qabu beeken jira. Ani carraa gaafi ifaa tahu barbaadu ittin gaafadhu naaf kenname jira. Ani yeroo fedheti qoranno addaan kutuuf ykn gaafin deebisu hin barbaanne akkan irraa darbu dandahu mirga koo tahuodeefanno naaf ibsame jira.kanaafu ani fedha kootin qoranno kana irrati akkaan hirmadhu yeroon ibsu mallatto kootin akka armaan gaditi argamun ni mirkaneessa.

Hub.Unkaan kun kan mallatahu bakka qaamni raga sassabu jirutu harkaa fi harakati tahu isaati.Hafteen mallatto hayyamumma hirmaataaf kenname. Lak.koodi_____

Maqaa fi mallatto hirmatu _____ mallatto _____ guyyaa_____

Maqaa fi mallatto raga sassabu_____ mallatto_____ guyyaa_____

<<Hirmana keessaniif Galatooma >>

8.3. Appendix C: Informed Voluntary Consent Form for Head of High school.

My Name is----- . I am working as a data collector for the study being conducted in this high school by Abraham Jemal who is studying for his Master's degree at Haramaya University, the college of health and medical sciences. I kindly request you to lend me your attention to explain for you about the study and your institution being selected as the study setting.

The Study title: Practice of Menstrual Hygiene Management and associated factors among High school female students in Meta District, Ethiopia, 2019.

Purpose /aim of the study: the finding of this study can be of a paramount importance for the hospital to plan intervention programs to prevent unhygienic practices of menstrual hygiene management in the Meta woreda high school, thereby improve female students' health and dignity in general. Moreover, the aim of this study is write a thesis as a partial requirement for the fulfillment of a master's program in general public health for principal investigators.

Procedure and duration: I was interviewing the female students using a questionnaire to provide me with pertinent data that is helpful for the study. There 38 questions to answer where I was fill the questionnaire by interviewing the High school female students .The interview for each female students take 30-40 minutes.

Risks and benefits:: The risk of participating in this study is very minimal, but only taking 30-40 minutes from your leaning time. There was not be any direct payment for participating in this study. But the findings from this research may reveal the important information for the local health, education, women and child affairs water minerals and energy office planners.

Confidentiality: The information that we was provided was kept confidential. There was no information that was identify the participants in particular. The findings of the study was general for the study community and was not reflect anything particular of individual person's . The questionnaire was coded to exclude showing names. No reference was made in oral or written reports that could link participants to the research.

Rights: Participation for this study is fully voluntary. You have the right to declare to participate or not in this study. If they decide to participate, they have the right to withdraw from the study

at any time and this was not label them for any loss of benefits which you otherwise are entitled. They do not have to answer any question that they do not want to answer.

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

Principal investigator: Abrahim Jemal Email ibrojamal123@gmail.com or phone 0910199204 /0256666020/0256660231 , P.O.Box 036 Harar, Ethiopia.

Institutional Research Ethics review Committee: office phone 0254662011, P.O.Box 235, Harar, Ethiopia.

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 procedures, the risks and benefits, issues of confidentiality, the rights of participant and the contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that 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 high school has the right to stop this study from being conducted if any misdeeds and unethical procedures are observed during the data collection process in the High school premises. Therefore, I declare my voluntary consent on behalf name of the High school _____ management to allow this study to be conducted in the high school with my initials(signature) as indicated below.

Name and signature of head of the High school _____ Signature _____ date _____

Name and of the data collector _____ Signature _____ date _____

Thank you for your cooperation

8.4. Appendix D: Informed Voluntary Consent Form for Minor (participant age <18 years)

My Name is----- . I am working as a data collector for the study being conducted in this high school by Abraham Jemal who is studying for his Master's degree from Haramaya University, the college of health and medical sciences. Your girl randomly selected to be participant in this study. I kindly request you to lend me your attention to explain you about the study and Girls participation.

The Study title: Practice of Menstrual Hygiene Management and associated factors among High school female students in Meta District, Ethiopia, 2019.

Purpose /aim of the study: The finding of this study can be of a paramount importance for the Meta woreda health, education, water and mineral energy and women and child affairs office and High school to planners on intervention programs to prevent unhygienic practices of menstrual hygiene management in their community Meta woreda high school, thereby improve girls students health and dignity in general. Moreover the aim of this study was write a thesis as a partial requirement for the fulfillment of a master's program in general public health for principal investigators.

Procedure and duration: I was be questions about your girls that help us to know the practices of menstrual hygiene management . Therefore I asked your girls students by using a questionnaire to provide me with pertinent data that is helpful for the study. There are 38 questions to answer where I was fill the questionnaire by interviewing your Girls students the interview for each female student's take 30-40 minutes.

