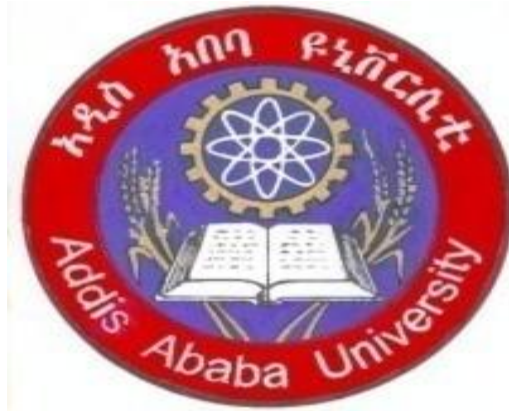


**ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH**



Menstrual Hygiene Management and School Dropout among Female Adolescent Students of Habru Woreda, North Wollo, Amhara Region, Ethiopia, 2013

By

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A thesis to be submitted to the School of Public Health, College of Health Sciences, Addis Ababa University as partial fulfillment of the requirements for the Degree of Master of Public Health in Reproductive Health

**June, 2013
Addis Ababa**

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Abbreviations

Eth Birr	Ethiopian Birr
FGD	Focus Group Discussion
HEWs	Health Extension Workers
IDI	In depth Interview
MDGs	Millennium Development Goals
MHM	Menstrual Hygiene Management
PI	Principal Investigator
PSU	Primary Sampling Unit
SPSS	Statistical Package for Social Sciences
SRH	Sexual and Reproductive Health
SSU	Secondary Sampling Unit
TSU	Tertiary Sampling Unit
TV	Television
UNICEF	United Nations Children's Fund
WHO	World Health Organization

Abstract

Background: Adolescence in girls has been recognized as a special period in their life cycle which is marked with onset of menarche. Even though menstruation is a natural process, it is linked with several misconceptions and practices. Absenteeism and drop out from school are common problems among girls in less developed countries due to menstruation related problems.

Objective: This study aimed to assess menstrual hygiene management and its consequences on school attendance among junior secondary school adolescent girls in Habru Woreda.

Method: A cross-sectional mixed method study combining both quantitative and qualitative research methods was used among 595 randomly selected adolescent school girls of Habru Woreda. A pretested and structured questionnaire was used to collect the data. Epi Info version 3.5.3 and SPSS version 16.0 were used for data entry and analysis for the quantitative data and an inductive content analysis using Open-Code software version 3.6 for the qualitative data.

Results: The mean age of students was 15.0 ± 1.3 years; most had their menarche at a mean age of 14.0 ± 1.2 years. About half girls had knowledge of menstruation, 294 (65.6%) of them did not use sanitary pad. Sanitary pad use was strongly associated with urban residence [AOR=2.3; 95% C.I: 1.2 - 4.5], mothers education of secondary and above [AOR=4.3; 95% C.I: 1.6 - 11.3]. Household monthly expenditure of 601-900, 901-1200 and greater than 1200 birr [AOR (95% C.I): 3.2 (1.5 – 7.2), 3.4 (1.6 – 7.4), 5.0 (2.2 – 11.2)] respectively and living with relatives [AOR (95% C.I) 0.16 (0.04 – 0.56)]. About 55% of girls had history of school absenteeism during their menstrual period. School absenteeism was strongly associated with those who didn't use sanitary pad [AOR (95% C.I) 5.4 (3.0 - 9.6)] and learning in Melka Chefe Junior Secondary School [AOR (95% C.I) 0.41 (0.18 - 0.90)]. About 58% of girls perceived that their academic performance was affected after menarche compared to their ranks before they had menarche. In addition, girls dropped out from school due to embarrassment following soiled cloth while at school with blood as well as lack of sanitary materials and poor school sanitary facilities.

Conclusion and recommendation: Despite girls' knowledge about menstruation and its management; use of sanitary pad was low. School absenteeism and dropout because of problems related to menstruation may affect the effort made towards the realization of empowering girls and gender equity. There should be a concerted effort among schools, family and others concerned in understanding and averting girls' school absenteeism and drop out because of lack of sanitary materials during menstruation.

1. Introduction

1.1. Background:

World Health Organization (WHO) has defined Adolescence as the period between 10-19 years of life. Adolescence in girls has been recognized as a special period in their life cycle that requires due attention. This period is marked with onset of menarche (1). Menstruation; which is a unique phenomenon to females, is part of the female reproductive cycle that starts when girls become sexually mature at the time of puberty (2-4).

Even though menstruation is a natural process, it is linked with several misconceptions and practices which may result in adverse health outcomes. Poor hygiene during menstruation has been associated with serious ill-health including reproductive tract and urinary tract infections. Today, millions of women are suffering from reproductive and urinary tract infections and its complications and often the infection is transmitted to the offspring of the pregnant mother. Those individuals having a better knowledge and reproductive safe practices regarding menstrual hygiene are less vulnerable to reproductive tract infections and its consequences (3, 4).

In rural Peru, the beliefs and taboos associated with menstruation strongly encourage girls to remain at home during their period which contributes for high rates of school absenteeism, repetition, and dropout (5). According to estimates of UNICEF about 1 in 10 school-age African girls do not attend school during menstruation or dropout at puberty due to lack of clean and private sanitation facilities in schools (6).

Though, most (92.1%) students are aware of menstruation before menarche their utilization of sanitary pads was low (37.6%) and a significant proportion (62.4%) were using pieces of cloth (7). Only thirty one percent of students were using reusable cloth while the rest stated that they either didn't use any product or they would wear long pants under their skirts to manage menstrual flow (8).

Due to menstruation related problems students were absent from school (43% - 50.7%) ranging from one days to four days when the occurrence of menstruation coincided with week days (7-9). About 90% of students said that their school did not have a separate sanitary facility for females where they could manage their hygiene while menstruating (8).

Moreover, students had a difficulty of attending class attentively (37.8%) and their perception (attitude) and practice towards school performance had negatively affected mostly due to menstruation related problems like pain as well as fearing sudden leakage. About thirty nine percent of respondents perceived that menstruation had influenced their academic performance or rank as it was compared before menarche. They also faced a psychological trauma; they felt inconvenient sitting beside male students, felt discomfort and shame leading difficulty of attending class as usual class days **(9)**.

1.2.Rationale

Because of schools did not have a separate sanitary facility for females at least 43% of informants who had reached menarche had missed school during menstruation days **(8)**. Lack of gender sensitive/separate facilities were related to have a high relation to female dropouts in Oromia (65%) and Amhara (33%) regional states of Ethiopia **(10)**. The role of teachers with regard to providing information about menstruation and its management to their students at school is very low (21.8%) **(7)**.

Few girls in rural Ethiopia had access to modern sanitary products to manage their hygiene during menstruation. The majority of girls, 61.4% use rags, and 24.5% use nothing (typically implying that they isolate themselves) and 8.4% of girls' wore additional clothing. These unhygienic practices may lead infections like genito-urinary tract infections which will lead to further complication if left untreated. Demonstrating the urban-rural disparity in access to products, 37.1% of urban Ethiopian girls use sanitary pads while only 1.6% of rural girls use this method. For many girls, having sanitary pads was a problem due to a lack of local access and financial constraints **(11)**.

Due to the problems encountered by students while menstruating; especially poor school attendance and academic performance as well as school dropout, it may seriously hamper the realization of MDG-2 on universal education and MDG-3 on gender equality and women empowerment.

Therefore, this study is intended to generate a useful insight to address the proposed problem and the findings can be an input for both planning and developing strategies about menstrual hygiene management and its associated problems and a base for further research.