Risks and benefits: The risk of being participating for your Girls in this study is very minimal, but only taking few minutes from your time. There was not be any direct payment for participating in this study. But the findings from this research may reveal the important information for the local health, education, women and child affairs, water minerals and energy office planners.

Confidentiality: The information that we was collect from this study was be kept confidential. There was be no information that was identify your girls or yourself in particular. the finding of the study was be general for the study community and was not reflect anything particular of

individual person's or housing . The data that we gather from the questionnaire was be coded to exclude showing names. No reference was be made in oral or written reports that could link participants to the research.

Rights:Participation for this study is fully voluntary. You have the right to declare to allow your girls to be involved in this study or not. If you wasallow your child for this study,you have the right to withdraw her from the study or not. If you was allow your girls for this study at any time and this wasnot label you/your girls for any loss of benefits which you/your girls otherwise are entitled. Youdo not have to answer any question that you do not as well.

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

Principal investigator:AbrahamJemal Email ibrojamal123@gmail.com or phone 0910199204, 0256666020/0256660231 , P.O.Box 036 Harar, Ethiopia

Institutional Research Ethics review Committee: office phone 0254662011, P.O.Box 235, Harar,Ethiopia

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 procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to withdraw my girls from the study at any time or not to answer any question that I do not want. Therefore, I declare my voluntary consent to allow my child to participate (be involved) in this study with my initials (signature).

Name and signature of parents/Guardian care givers:_____sign _____date_____

Name and signature of data collectors:_____sign_____date_____

N.B.This is signed face to face in the presence of the data collectors.

Please provide a copy of this signed consent to the participant.

.if the participant (parent/guardian) is lay person and cannot sign initials can put his/her thumb print in front of a competent witness; and the witness has to signalongside (with his/her name and address. If the participant is in the age range of 15-18 years,an assent (oral or written)may also be required from the minor on top of the parental/guardian consent.

Thank you for your cooperation.

8.5. Appendix E: Gaaffilee adda addaa fi uunkaa waliigaltee afaan oromootti

hiikkame.(hirmaatoota umriin isaani waggaa <18gadi tahaniif)

Uunkaa hirmaannaa fi Gaaffiileef odeeffaanoo kennuu.

Unkaan kun kan irratti xiyyeeffatu shamarraan mana barumsa jiran irraa odeeffannoo funaanuufi Gaaffilee dhiyaatani. Duraan dursee Nagaan koo isin haa ga'u maqaan koo obbo Abraahim Jamaal Yunivrsitii Haramaayaatibarnoota Fayyaa Hawaasaatiin Digrii lammaffaa ittiin eebbifamuuf waraqaa qorannoo irratti odeeffannoo walitii qabachutti jira. Kanaafu har'a kaniin dhufe shamarraan mana barumsa sadarkaa lammaffaa irrattii halaa qabinsaa marsa lagu fi wantoota isaa walqabate irratti qorannoo gaggeesuufiin dhufe. Qorannoo koo gaggeessuun dura haala fi maalummaa qorannoo kiyya ragaa tahu ibsuufiin yaala.

Mata duree Qorannichaa:-Haala qabinsa lagu fi rakkoolee wal qabatan shamarraan mana barumsaa sadarkaa lammaffaa (high school) keessa jiran irratti Aanaa Meettaa, Godina Harargee Bahaa, Naannoo Oromiyaa, Itoophiyaa.

Kaayyoo Qorannichaa:-Haala qabinsa lagu fi sababoota isaan wal qabatan addaan baasuuf, Shamarraan barumsaa irraa jiran irratti Aanaa Meettaa , Godina Harargee Bahaa, Naannoo Oromiyaa, Itoophiyaa.

Sababa Qorannichaa:- Kaayyoo qorannoo kanaa inni guddaa Fayyaa Hawaasatti Digrii 2^{ffaa} argachuu yoo ta'u, bu'ura qorannoo kanaa qabinsa qulqullina marsa lagu fi sababoota isaan wal qabatan addaan baasuuf, shamarraan barumsaa keessa jiran irratti Aanaa Meettaa Godina Harargee Bahaa, Naannoo Oromiyaa, Itoophiyaa.

Adeemsa qorannichaafi yeroo inni fudhate:

Qorannoon kun kan adeemsifamu mana barnoota sadarkaa lammaffaa Aanaa Meettaa keessatti yoo ta'u shamaraan mana barumsa jiran irratti adeemsifama.

Qorannoo kana irratti ragaaan kan walitti qabamu shamarraan carraan ba'eef hunda irratti ni gaggefama .shamarraniif gaffileen adda addaa ni dhiyaataf ofumaisaanitin deebi itti kenna deemu. inni biro bishaani fi manni fincaani addaati shamarraniif jirachu isaa ijaan ni ilaalama. Hirmaatootni qorannoo kanaaf filatamatan marti kan qorannoo kana gaggeessinu yoo hayyama issin irraa argannee fi isaan fedhii qabaataniidha. Gaaffii isin gaafannuuf daqiiqaa 38 qofa isin duraa fudhanna.

Bu'aa fi miidhaa Qorannicha .

Qorannoo kana keessatti hirmaachuufi odeeffannoo keenuun midhaa tokkollee isin irraa waan ga'u hin qabu. Garuu odeeffannoon isin kennitan haala qabinsa qulqullina mul'achuu danda'u safaruun shamaraan naannoo irratti haala kam irraa akka jiru beeku fi kallati fuldura kahuuf akkasumaas ogessoota qorannoo wal fakkatu gochuuf ni gargaara.

Kaffaltii Raawwatama

Qorannoo kana irratti hirmaachuun wanti kafalamu ykn kennamu tokkolleen hin jiru akkasumaas qorannoo kana irratti hirmaachuun bahiin baaftan tokkolleen hin jiru.

Iccitti Odeeffanichaa

Odeeffannoon qorannoo kanaaf funaanamu hunduu iccittii isaa eegamuu qaba. Namoonni odeeffannoo kana yammuu kennitan maqaan keessan hin barreeffamu, garuu mallattoo addaan kenameefi taa'a. Itti dabaluun odeeffannoo kana nama qorannoo kana adeemsisu ala namni kamiyyuu akka hin-arginettin taa'a.

Mirga qorannoo irratti hirmaachuufi hirmachuu dhisuu.

Qorannoo kana irratti hirmachuufi hirmaachu dhisuu mirgaa nama dhunfaa irratti hunda'a. Gad-fegeenyaa habannoo yoo barbaaddan teessoowwan armaan gadiitiin dubbisuu dandeessu.

Maqaa Abbaa Qorannichaa: Abraahim Jamaal Mohammad

Bilbila:-0910199204 lak. Biro 0256660231/0256666020 Lak.S.P 036 Harar, Ityoopyiya

Email:-ibrojamal123@gmail.com

Koree Jiddu Galeessa Qorannoofi Qo'annaa Yuunivarsistii Haramayaa kollejjii saayinsi fayyaa hawaassa fi Haakima.

Lak.Bilbila 0254662011,**Lak.S.P** 235 Harar,Ityoophiyaa

Unkaa fedhiin Hayyamumma odeeffanna qoranno guddistoota ykn kununsitoota :

Ani Unkaa odeeffanno walgalte dubbiseen jira ykn naaf dubbisani dhageefadhen jira. Ani bu'aa qoranno , adeemsa ,bu'aa fi miidha ,icciti akkamiti akka eegamu fi mirga hirmatoota fi yoo barbaachisa tahe gaafi fedheefu qaama qoranichaa gaggessu gaafachu akka dandenyu hubadheen jira. Ani akka gaafiin na gaafatu carra siif kennine .gaafin ifaa tahu qabu yoo jiraate akka nu gaafatan carraa issini kennan jira. nuti yeroo feneti mirga qoranicha addaan kutu shamaran ykn guddatoota akka qaban naaf ibsame /hibadheen jira,akkasumas gaafii deebisu hin barbaanne akka irraa darbu dandayan hubadheen jira.kanaafu ani micinyoon kiyaa akka qoranno kana irratti akka hirmaatu fedhii kootin hayyama tahu koo mallatto kootin naan mirkanessa.

Maqaa fi mallatto maati /guddiftoota /kununsitoota :__Maqaa Mallatto guyyaa

Maqaa fi mallatto nama odefanno sassabu:Maqaa

Mallatto

guyyaa

N.B. mallatoon kun nama ragaa funaanu fuulleti kan mallatessitan tahaa.Hafte mallatto waligalte kana qaama hirmaatoota qoranno kanatiif kennamu qaba.

.yoo hirmatootni (maatin /guddiftootni ykn kununsitootni) nama hin baratin fi mallatessu hin dandenyee tahe qubaa abba guddo isaatin /ashaara/ fuule maqaa fi teesso isaa /ishee isaati mallatessu ni danda'ama.yoo umriin hirmatoota waggaa 15-18 ,gaafin hayyamumma afaani fi barrefaman (oral or written) guddatootni gubaa waligalte maati/guddistoota irrati taha.

<<Hirmaanna keessaniif Galatooma>>

8.6 Questionnaire in English Form

Code _____ starting time _____ Date _____

Read and follow the instruction for each question and circle on the response option.