2. Literature Review

2.1. Definition of Menarche

Menarche is the period at which menstruation begins. Menstruation is the discharge of blood and tissues from the lining of uterus each month. It is often called the menstrual period and is a function of the female body (2-4). The menstrual rhythm depends on the hypothalamus-pituitary-ovarian function. The menstrual period varies; may last from three to seven days, and each period comes approximately every 28 days if the woman does not become pregnant during a given cycle (2).

The mean age at menarche in most girls ranges from 13-14 years old and it was slightly lower for urban girls (9, 12-17). Ages of menarche could be affected by genetic factors, racial factors, nutritional standards, socio-economic conditions and indulgence in strenuous physical activity (18-21). Food insecurity was associated with delay of age at menarche by one year among adolescent girls with a median age of 15 years (secured) and 14 years (unsecured). Stunted girls had menarche one year later than their non-stunted peers (22).

Controlled for familial environment (i.e. family structure, parental employment and socio-economic status), life drunkenness with episodes of 2, sexual initiation before 15 years and BMI (overweight or obese) were significantly and independently associated with early menarche ($p < 0.01$) (23). Girls who reached menarche were significantly heavier and taller with higher BMIs than those of their pre-menarcheal peers. And thus BMI was an important factor in the onset of menstruation even though some other unmeasured environmental variables may be implicated (20, 24).

2.2. Knowledge about menstruation and hygienic management

The main sources of information regarding menstruation and its management to adolescent girls were their mothers, friends and teachers (7, 25, 26). During the first time of menstruation girls experience it differently; they were frightened, scared, felt irritated and disgusted, fear and shame (4, 17, 27, 28).

Adolescent girls gave different meanings to menstruation and perceived it as physiological (natural) process, as an assurance of fertility (i.e. fecundity), as release of 'bad blood' (29). Even though the main sources of information were mothers, majority of the mothers (70.4%) had perceived menstruation as dirty and polluting and which results in the same perception among

girls (14, 30). In another study it was viewed as an event that happens to the girl during puberty; occurring monthly and spoiled blood had got rid of the body, however, those individuals who had informed of it before menarche had positive attitude (25).

Knowledge regarding menstruation was significantly associated with the age group of respondents ($x^2 = 19.96$, $p < 0.05$) as early adolescents had poor knowledge than middle and late adolescents but not the type of school they attended or their religion (16). A study done in India indicated that among study participants who were educated secondary or higher level, 85.5% did not know which organ produces the menstrual blood. This suggests that most of the teachers are not talking about reproductive system in schools. The same study also showed that sixty nine percent of subjects were aware that poor hygiene predisposes to infection but still cleaning of external genitalia was found to be unsatisfactory in 32.8% subjects (4).

2.3. Menstrual hygiene and management practice

A comparative study in urban and rural adolescent girls in India revealed that majority of urban as well as rural girls preferred cloth pieces to manage their menstrual flow than to the sanitary pads (31).

There was a variation in menstrual hygiene practice which was highly influenced by economic status and residential areas (urban and rural) to use sanitary pads (26). Even though girls had a preference of using commercially-available pads for managing their periods, a lack of money inhibits them from purchasing pads (32). Usage of disposable sanitary pads were affected by high cost of pads, lack of knowledge how to use, embarrassment to buy or using cloth was a tradition for them since their mothers were using cloth. Generally good menstrual hygiene was practiced among students whose mothers were literate, grade 10 students, those who have had prior knowledge about menstruation before menarche, those who had proper sanitary latrine at home and exposed to advertisements promoting usage of sanitary towels in mass media (33).

The prevalence of RTI/STI was found to be highest among those who were using old washed cloth (64.86 %) and least in those using sanitary pads (33.60 %)($P < 0.001$) (34). Another study done in India indicated that amongst those who used cloth, 65.70% were found to be suffering from genital infections as compared to 12.30% in those who used sanitary napkins (28).

After the use of clothes girls washed the clothes and reused it to manage the next menstrual flow. However they used to wash the cloth with water only and/or with soap and water; there was a problem of drying it since some of them dried it by direct sun light where as others hide it under other clothes, inside the house where the sun rays are coming or put in a secret place far from the eyes of humans which might be unhygienic and be a source of infection **(14, 30, 33)**.

There was a variation regarding taking bath as well cleaning of external genitalia during menstruation. However, girls are aware of the fact that that poor hygiene predisposes to infection but still cleaning of external genitalia was found to be unsatisfactory. Some of them cleaned the genitalia with toilet tissue paper while others used to wash the genitalia with water only and/or with soap and water. The practice of taking bath during menstruation was very low as most of the girls didn't take bath while others 1 – 2 times a day **(4, 26, 27, 29, 35)**.

Regarding use of disposable sanitary pads above 50% of girls had used it and they change the pads with a frequency of 1 – 5 pads per day. The practice of changing pads was very low at night time and during school or college hours than during the day and out of school days. Up to 80% of students didn't change pads during school hours and their main reason was the water supply of schools was erratic. Hygienic practices, like washing of external genitalia, were also affected by religion, maternal occupation and education, age group of girls and knowledge of girls about menstruation and its management **(15-17, 27)**.

Concerning disposal system of the materials used for management of menstruation most of them disposed with domestic wastes. Others disposed it by flushing into toilet leading blockage of tubes, by burning, burial or in pond water in which the water might be used for another purpose **(16, 33)**.

Delivery of health education regarding toilet and genital organ hygiene as well as bathing during menstruation led to a noticeable change in the behavior, awareness, and toilet-menstruation hygiene practices of the high school students as compared to the control groups **(36-38)**.

2.4.The effect of menstruation related problems on girls education

Due to menstruation, girl's social as well as spiritual health is affected. Ninety percent of the girls had faced restrictions during menstruation to attend religious occasions while 29.9% of them from household work (4). In rural areas of Rajasthan, during menstruation, girls were instructed not to pass through crossroads not to caught by evil spirits and becoming mad. These beliefs and practices make their life more miserable and embarrassing (14). Eighty percent and 75.6% of the girls were restricted from sour food and not visiting temple respectively (33).

In northwest Ethiopia, 2007, the overall prevalence of dysmenorrhea was 72% and menstrual cycle was irregular in 43% of study participants. Among those with dysmenorrhea only 11.4% of them consulted health worker. Premenstrual symptoms were present in 75.4% of study participants and the most common symptom was abdominal cramp (76.2%) of those with PMS (7).

Dysmenorrhea is a common health problem among school girls where 94.4% of girls in EL-Minia Governorate of Egypt done in 2009 had it (39). The overall prevalence of dysmenorrhea was 44.3% and 59.8% of the subject experienced premenstrual symptoms (13). Nearly 57% of adolescent girls reported that they had bad odor of menstrual blood, followed by profuse discharge of menstrual blood (30.6%) and lower abdominal pain (27.5%) (27). Abdominal pain/discomfort (66.2%) was the commonest medical problem encountered followed by waist pain (38.5%), depression (24.4%) and vomiting (6.9%) amongst school girls (29).

However, students faced different health problems related to menstruation, but their health seeking behavior for treatment was generally low. The measures taken to manage dysmenorrhea were intake of certain types of domestic hot drinks, taking analgesics and perform physical activities. Others treated themselves with prostaglandin inhibitors; like Ibuprofen (25, 39, 40).

During menstruation days girls were absent from school (17%) and their reasons for absenteeism were pain/discomfort (69%), fear of sudden leakage (19%), embarrassment (15%) and having no material to manage menstrual flow (12%). School absenteeism was higher among those who didn't use disposable sanitary pad (76.1%) and were teased by students (35%) (11).

Due to dysmenorrhea students' class concentration (53.5%), class participation (49.9%), socializing with friends (45.3%), test-taking skills (35.6%), and homework tasks performance (35.6%) had affected. And it was significantly associated with school absenteeism and decreased academic performance, sports participation, and socialization with peers **(39, 41)**.

A study conducted in Saudi Arabia revealed that, premenstrual syndrome was diagnosed in 35.6% of study participants and it was associated with limited class concentration (48.3%). Severe PMS was associated with impairment of daily activities and psychological distress symptoms like anxiety **(42)**.

Water supply in most toilets was erratic and under these circumstances, 80% of students didn't change their pads during school hours. Majority (73.7%) of girls reported that they were not in favor of attending school during menstruation, especially when menstrual flow was heavy **(27)**.

Girls reported that there was a difficulty to manage their periods in school due to lack of adequate privacy and sanitation of toilets, lack of water and an inability to bathe, which was a preferred practice if a girl had menstruating while at home. For schools which didn't have disposal facility for materials used for menstruation some of the students even carried the absorbents back to home **(32)**.

Thirty eight percent of girls were absent from school during menstruation which was due to lack of sanitary facility of schools for disposing sanitary pads (75%), lack of water for washing (67.5%), abdominal pain/discomfort (65%), fear of sudden leakage (23.7%) and socially withdrawn during menstruation (5.4%) and some of them even carried the absorbents back to home **(33)**.

Girls are less likely to attend school (2.4 percentage points) on days they had their period as compared with other days. The average girl had a period about 8% of school which translates to 0.19% school missed due to the period, or about 0.35 days in a 180 day school year. However providing better sanitary products (a menstrual cup) had no impact on closing this small attendance gap **(43)**.

Conceptual framework

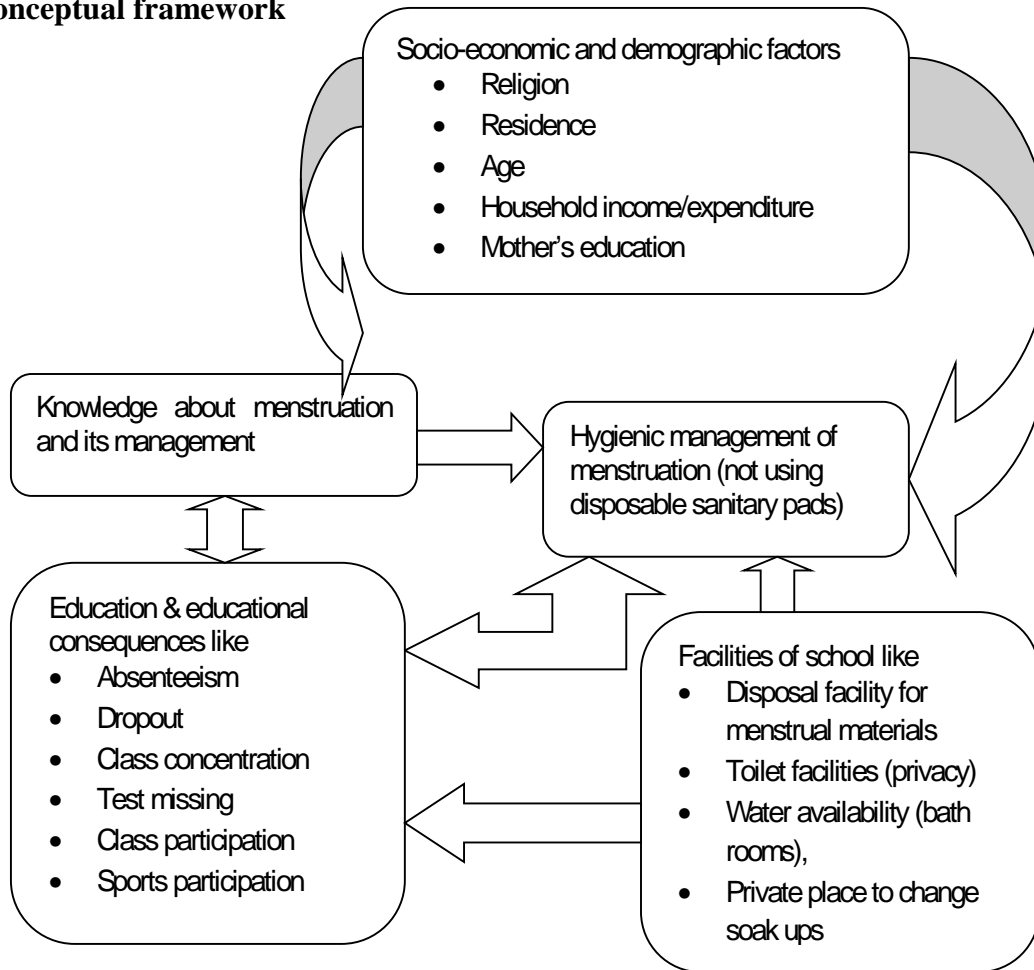


Figure 1: Conceptual framework indicating factors associated with menstrual management and its effect on education.

Hygienic management of menstruation can be affected in multifaceted ways. This is the view that factors such as knowledge about menstruation and its management, school facilities, educational status and socio demographic and economic factors as determinants for hygienic management of menstruation. On the other hand lack of school sanitary facilities like toilet, bath room, disposal facility for sanitary pads, etc leads effect on students' education (absenteeism). Students who had a complaint of menstrual related problems (may be related to unhygienic management of menstruation) may not come to school. Due to lack of knowledge regarding management of menstruation students may stay at home for fear of leakage or shame.

3. Objectives

3.1.General Objective:

- To assess factors of menstrual hygiene management and its associated consequence on school attendance and dropout among junior secondary school adolescent girls in Habru Woreda, North Wollo, Amhara Region, Ethiopia.

3.2.Specific Objectives:

- ✓ To assess the prevailing knowledge of adolescent school girls about menstruation and its hygienic management,
- ✓ To identify factors that determine hygienic management of menstruation among adolescent school girls,
- ✓ To assess the association between menstruation related problems and school attendance among adolescent school girls.
- ✓ To assess influence of menstruation related problems on school dropout among adolescent school girls.

4. Methods and materials

4.1. Study area

Habru is one of the woredas in North Wollo, Amhara Regional state. It is bordered on south by Mille River which separates it from the South Wollo Zone, on the west by Guba Lafto, on the north by the Logiya River which separates it from Kobo, and on the east by the Afar Region. Towns in Habru include Mersa and Wurgesa. The woreda has a total population of 192,742; of whom 96,874 are men and 95,868 women (1.01: 1.0 ratio of male to female); 21,600 (11.21%) are urban inhabitants. The majority of the inhabitants were Muslim, 77% while 22.95% of them were Orthodox Christians (44).

The study was conducted in Habru Woreda among randomly selected primary school students. There were a total of 98 primary schools (grade 1-4; 43 schools and grade 1-8; 55 schools) all of which are owned by the government. The total number of students enrolled in primary education in the year 2012/13 were 31,361; 15,642 males and 15,719 females (45).

4.2. Study design

The study was school based cross-sectional study design using a concurrent mixed method research combining both quantitative and qualitative researches approaches where the qualitative part used to supplement the quantitative findings.

4.3. Source and study population

4.3.1. Source population

For quantitative study

All female junior secondary schools students in Habru woreda who are enrolled in grades 7 and 8 during the academic year 2012/13.

For qualitative study

All female adolescents enrolled in grades 7 and 8 and female teachers of junior primary schools, and of adolescent girls who drop out from school in Habru woreda.

4.3.2. Study population

For quantitative study

All female adolescent students who attend the regular (day time) in randomly selected schools

For qualitative study

All female students who had their menarche and enrolled in grades 7 and 8; female teachers in the respective schools and adolescent girls who drop out of schooling in the previous four years were the study participants.