Question		Response	skip	
I. .sociodemographic characteristics				
101	Name of School	1.ChelenkoHigh school 2. kulubi 3. koromi		
102	What is your age know? (in years)	_____years		
103	At What age you seen first menstruation ? (in years)	_____year s		
104	Residence Area?	1.Rural 2.urban		
105	Ethnicity ?	1. Oromoo 2. Amahar 3. Gurage 4. other		
106	Grade of education ?	1. Grade 9 th 2. Grade 10 th		
107	Religion	1. Ortodox 2. Muslim 3. Protestant 4.Others		
108	What is Educational level of your mother ?	1.noformal education 2. primary education 3.secondary Education 4. Above Secondary		
109	What is Educational level of your father ?	1.no formal education 2. primary education 3.secondary Education 4. Above Secondary		
110	What is your mother Main occupation?	1.Farmers 2.Merchant 3.employ (gov't/NGO/Private 99.oths		

111	What is Main Father occupation?	1.Farmers 2.Merchant 3.Emplay(gov't/NGO/Privat 4.other		
112	What is total persons living in your family?	1. two –three 2.four-five 3.six-eight		
		4.nine-twelve 5.thirten and above		
113	With whom do you live?	1. both parents 2.Mothers only 3.Fathers Only 4.Others		
114	Do you permanently get pocket many from your family ?	1.Yes 2.No		
115	Do you have own source of in come for personal hygiene ?	1.Yes 2.No		
II. Knowledge about Menstrual Hygiene management				
	Question	Response		Skip to next
201	Do you learn about menstrual hygiene management in the school?	1.Yes 2.No		
202	Ever discus about menstruation with your parents or girls friends/peer.	1.Yes 2.No		
203	What is average menstrual cycle for normal menses ? Duration of menstrual cycle during each period	1.19-20days only 2. 21-35 days 3.Idon't know		
204	What is average duration of normal menstrual discharging days ?	1. 2-7days 2. 2-3days only 3.less than 2days 4. I don't know		
205	Do you Heard about MHM before attending your menses?	1Yes 2. No		
206	What do menstruation means?	1.its physiological process 2.it ispathological process 3. it's acurse from god 4. I don't know 5.others		

207	Cause of Menstruation ?	1.Hormonalchange 2. it's a curse from god 3. caused by diseases 4. I don't know	
208	From which organ menstruation fluids come?	1. uterus 2.urinary bladder 3. Cervix 4. I don't know	
209	During menstruation girls should take more nutrition?	1. Yes 2. No	
210	Menstruation Does not lifelong process?	1. Yes 2. No	
211	Do you know that there is foul smelling during menstruation ?	1. Yes 2. No	
212	Does feeling pain during menstruation is sign of disease ?	1. Yes 2. No	
213	During menstruation Running and dancing not harm for girls ?	1.yes 2.No	
214	Girls should know about menstruation before attending menstruation ??	1.Yes 2.No	

III. Practice about Menstruation Hygiene Management

S.N	Question	Response	Skip
301	Do Use Menstrual fluid absorbing materials during menstruation.	1.Yes 2.No	If no 306
302	Do Use Disposable sanitary pad during menstruation?	1.yes 2.No	
303	What type of materials used during last menstruation?	1.Cloth/Towel 2.Tampon 3.Purchased sanitary pad 4.Toilet paper 5.Cotton	
304	change the sanitary pad or materials 3 times and more per day	1.yes 2.No	
305	Do you Hand washing after changes the pad and sanitary pad?	1.yes 2.No	
306	Do you Cleaning genital area during menstruation?	1.yes 2.No	

307	Cleaning genital area during menstruation?	1.yes 2.No		
308	Do you use soap for cleaning external genitalia during menstruation?	1.yes 2.No	.	
309	Do you take bathing during menstruation?	1.yes 2.No	if no skip to Q	
310	Do you daily bathing during menstruation?	1.yes 2.No		
311	Where do you dispose used sanitary pad?	1.latrine 2.distbin 3.dispose every where 4.other		
312	Do you keep pads in clean plastic between used?	1.yes 2.No		

School related factors respondent are High school management and head of gender club/observation .

401	Does your school have water source available the compound for drinking and washing(hand washing ,clothes) ?continuously	1.yes 2.No		
402	Does your school have a separated place to change sanitary pads in the compound?	1.yes 2.No		
403	Does your school have a separated toilet for female students in the compound?	1.yes 2.No (skip to 405)	If no skip to 405	
404	Does separate toilet have dist bin for dispose the used pads for female students in the compound?	1.yes 2.No		
405	Does your school have a female bathing area used during menstruation in the compound?	1.yes 2.No		
406	Does your school have a functional mini-media in the compound?	1.yes 2.No		
407	Does your school have a menstrual hygiene club in the compound?	1.yes		