4.4.Exclusion criteria

- ✓ Female students not attending regular or day time school, and
- ✓ Adolescent girls dropped out of schooling who do not have their menarch

4.5. Sample size

Quantitative study

The sample size was determined based on single population proportion formula.

$$n = \frac{Z_{\alpha/2}^2 \cdot p(1-p)}{d^2}$$

Where: $Z_{\alpha/2}$ = The Z- score corresponding to the 95% confidence level which is 1.96

P= is the proportion of girls using sanitary pad menstruation

d= is the degree of precision

The assumption for calculating sample size was a 95% confidence level, 5% degree of precision and 37.6% use of sanitary pad during menstruation by adolescent school girls (7). The 37.6% prevalence was taken which gave a larger sample size after computing samples for knowledge (92.1%) (7), sanitary pad use (37.6%) (7) and school absenteeism (17%) (11) based on a recent published study nationally. Taking this assumption 'n' became 361 and with the design effect of 1.5 and 10% non- response rate, the final sample size became 595.

Qualitative study

For budgeting purposes, it was planned to conduct six in-depth interviews among adolescent girls who drop out of school and four in-depth interviews among female teachers and four focus group discussions among female adolescent students. However, all interviews were depended

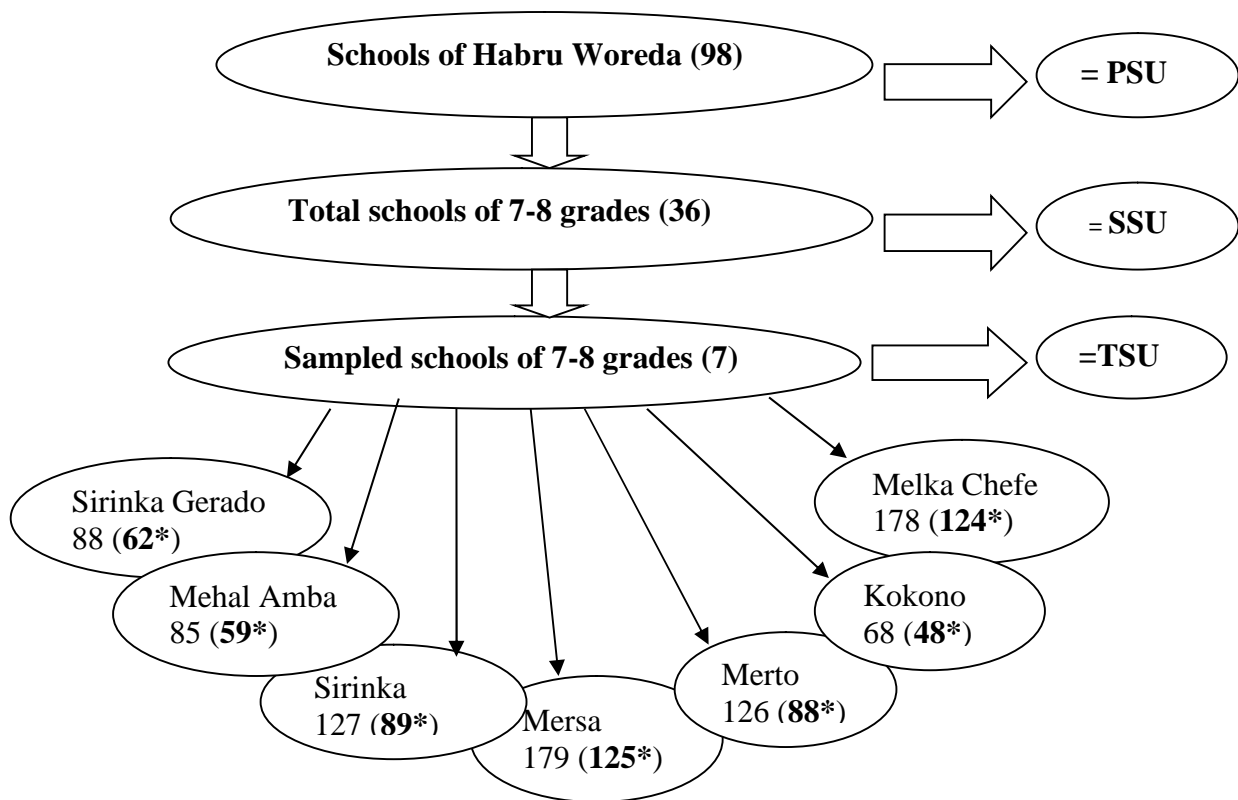
upon saturation of information. Hence only five in-depth interviews were conducted with dropout girls.

4.6. Sampling procedures

Quantitative study

The students were selected using multistage sampling technique: First a list of all primary schools and then 36 schools having 7 and 8 grades within the Woreda were compiled from the total 98 primary schools. Seven schools having grades 7 and 8 were randomly chosen from the total 36 schools using simple random sampling. Then 595 students were selected by a stratified random sampling with proportionate allocation to size using list of female students for each grade and section (sampling frame) as depicted in Annex II. The strata were based on grades and sections for those schools having two or more sections for each grade. (Fig 2)

Diagrammatic presentation of sampling procedure



*NB: *Indicates sampled students from each school (595 students)*

Figure 2 - Schematic representation of the sampling procedure

Qualitative study

Students who were participating in different school clubs and enrolled in grades 7 and 8 were purposively selected for focused group discussion. Girls who dropped out from school were purposively selected from the community for in-depth interview. Female teachers who deal with girl students as school counselor or those who work closely with girls were purposively selected for in-depth interview.

4.7.Variables

4.7.1 Dependent variables

- ✓ Hygienic management of menstruation (utilization of disposable sanitary pad)
- ✓ School absenteeism due to menstruation related problems

4.7.2 Independent Variables

- ✓ Socio-demographic factors
- ✓ School environment
- ✓ Parental or family factors
- ✓ Knowledge about menstruation and its hygienic management
- ✓ Disposable sanitary pad use

NB: Disposable sanitary pad utilization was taken as both dependent and independent (for school absenteeism) variable

4.8.Data collection tools and techniques

Quantitative study

A self-administered pre-tested close ended questionnaire was used. The questionnaire was mainly composed of socio-demographic factors, parental factors, knowledge and hygienic management regarding menstruation, problems associated with menstruation (schooling). The pre-test was done in a similar setting which was distant from the selected schools to avoid contamination of information before the actual study.

Study participants were selected randomly among those students enrolled in the respective grades (7 and 8). The students were introduced briefly about the purpose of the study, how to fill in and their right by the data collectors and the supervisor in the class room. Four female data collectors (health extension workers), one supervisor with a qualification of public health and experience of counseling were recruited. Two days of training was given all about the purpose of

the study including the rights of study subjects and the content of the questionnaire in detail as well.

Qualitative study

For the qualitative part; a total of six in-depth interviews (IDI) with dropout girls, four IDI with female teachers and four focus group discussions with students was planned. The data was collected from four teachers (IDI) and four FGD participants while only five IDI was conducted out of six IDI among dropout girls under female supervisor and qualitative data collector.

4.9.Data quality control and management

Quantitative study

The data quality was maintained through careful design of questionnaire, translating English to Amharic and finally to English and pre-testing for relevant amendment. Brief introduction to data collectors and field supervisors and to the students before and during the collection process was given. The study participants complete each question after the data collector had read each question step by step and notifying skipping pattern in order to avoid incomplete and inconsistent data. The principal investigator and supervisor closely monitored the process and the questionnaires were checked for completeness immediately after collection.

Qualitative study

To ensure the data quality semi-structured in-depth interview and focus group discussion guide with probing questions was used to reduce error from memory lapse. All the information was recorded using digital voice recorder and note was taken. The recorded data was transcribed and then translated into English.

4.10. Operational definitions

Disposable sanitary pads/napkins – commercially available materials used for absorbing or catching menstrual flow.

Gender friendly schools - schools having facilities for both male and female students; for example separate toilet facility for male and female students, continuous water flow, sanitary disposal facility for used sanitary pad, private place for girls to change menstrual soak ups, etc.

Heavy menstrual bleeding – more than the usual menstrual flow or using 3 soak ups per day

Irregular menstrual cycle – menstruation that occurs in irregular interval from one cycle to another.

Knowledge on menstruation – the awareness of girls before and after menarche to the twelve knowledge questions regarding menstruation and its management.

Menstrual hygiene – healthy practice during menstruation to frequently change menstrual soak ups (at least twice a day) and under wears; and minimum once a day washing.

Menstrual related problems – at least one problem associated with occurrence of menstruation, like pain during menstruation, excessive bleeding (more than usual), embarrassment, etc.

Normal menstrual bleeding – menstrual flow perceived as similar with other periods or using 1-2 soak ups per day

Regular menstrual cycle – menstruation that occurs uniformly and in orderly intervals throughout a given period of girls'/women's life, 21-35 days of interval.

Scanty menstrual bleeding – menstrual flow lower than usual or normal flow

School absenteeism – not to be in class and/or in school for regular attendance because of menstruation related problems.

School dropout – a student who leaves school before graduation/completion without transferring to another school because of menstruation related problems.

4.11. Data analysis procedures

Analysis of the quantitative data

Data was entered using Epi Info version 3.5.3. After data had cleaned for inconsistencies and missing value, analysis was performed using SPSS version 16.0 statistical software. Frequencies and proportions were computed for description of the study population in relation to socio-demographic and other relevant variables. The results were presented in the form of tables and figures.

To assess the association between the different predictor variables with disposable sanitary pad use and absenteeism from school (dependent variables), first bivariate relationships between each independent variable and outcome was investigated using a binary logistic regression model.

Those independent variables found to be significant with p-value less than 0.05 at the bivariate level were included in a multivariate logistic regression model for the dependent variable to control potential confounding variables. Significance was determined using crude and adjusted odds ratio with 95% confidence intervals.

Knowledge of menstruation and hygienic management was measured among those who reported they had heard about menstruation including its management. The students' knowledge on menstruation and its hygienic management was scored. Each correct response earned one point, whereas any wrong or don't know answer attracted no mark and thus the sum score of knowledge was calculated (12 points). Respondents that scored 0-3 points were adjudged as having poor knowledge; whereas those that scored 4-6 and 7-12 points were adjudged as having fair and good knowledge respectively.

Analysis of the qualitative data

The qualitative data from the interviews with dropout adolescent girls and female teachers, and focus group discussions with adolescent school girls were analysed using content analysis (46). The analysis was started by importing the transcribed text into the OpenCode version 3.6 to facilitate the coding process (47). Units of relevant meaning were coded segment by segment. As part of the analysis five categories were developed that illustrated the manifest meaning of the findings, while the single theme represents the overall joint interpretation of the qualitative and quantitative information and reflects the latent meaning of the data (Table 1).

4.12. Ethical consideration

The study was conducted after obtaining ethical clearance from, School of Public Health, College of Health Sciences, Addis Ababa University Research Ethics Committee and Habru Woreda Education Office. Schools' director and directress were briefed on the objectives of the study. Written informed consent was obtained from the participants. For those students who are under the age of consent, assent was taken from school members. Confidentiality was maintained by omitting their names on the questionnaires. Students were informed of their full right to skip or ignore any questions or terminate their participation at any stage. They were also assured that there was no harm or benefit of being participating in this study.

4.13. Dissemination of results

The results of this study will be submitted to School of Public Health College of Health Sciences as partial fulfillment of master's degree in public health. It will also be given to Habru woreda Health and Education Offices and other concerned governmental and non-governmental organizations. It will also be sent for publication in peer reviewed journals and to make presentations in scientific conferences.

Table 1: The theme, categories and codes as identified from the qualitative data

Theme: 'Girl students academic performance and school attendance is affected by lack of knowledge, sanitary materials and lack of facilities at schools'					
Categories	1-Poor knowledge about menstruation	2-Unreadiness during menstruation	3-Influence on academic performance	4-Reasons of school absenteeism	5- Reasons of school dropout
Codes	No prior knowledge about menstruation Misperceptions Shocked Scared Disclosure	Afraid to use sanitary pad in school Knowledge gap on how to use sanitary pad Ashamed to buy sanitary pad Unavailability of sanitary pad Malpractices High cost	Class concentration Class participation School absenteeism School dropout Missing exam	Lack of school facilities Fear of unexpected bleeding Lack of material or pad Embarrassment Pain	Fear of sudden bleeding Lack of material or pad Lack of knowledge Embarrassment

5. Result

The results of this study is presented mixing both quantitative and qualitative research where the qualitative research results are presented using the five categories presented in table one of the methods section.

5.1.Socio-demographic and economic characteristics of adolescent school girls

Five hundred seventy four students participated in this study obtaining a response rate of 96.5%. Most, 562 (92.8%) of the respondents were Amhara and 313 (54.5%) were Orthodox Christians. More than half, 305 (53.1%) of them were grade 7 students and 315 (54.9%) were from rural areas. Their age ranges between 12 and 19 years with a mean and standard deviation of 15.0 ± 1.3 years and most of them are in the age group of 14-16 years, 306 (53.3%). Only six of the students were married. Their families' monthly expenditure ranges from 100-5000 birr with mean and standard deviation of 787.2 ± 636.1 and most of the expenditure fall within 301-600 Ethiopian birr, 170 (29.6%).

Mothers of most school girls were illiterate, 244 (42.5%) and most of their fathers can only read and write, 210 (36.6%). And mothers of most of the respondents were housewives, 361 (62.9%), followed by petty traders, 157 (27.4%), while fathers of most girls were farmers, 381 (66.4%). About three quarters (74%) of the girls live with both parents. (Table 2)

Regarding the schools they were learning; most of them were from Mersa, 120 (20.9%) followed by Melka Chefe, 119 (20.7%), Sirinka, 85 (14.8%) and Merto, 85 (14.8%) junior secondary schools. The other students were from Sirinka Gerado, 61 (10.6%), Mehal Amba, 58 (10.1%) and Kokono, 46 (8%) junior secondary schools.

Table 2: Socio-demographic characteristics of school girls in Habru Woreda, North Wollo, Ethiopia, 2013

Characteristics of respondents (n=574)		Numbers	Percent
Age Group (years)	10-13	76	13.2
	14-16	306	53.3
	17-19	192	33.4
Religion	Orthodox	313	54.5
	Islam	239	41.6
	Others*	22	3.8
Residence	Rural	315	54.9
	Urban	259	45.1
Grade	Grade 7	305	53.1
	Grade 8	269	46.9
Marital Status	Never married	568	99
	Married	6	1
Ethnicity	Amhara	562	97.9
	Tigre	12	2.1
Live With	Both parents	425	74
	Mother only	81	14.1
	Relatives	43	7.5
	Others **	25	4.3
	Mother's Education	Illiterate	244
	Read & write	181	31.5
	Primary	83	14.5
	Secondary and above	66	11.5
Father's Education	Illiterate	153	26.7
	Read & write	210	36.6
	Primary	98	17.1
	Secondary and above	113	19.7
Mother's Occupation	House wife	361	62.9
	Petty trader	157	27.4
	Employed*****	37	6.4
	Others***	19	3.3
Father's Occupation	Farmer	381	66.4
	Petty trader	81	14.1
	Employed*****	101	17.6
	Others****	11	1.9
Monthly Expenditure (Eth Birr)	<=300	129	22.5
	301-600	170	29.6
	601-900	91	15.9
	901-1200	103	17.9
	>1200	81	14.1

NB: * (protestant and catholic), ** (live with husband and father), *** (farmer, daily laborer), **** (carpenter, barber, daily laborer), ***** employed (government and private)

5.2. Adolescent school girls' knowledge about menstruation and its hygienic management

Out of 574 respondents, 104 (18.1%) of them had discussion within the family about sexual and reproductive health (SRH) issues. But only 31 (29.8%); out of those who discuss SRH issues, had discussion about menstruation and its hygienic management as well. The discussion was made some times and as per convenience with their mothers and elderly sisters.