Wealth Index

501	What is a main source of drinking water for your family?(Only one answer is possible)	1.Pipe water 2.Public Tap or Pipe 3.Well or bore well 4.Protected Spring 5.Unprotected spring 6.Surface Water(river,pond) 7.Other Sources(specify)	Remark	
502	How long does it take you to fetch water (single trip)	_____minutes		
503	What is average monthly income of your family?	_____ in Ethiopian Birr		
504	What is your average monthly income in ETB?	_____ in Ethiopian Birr		
505	Does your family have a land (any size) used for agriculture?	1. Yes 2.No		
506	How many domestic animals does your family/HH have?(If your family do not have any domestic animals, write zero in front the name of that domestic animals)	<u>Animas</u>	<u>Number</u>	<u>Remark</u>
		Cows		
		Oxen		
		Horses		
		Donkeys		
		Mules		
		Goats		
		Sheep		
		Chickens		
		Camels		
Other/specify				
507	Type of floor that your family's house made up of :	1. Cement 2. Earthen 3. Other/specify		
508	Type of wall that your family's house made up of :	1. Cement 2. Mud 3. Other/specify		
509	Type of roof that your family's house made up of :	1. Concrete 2. Iron sheet 3. Other/specify		
510	What kind of toilet facilities does your family have?	1. VIP latrine 2. Traditional pit latrine 3. Other/specify		
511	What type of fuel does your family mainly use for Cooking purpose?	1. Electricity 2. Kerosene/LPG		

			3. Charcoal		
			4. Firewood		
			5. Straw/shrubs		
			6. Animal dung		
			7. Other/specify		
512	Does your family have these infrastructure in the family (tick under yes if they have and under no unless otherwise/if they do not have/	<u>Infrastructure in the family</u>	<u>Yes</u>	<u>No</u>	Remark
		Electricity			
		A kerosene			
		Lantern lamp			
		A pressure lamp			
		A bed			
		A chair			
		A table			
		A radio			
		An electric mitad			
		non-mobile telephone			
		A television			
		A refrigerator			
		A sofa			
		Water glass for drinking (Aburcuqo bishaani)			
		Solar			
		A watch			
		Mobile Phone (≥ 1)			
	A bicycle				
	A car/vehicle				
	Other (specify)				

Unkaa gaafii (Questionnaire Form) Lakk.Koodi _____ sa'aa itti jalqabame _____
 Godina _____ Aanaa _____ Guyyaa _____ maqaa mana barumsa _____
 Qajeelfama gaafii irraa jiran ilaala deebii sirri jettu irratti marii bakkaa irraa darbi jedhu ilaali qajeelfama hordoffun guuta.

Gaafii		Deebii tahu malu ykn dandayu	Gaa fi biro oti darb i
I.Teessu fi Haala jireenya hawaasumma fi qabeenya			
101	maqaa mana barumsa	1. mana barumsa calaanqoo/Chelenko High school 2. mana barumsa qullubii 3. mana barumsa koromii	
102	Idoo jireenya	1.Baadiyaa 2. Magaala	
103	Umriin kee waggaa meeqa (waggaa guutuun)	_____ waggaa	
104	Kutaa meeqaffa barata?	1. kutaa 9, 2. kutaa 10	
105	Amanmtaan kee maali?	1. ortodoksii 2. muslima 3. Protestanti 4. kan biro (ibsi) ----	
106	Sabni kee maali	1. Oromoo 2. Amaara 3. Guragee 4. . kan biro (ibsi) ----	
107.	Yeroo ammaa kana Eenyu wajjin jiraata	1. Abba fi Haadha koo 2.Haadha koo qofaa 3. Abba koo qofa 4.firaa dhihoo wajjin 5.qophaa koo 6.Hiriyaa koo wajjin 7.. kan biro (ibsi) -----	
108.	Sadaarkaan barumsa Haadha keeti hangam baratte?	1.hin barannee 2. dubbisu fi Barressu qofa 3. sadarkaa (kutaa1-8) 4. sadarkaalamaffa (kutaa 9-12) 5.sadarkaa lammaffa ol (barnoota olanaa /higher education)	
109.	Sadaarkaan barumsa abbaa keeti Maali ? (hangam barate ?)	1. hin barannee 2. dubbisu fi Barressu qofa 3. sadarkaa (kutaa1-8) 4. sadarkaalamaffa (kutaa 9-12) 5.sadarkaa lamaffa olii(higher education)	
110	Hujiin ummaa keeti maali?	1. Haadha mana 2.Qonnaan bultu 3.daldaltu 4.Hujii dhunfaa/Dhaabbata miti-mootumma 5.Hojjattu mootumma 6. hujii Humna 7.kan biro (ibsi) -----	
111.	Hujiin abbaan keeti ijoon maali?	1. Haadha mana 2.Qonnaan bulaa 3.daldalaa 4.Hujii dhunfaa/Dhaabbata miti-mootumma 5.Hojjatta mootumma 6. hujii Humna 7.kan biro (ibsi) -----	

112.	Baay'inni maati keessani walii jiraatani meeqa?	-----Lakkoofsan Barresi		
113.	Galii ykn Qarshii dhunfaan wantoota adda addaa ittin bitachuuf itti fayyadamtu gali dhunfaa keeti ni qabda?/Galii offi keeti kophati ni qabda?	1.Eeyye 2.Miti gara gaafi 201 darbi	→	Yoomiti ta'e gara gaafi 201
114.	mallaaq/qarshi wantoota adda addaa ittin bitachuuf Eenyu irraa argata? FKN Dibaata fi Moodessii adda addaatiif	1. Maati kiyyaa/abba kiyyaa 2.Jalalle kiyyaa 3.Obboleessa /obboleeti kiyya 4.kan biro/(ibsi) _____		
II. Beekumsa lagu fi qulqullina lagu ilaalchise				
	Gaafii	Deebi tahu malu	Gaafii itti anuti darbi	
201	Amman duraa laguun siti dhufee beeka a.eeyyee b.miti. Yeroo laguun jalqaba sitti dhufu umriin kee meeqa turee ?(umriin Waggaan)	----- waggaan		
202	Giddugaleessan shamaraan waggaa meeqati laguun jalqaba itti dhufu dandayaa?(umrii waggaa)	1. _____ 2.hin beeku		
203	Mana barumsa keessati waa'ee laguun qulqullinaan qabu baratani beektu?	1. Eeyyee 2. Miti		
204	Wa'ee laguun maati ykn hiriya kee wajjin ni mari'atu?	1. Eeyyee 2. Miti		
205	Giddugaleessan guyyaan laguun darbee fi isaa itti Aanee dhufu jiddu jiru ilaalchise kamtu sirridha (marsa laguun tokko isaa itti aanu irra qabu guyyaa meeqa)?	1. guyyaa 25 hanga 28 jidduti 2. guyyaa 25 gad. 3. guyyaa 28 hanga 35 jidduti 4.guyyaa 35 days 5. Ani hin beeku/ hin yaadadhu		
206	Jiddugaleessan laguun nama fayyalessa dhufee guyyaa meeqaaf tura ?	1.guyyaa lama gadii 2. guyyaa lama hanga sadi jiddu 3. guyyaa sadi hanga shan jiddu 4. guyyaa shan caala 5.Ani hin beeku/ hin yaadadhu		
207	Osoo laguun jalqaba siti hin dhufiin odefanno ykn hubanno laguun argate?	1. Eeyyee 2. Miti (Gara gaafi 209ti darbi) →	Garaa G209ti	
208	Yoo gaafin 207 Eeyyee tahe maddi odefanno Eenyu irraa argate? (deebin tokkoo caala deebisun ni dandayama)	1. Harmee/ Umma tiyya 2.mana barumsa(mini -media/barsisa) 3. Hiriya kiyaa kan dhiira ykn durba 4. obboleeti koo kan narra guddo 5.Teleevijiini/Raadiyoo 6. Ogeesoota fayyaa (HCW) 7. Interneti/madda odefanno hawaasa 8.Abba koo 9.Gumi koorniyaa		

		/shamarani		
209	Laguun maali ?	1. kuni adeemsa jijjirama Saalammeti. 2. jijjirama adeemsa rakko addaati 3. Abarsa waaqati /rabiti 4.Eebba maatiti 5.Ani hin beeku		
210	Sababni ka'umsa lagu maali?	1. jijjirama Hormoonitin 2.Abarsa waaqa /Rabiti 3. waan dhukkubuf /dhukubsateef 4. Ani hin beeku		
211	Dhanagala'aan lagu qaama ykn eessa irraa dhufaa (From which organ does menstrual blood comes.)?	1. Gadameessa 2.Buqushaa 3.Afuffee fincaani 4.Garaa 5.Ani hin beeku		
212	Dhangala'aan Yeroo lagu foolii addaa ni qaba?	1. Eeyyee 2. Miti		
213	laguu qulqullinaan qabu jechuun maal jechudhaa ? (deebi tahu dandahu barressi)	_____		
214	Dhukkubiin ykn laalan yeroo lagu namati dhagahamu jechun dhukkuba jechuu dha?	1. Eeyyee 2. Miti		
215	Shamarran yeroo laguun itti jiru yoo fiigaan fi sirbaan ykn taphatan miidhaa humatu irrati hin qaba?	1. Eeyyee 2. Miti		
216	Dubartootni yeroo lagu nyaata dabalata ykn madaalama soorachu qabu?	1Eeyyee 2. Miti		
217	Shamarran osoo laguun jalqaba itti hin dhufiin waa'ee lagu beeku qabu.?	1.Eeyyee 2.Miti		
218	Laguun adeemsa umrii guutu dubartoota wajjin turu dha?	1.Eeyyee 2.Miti		
219	Lagu qulqullinaan qabuun maaliif barbachisa?(yoo xiqqaate fayyida isaa lama iddoo duwa irrati barressi ?)	1.Fayyaa qaama walhormaatiif 2.irra caalati fayyaa nama birootiif		