Majority of the girls, 478 (86.8%) had heard about menstruation before they had menarche. The leading sources of information were sisters, 204 (42.7%), followed by mothers, 183 (38.3%), friends 141 (29.5%) and teachers, 64 (13.4%). Five hundred one (91%) of girls were aware that girls attain menarche around the ages of 11-16 years. Most of the study subjects, 516 (93.6%) knew that the duration of normal menstrual blood flow varies between 2 to 7 days. Similarly, majority, 535 (97.1%) of the school girls knew that normal menstrual cycles vary between 21 to 35 days. Only 262 (47.5%) of the respondents knew disposable sanitary pad as menstrual soak ups while most, 398 (72.2%) of them knew homemade cloth and 163 (29.6%) knew underwear.

Regarding knowledge about menstruation; 319 (57.9%) of them knew correctly that menstruation is a physiologic process. Seventy four (13.4%) of them knew that as it is the curse of God (Fig 3). Only 46 (8.3%) of them knew correctly that menstruation is due to hormones while 366 (66.4%) and 39 (7.1%) knew that menstruation is due to aging into puberty and curse of God respectively. One hundred twenty seven (23%) of the respondents knew correctly that the bleeding during menstruation is from uterus. Ninety six (17.4%) of the respondents mentioned that menstrual blood is from vagina, 91 (16.5%) from fallopian tube and 68 (12.3%) from bladder. About 51% of the subjects knew that a woman couldn't conceive when she had sexual intercourse during menstruation.

One hundred thirty five (24.5%) of the students reported that they had learnt menstruation and its hygienic management in their schools, and 154 (27.9%) of them felt comfortable to communicate menstrual matters with someone else. Thus, most of them preferred to communicate with mothers, 60 (10.9%), sisters 53 (9.6%), and friends 53 (9.6%) and 11 of them preferred to talk with teachers.

Table 3: Knowledge of menstruation and menstrual hygiene among adolescent school girls in Habru Woreda, North Wollo, Amhara Region, Ethiopia, 2013 (n=551)

Variable	Numbers	Percent
Know about menstruation	478	86.8
Feel comfortable to talk about menstruation	154	27.9
Knew common age range of menarche	501	90.9
Knew normal menstrual bleeding duration	516	93.6
Knew duration of a normal menstrual cycle	535	97.1
Knew disposable sanitary pad as menstrual soak up	262	47.5
Aware that menstruation is a physiologic process	319	57.9
Aware that menstruation is due to hormones	46	8.3
Aware that menstrual blood is from uterus	127	23
Aware that a girl cannot conceive during menstruation	279	50.6
Had learnt menstruation & its hygienic management in school	135	24.5
Aware that a girl can go to school during menstruation	476	86.4

NB: Multiple responses were possible and the percent is greater than 100%.

The mean score of the school girls' knowledge of menstruation and its hygienic management was 6.95 ± 2.03 , with half, 283 (51.4%) of them had good knowledge of it. Detailed grading of the respondents' knowledge of menstruation and its hygiene is depicted in Table 4.

Table 4: Knowledge grading on menstruation and its hygienic management among adolescent school girls in Habru Woreda, North Wollo, Amhara Region, Ethiopia, 2013 (n=551)

Grading	Frequency	Percent
*Knowledge (n=551)		
Poor (0-3 points)	17	3.1
Fair (4-6 points)	251	45.6
Good (7-12 points)	283	51.4

**Only 551 were included in knowledge scoring (23 of them didn't heard about menstruation and didn't start menstruation)*

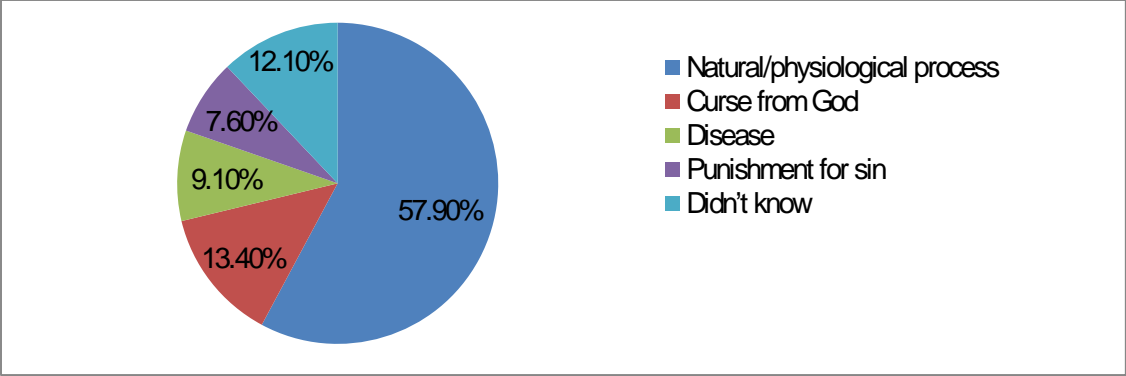


Figure 3: Pie chart showing knowledge of adolescent school girls about menstruation in Habru woreda, North Wollo, Amhara Region, Ethiopia, 2013 (n=551)

Most female students, 455 (79.3%) had experienced menstruation. The mean age at menarche was 14.0 (± 1.2) years with median age of 14 years. Girls in the study reported the different places where they experienced their first menstruation; 218 (47.9%) at home, 124 (27.3%) at school, 43(9.4%) at different places outside of their homes and 70 (15.4%) didn't remember the place. One hundred ninety five (42.9%) of girls reported that they were embarrassed, 144 (31.6%) were upset and tensioned and 77 (16.9%) irritated or disgusted (Fig 4).

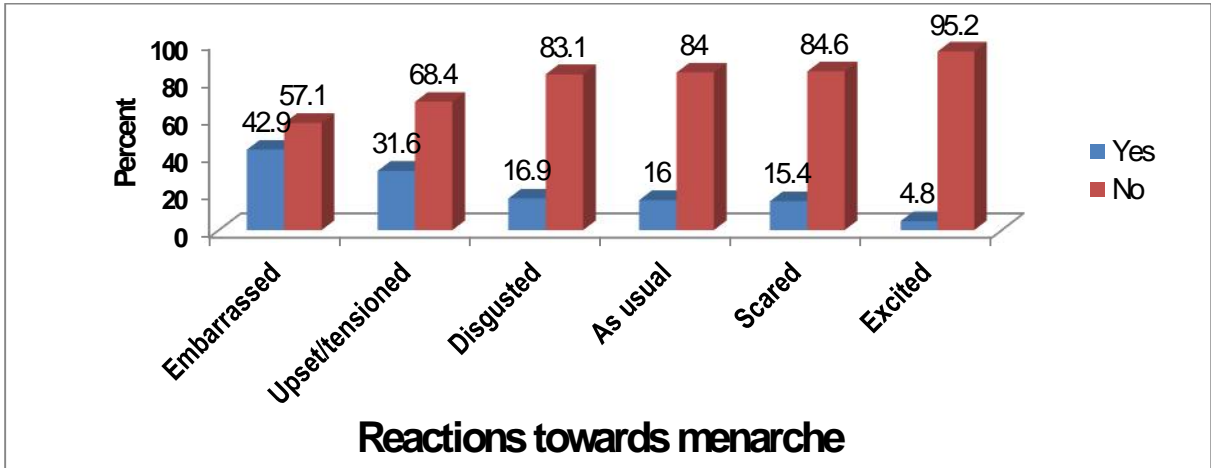


Figure 4: Showing reactions to menarche among adolescent school girls in Habru woreda, North Wollo, Amhara Region, Ethiopia, 2013 (n=455)

1-Poor knowledge about menstruation

As revealed from the focus group discussions and in-depth interviews most of them indicated that they had no prior knowledge about menstruation and its management. Due to lack of knowledge, girls faced different psychological and emotional problems. Most girls were shocked, scared and felt ashamed. They didn't communicate issues of menstruation with somebody else rather they kept as their own mystery. They had also misconceptions about menstruation as they perceived menstruation as dirty and a result of some diseases.