III. Wa'ee qulqullina dhangala'aa lagu Eegu ykn we'aa lagu qulqullinaan qabu./Practice about Menstruation Hygiene Management

Lakk	Gaafi	Deebi tahu malu	Gaara itti Aanuti darbi	
301	Yeroo lagu waan dhangala'oo lagu itti qabatan ni fayyadamta?Do you use absorbent materials during menses?/	1.Eeyyee 2.Miti 305ti darbi gara Gaafi	Gara 305 → gaafi	
302	Yoo gaafin 301 Eeyyee tahe,Yeroo Lagu meeshaa lagu ittin qabatan gosa kam fayyadamta? (deebisaan tokkoo ol ni dandayama)	1.Moodesii 2.cittu Uffata harawaa/carqi 3.carqii uffata dhumaa/uffata dhumee 4.humatu hin fayyadamu 5. kan biro (ibsa) -----		

303	Yeroo Laguu isaa booda meeshaa laguu ittin qabatu kamiti fayyadamte ? (deebi tokko qofa filatama.)	1.Moodesii/ 2.Cittu Uffata harawaa/carqi 3.Carqii uffata dhumaa/uffata dhumee 4.humatu hin fayyadamu 5. kan biro (ibsa) -----		
304	Mana barnoota keessati bakki addaa shamaraan moodesii itti jijjiratan fi yeroo boqonna itti dabarsan kophati ni jira? (mana barumsa keessati.)	1. Eeyyee 2.Miti		
305	Sababaanni ati meesha laguu ykn moodesiti hin fayyadamneef maali?(deebin lama ol ni dandayama)	1.Gatin isaa qaali/Mi'aa 2.Iddoo itti gatamu waan hin jireef 3.fayyida isaa Hin beeku 4.Saalfadheti 5.kan biro (ibsi) -----		
306	Guyyaati yeroo meeqa meeshaa laguu ittin qabatan jijjirata?	1. yeroo tokkoo 2.yeroo lama 3. yeroo sadii 4.yeroo sadi caala		
307	Ergaa huccuu/meeshaadhangala'aa laguu ittin qabatuu jijjirate booda harka ni dhiqata ?	1.Eeyyee 2.Miti		
308	Yoo gaafin 307 eeyyee tahe Yeroo harka dhiqatu maalitti fayyaadamta?(maalin dhiqata?)	1. Saamuna fi Bishaan 2. Bishaan qofa 3. kan biro (ibsi) ----		
309	Qorichi yeroo baay'ee Sababaa laguun sitti dhufeef qoricha ni fayyadamta ?	1.Eeyyee 2.Miti yoo miti tahe →	gara gaafi 311ti darbi.	
310	Yoo gaafin309 Eeyyee tahe ,qorichi at yeroo baayy'ee fayyadamtu maali?	1.qoriicha Aadaa/digalo muka 2.qoricha Dikelofenak 3.paracetamol		
311	Yeroo laguun sitti jiru qaama hormaata kee ni qulqullefata?	1. Eeyyee → 2.Miti (garaa Gaafi 313)	Garaagaafi 313ti	
312	Yoo gaafin 311 eeyyee tahe maalin qulqullefata?	1.saamuna fi bishaan 2.Bishaan qofa 3. soofi 4.kan biro (ibsi) -----		
313	Yeroo laguun sitti jiru qaama ni dhiqata ?	1.Eeyyee 2.Miti (garaa gaafi 315darbi) →	Garaagaafi 316ti darbi	
314	Yeroo laguun siti jiru yoom irraa Eegalte ykn jalqabde qaama dhiqata?	1.guyyaa jalqaba/guyyaa hunda 2. guyyaa lamaffa 3.guyyaa saddaffa 4. guyyaa dhuma 5.Gonkuma hin dhiqadhu 6.kan biro (ibsi) -----		
315	Yeroo qaama dhiqatan maal itti fayyaadamtani qaama dhiqata?	1.samuna fi bishaan 2.bishaan qofan, 3. kan biro (ibsi) -----		
316	Mana barumsa keessati Meeshaa yeroo laguutiif erga itti fayyadamne booda Eessati maqfama ykn gatama ? (yoo moodesi gabaa bitamu ykn manati hojjatamu fayyadamne)	1.dirree irrati 2. mana fincaani 3. meesha dasti bin jedhamu 4. kan biro (ibsi) -----		

317	Huccuun laguuf ittin qabachuuf itti garagaaramtu yoo dhiqte irraa deebite fayyadamte erga miicee booda eessati goggosita? (yeroo carqii irraa deebiin fayyadamtu.)	1. Alaa bakka Gaaddisa 2. mana keessa iddo gaaddisa 3. Ifaa aduu keessaa gara keessatin/golaa 4. Alaa ifaa Aduu keessa 5. bakka hin mul'anne uffata irrati hagugun 6. bakka hin mul'anne iddo mara/hunda 7. kan biro (ibsa)		
318	Huccuu /Carqii akka moodesiti itti garagaramtan irraa deebin itti fayyadamtan maalin dhiqan (yoo irraa deebin itti fayyadamtan tahe)	1. saamuna fi bishaani wajjin 2. bishaan qofaan 3. kan biro (ibsa) -----		
319	Huccuu /Carqii irraa deebin fayyadamtan Eessa kaawatan ?	1. miikaa keessa kophati 2. uffata biro wajjin 3. mana shawara keessa/qaama itti dhiqatan keessati 4. kan biro (ibsi) -----		

7.7 Haala Jiru fi jireenya akkasumaas qabeenya

401	Maatin keessan Bishaan dhugaati irraa caalati ykn yeroo baay'ee eessa argatu? (filanno tokko qofa filatu)	1. Bishaan bomba 2. Boono ummata 3. Bishaan bollaa 4. madda bishaani sirriti kunuunfame 5. Madda bishaani dalayaa qabu(kan hinkunuunfamne) 6. Bishaan dirre irraa 7. Kan biro/ibsi	Yaada
402	Bishaan dhugaati dhaqachuuf ykn fidachuuf saa'a meeqa issin jala fudhata?(mana keessani hanga bishaan geessuti qofa)	_____daqiqaan	
503	Jiddugalessan galiin maatin keeti ji'aan meeqa?	_____qarshii Itiyooophiyaa	
504	Baasin maati keet talmamaan hangam tahaa /Jiddu galessan baasin maati kee qarshii meeqa tahaa?	_____qarshii Itiyooophiyaa	
505	Maatin kee lafa qonnaaf itti fayyadaman ni qabani? (haa xiqqaatu haaguudatu)	1. Eeyyee 2. miti	
506	Maatin kee bineeladoota mana meeqa qabu? (yoo maatin kee beeladoota mana hin qabanne maqaa beladoota durati lak. Duwaa barressi. yoo qabatan fuullee beeladootati baayina isaa barressi)	<u>Bineeladoota</u> Saa'a /sawwan Qotiyoo Farada/Faradoo Harree Gaange Re'ee Hoola Lukku Gaala	<u>Lakk.</u> <u>Yaada</u>
507	Manni maati keeti lafti isaa maal irraa hojjatame?	1. Simintoo 2. biyyoo 3. kan biro/ibsi	
508	Manni maati keeti dhaabni isaa maal irraa hojjatame?:	1. Simintoo 2. Horofaa/Wood 3. Kan biro/ibsi	
509	Manni maati keeti baaxiin isaa maal irraa hojjatame?	1. Konkiriiti	

		2.qorqorroo 3.Mana citaa			
510	Maatin kee mana fincaani gosa akkami qaba.	1.Mana fincaani ammayya/VIP (kan dhiqamu) 2.Mana fincaani Aadaa/ 3.Kan biro /ibsi			
511	Maatin kee irraa caalati nyaata bilcheesuuf maaliiti fayyadama. (Deebiin tokkoo ol ni dandayama)	Eletirika Gaazii kasaala qoraan baala mukaa (Straw/shrubs) dikee looni kan biro/ibsi			
512	Maatin kee meeshaalee tarrefaman kannen keessa kamfaa qaban?(meeshalee maatin kee qaban eeyyee jedhii, kan hin qabnee immo miti jalati agarsiisi)	<u>Gosoota meesha mana maatin qaban.</u>	<u>Eeyyee</u>	<u>miti</u>	Yaada
		Eletrika			
		Gaazii			
		Lamba			
		Faanusa			
		Siree			
		Teesso			
		Minjaala/Xarapezaa			
		Raadiyoo			
		Eele buddenna			
		Bilbila sararaa			
		Bilbila mobile			
		Televisiona			
		dilaleessa			
		soofa			
		(Aburcuqo bishaani)			
		Solar			
Sa'aati					
Bilbila mobayila (≥ 1)					
Motor sayikili					
makina					
Kan biro/ibsi					

APPROVAL SHEET
HARAMAYA UNIVERSITY
POSTGRADUATE PROGRAM DIRECTORATE

Submitted by:

Name of student	signature	Date
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Approved by:

1. _____

Major Advisor	Signature	Date
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2. _____

Co-Advisor	Signature	Date
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3. _____

Research Thematic Area leader	Signature	Date
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4. _____

Chairman, DGC/SGC	Signature	Date
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5. _____

PGPD	Signature	Date
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