“I was in grade six and in class when I have my first menstruation; my cloth was stained with blood. I went home around the toilet running in front of students’ in order not to be seen by them. At home, I was afraid of being noticed by my family, I thought it would offend them and I changed my clothes without them noticing it” FGD-4(R7).

“During my first period I was shocked and embarrassed. Generally when it is menstruation, I thought that I am below humans, depressed, ehh ... I hate being female; I assumed it is a disease, enough” IDI-3 (Dropout girl)”.

In the two schools education about menstruation and its hygienic management was given in gender clubs. But all students didn't participate in those clubs since clubs were opened based on will. Even those students who were club members didn't participate and education was not given accordingly due to shortage of time to deliver education.

“Ehh ... it is due to shortage of time since we spent most of our time in the teaching learning process. Even they didn't come if I appointed them during class free time. They also didn't come during monthly meeting, enough this is the barrier” IDI-4 (Teacher).

5.3.Menstruation and its hygienic management

Of the 395 girls who took bath above half of the students, 217 (54.9%) responded that they washed their body when finished period and 348 (88.1%) of them used soap and water. Two hundred sixty five (58.2%) and 95 (20.9%) of girls reported that they changed their menstrual soak ups twice and more than twice a day respectively. Ninety five (20.9%) of them did change once a day and only 66 (14.5%) of students changed their menstrual soak ups in their schools. One hundred (37%) of the girls washed the reusable cloth with soap and water and dried it inside the house where sunrays are not coming, 90 (33.3%).

Cleaning of external genitalia, every toilet visit was done among 319 (70.1%) of students during menstruating days. For cleaning purpose, 135 (42.3%) girls used soap and water while 123 (38.6%) water only and 55 (17.2%) used plain paper.

Only 161 (35.4%) used sanitary pads and the rest 253 (55.6%), 30 (6.6%) and 11 of them used homemade cloth, alternate use of materials and underwear as menstrual soap up respectively. Most, 270 (91.8%) of them who use soak ups other than disposable sanitary pad reused the material. The reasons for not using sanitary pad were lack of knowledge on how to use, 156 (53.1%), followed by high cost, 130 (44.2%), and shame to buy from shop, 118 (40.1%). (Fig 5)

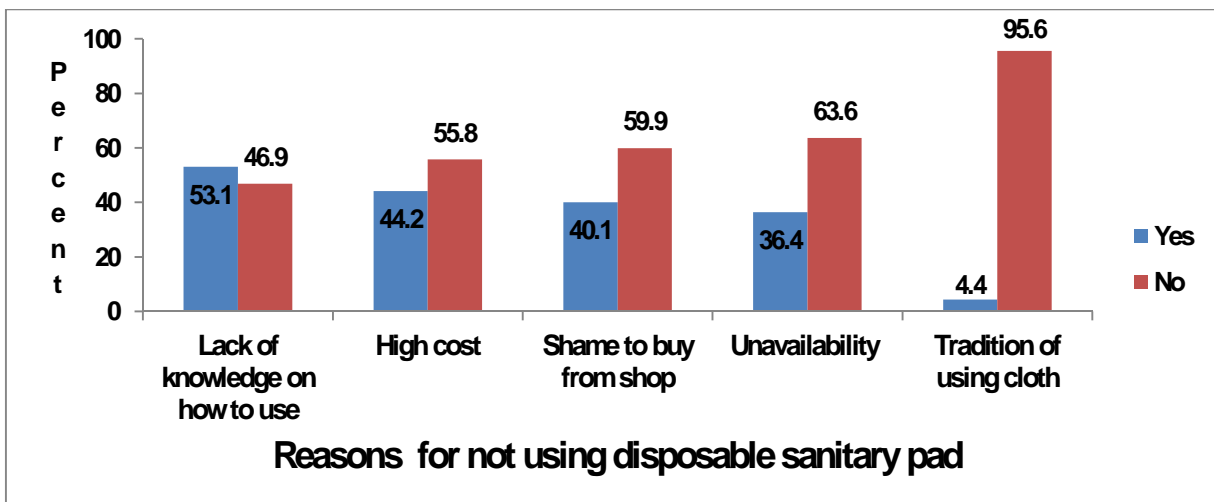


Figure 5: Showing reasons of not using disposable sanitary pad among adolescent school girls in Habru woreda, North Wollo, Amhara Region, Ethiopia, 2013 (n=294)

Majority, 389 (85.5%) of the students didn't change menstrual soak ups in school. One hundred seventy seven (45.5%) students had mentioned that there was no private and separate toilet for female students in their school. The other reasons were fear of other students as they might be seen them when they change, 152 (39.1%), no water source in their school 73 (18.8%) and they didn't had material/pad they change 59 (15.2%). Regarding the method of disposal of the used material; in school, 355 (77.6%) girls disposed the cloth pieces or sanitary pads used into latrines and 84 (18.5%) of them went home to disposed. (Table 5)

Table 5: Hygienic practices during menstruation among adolescent school girls in Habru Woreda, North Wollo, Amhara Region, Ethiopia, 2013

Hygienic practices	Number	Percent
Material used during menstruation (n=455)	Sanitary napkins/pad	161 35.4
	Homemade cloth	253 55.6
	Underwear	11 2.4
	Alternate use of above	30 6.6
Genital cleaning material (n=319)	Soap and water	135 42.3
	Water only	123 38.6
	Plain paper	55 17.2
	Others*	6 1.9
Bath frequency (n=395)	Daily	54 13.7
	First day	21 5.3
	Second day	41 10.4
	Third day	59 14.9
	When finished period	217 54.9
	As per convenience	3 .8
Bath using (n=395)	With soap and water	348 88.1
	With water only	47 11.9
Disposal of menstrual material used (n=455)	Open field	68 15
	Latrine	353 77.6
	Waste bins	16 3.5
	Go home to dispose	84 18.5
Absorbent material change per day (n=455)	Once	95 20.9
	Twice	265 58.2
	More than two times	95 20.9
Drying of washed reusable cloth (n=270)	In the shade outside	27 10
	In the shade inside	90 33.3
	In the sunlight inside	29 10.7
	In the sunlight outside	27 10
	Hidden under other clothes	51 18.9
	Hidden elsewhere	46 17
Washing of the reusable cloth (n=270)	With soap and water	100 37
	With water only	165 61.1
	Others**	5 1.9
Place of store between use (n=270)	In plastic bag separately	142 52.6
	With other clothes	98 36.3
	In the bath room	30 11.1

**(toilet tissue paper, piece of cloth), ** (ash, indod)*

NB: Multiple responses were possible and the percent might be greater than 100%.

5.3.1. Predictors of disposable sanitary pad utilization

Concerning the predictors of disposable sanitary pad utilization, multivariate logistic regression analysis carried out to determine the most important variables predicting the utilization of disposable sanitary pad among the study participants, showed that students who live in urban areas were 2.3 times more likely to use pad than their counter parts [AOR (95% C.I) 2.3 (1.2 – 4.5)].

The other predictor was mothers education, students whose mothers educational status was read and write, primary and secondary and above secondary were 2.3, 4.1 and 4.3 times more likely to use the pad than mothers who were illiterate [AOR (95% C.I): 2.3 (1.2 – 4.3), 4.1 (1.9 – 9.2), 4.3 (1.6 – 11.3)] respectively. School girls who were living with relatives were 84 % less likely to use disposable sanitary pad when compared to their counterparts [AOR (95% C.I): 0.16 (0.04 – 0.56)]. But there was no significant difference in utilization among those who were living with both parents, mother only, father only and their husband.

Students of a family having household monthly expenditure of 601-900 birr, 901-1200 birr and greater than 1200 birr were 3.2, 3.4 and 5.0 times more likely to use disposable sanitary pad than those with monthly expenditure less than 600 birr [AOR (95% C.I): 3.2 (1.5 – 7.2), 3.4 (1.6 – 7.4), 5.0 (2.2 – 11.2)] respectively.

On the other had students whose fathers educational status was primary [COR (95% C.I): 2.2 (1.2 – 4.1)] and secondary and above [COR (95% C.I): 3.3 (1.9 – 5.8)], mothers occupation of employed [COR (95% C.I): 3.8 (1.8 – 7.9)] and fathers occupation (petty trader and employed) [COR (95% C.I): 2.7 (1.6 – 4.5), 2.2 (1.4 – 3.6)] were found to be significantly associated with disposable sanitary pad use only in bivariate analysis but not in multivariate analysis. In addition students who were learning in Kokono, Merto, Sirinka Gerado and Mehal Amba primary schools were significantly associated with pad utilization in bivariate analysis but not in multivariate analysis [COR (95% C.I): 0.35 (0.14 – 0.83), 0.44 (0.23 – 0.85), 0.43 (0.19 – 0.94), 0.34 (0.15 – 0.78)] respectively. (Table 6)

Table 6: Factors associated with use of disposable sanitary pad among adolescent school girls in Habru Woreda, North Wollo, Amhara Region, Ethiopia, 2013 (n=455)

Variables		Disposable sanitary pad use		Crude Odds ratio (95% C.I.)	Adjusted Odds Ratio (95% C.I.)
		No n (%)	Yes n (%)		
School	Mersa	56 (53.8)	48 (46.2)	1	1
	Sirinka	42 (65.6)	22 (34.4)	0.61 (0.32 - 1.16)	
	Kokono	27 (77.1)	8 (22.9)	0.35 (0.14 - 0.83)*	
	Merto	48 (72.7)	18 (27.3)	0.44 (0.23 - 0.85)*	
	Sirinka Gerado	30 (73.2)	11 (26.8)	0.43 (0.19 - 0.94)*	
	Mehal Amba	31 (77.5)	9 (22.5)	0.34 (0.15 - 0.78)*	
	Melka Chefe	60 (57.1)	47 (42.9)	0.88 (0.51 - 1.51)	
Residence	Rural	178 (76.4)	55 (23.6)	1	1
	Urban	116 (52.3)	106 (47.7)	3.0 (2.0 - 4.4)***	2.3 (1.2 - 4.5)*
Live With	Both parents	206 (60.6)	134 (39.4)	1	
	Mother only	45 (71.4)	18 (28.6)	0.62 (0.34 - 1.12)	1
	Father only	9 (81.8)	2 (18.2)	0.34 (0.07 - 1.61)	
	Relatives	32 (91.4)	3 (8.6)	0.14 (0.04 - 0.48)**	0.16 (0.04 - 0.56)**
	Husband	2 (33.3)	4 (66.7)	3.08 (0.56 - 17.02)	
Mother's Education	Illiterate	159 (81.5)	36 (18.5)	1	1
	Read & write	82 (60.7)	53 (39.3)	2.9 (1.7 - 4.7)***	2.3 (1.2 - 4.3)**
	Primary	30 (44.8)	37 (55.2)	5.4 (3.0 - 10.0)***	4.1 (1.9 - 9.2)**
	Secondary and above	23 (39.7)	35 (60.3)	6.7 (3.5 - 12.7)***	4.3 (1.6 - 11.3)**
Father's Education	Illiterate	94 (76.4)	29 (23.6)	1	1
	Read & write	101 (68.2)	47 (31.8)	1.51 (0.88 - 2.59)	
	Primary	49 (59.0)	34 (41.0)	2.2 (1.2 - 4.1)**	
	Secondary and above	50 (49.5)	51 (50.5)	3.3 (1.9 - 5.8)***	
Mother's Occupation	House wife	193 (69.2)	86 (30.8)	1	1
	Petty trader	79 (59.8)	53 (40.2)	1.51 (0.98 - 2.32)	
	Employed†††	13 (37.1)	22 (62.9)	3.8 (1.8 - 7.9)***	
	Others †	9 (100)	0	0.000	
Father's Occupation	Farmer	206 (71.5)	82 (28.5)	1	1
	Petty trader	35 (48.6)	37 (51.4)	2.7 (1.6 - 4.5)***	
	Employed	48 (53.3)	42 (46.7)	2.2 (1.4 - 3.6) **	
	Others ††	5 (100)	0	0.000	
Monthly Expenditure (Eth Birr)	≤300	90 (80.4)	22 (19.6)	1	1
	301-600	97 (77.6)	28 (22.4)	1.18 (0.63 - 2.21)	
	601-900	40 (51.3)	38 (48.7)	3.9 (2.0 - 7.4)***	3.2 (1.5 - 7.2)**
	901-1200	38 (50.7)	37 (49.3)	4.0 (2.1 - 7.6)***	3.4 (1.6 - 7.4)**
	>1200	29 (44.6)	36 (55.4)	5.1 (2.6 - 10.0)***	5.0 (2.2 - 11.2)***

*Significant at *p-value < 0.05, **p-value < 0.01, and ***p-value < 0.001*

† (farmer, daily laborer), †† (carpenter, barber, daily laborer), ††† (government and private)

2-Unreadiness during menstruation

Even though girls knew disposable sanitary pad as menstrual soak up most of the girls used homemade cloth and or underwear. They mentioned their reasons for not using disposable sanitary pad. For example, while girls often state that disposable sanitary pad was their preferred method for managing their periods, lack of money inhibits them from purchasing pads and, on the other instance, disposable sanitary pads might not be available. On the other hand some of the girls expressed that they didn't have the knowhow to use rather hearing about it. There were some girls who feared to buy sanitary pad from shop and even to use sanitary pad available in school as they mentioned that male students follow their doing and teased by them.

“She taught us in the club and told us to use sanitary pad and not to get afraid. But we didn't use it since we are afraid of male students and they said ‘you are big, but soiled your cloths with blood’ (ደግሞሽን ታዘራለሽ). Since male students follow us and teased, we used only underwear. They also saw us through a narrow opening of modes class wall”
FGD-1 (R2.)

“I feel ashamed to buy modes from shop and felt that they might say she is on her monthly period” **FGD-3 (R3).**

“I am using underwear because my family couldn't afford to buy and I didn't know how to use” **FGD-4 (R3).**

From the two focus group discussions girls didn't take bath during menstruation rather when they finished their period. Their main reasons were a misperception of aggravating the bleeding if a girl took bath while menstruating.

“I had never washed my body in the middle of my period since the bleeding might aggravate as people said. And therefore I only change underwear and never wash”
FGD-1(R7)

“... I washed underwear daily but I didn't take bath because the blood might increase as people said. I washed my body when I finished period” **FGD-2 (R3).**

5.4. Health problems during menstruation and its effect on class attendance and school performance

5.4.1. Health problems and restrictions faced during menstruation

Regarding the different types of restrictions practiced during menstruation, only 120 (26.4%) girls did not practice any restriction. Three hundred thirty five (73.6%) girls practiced different restrictions during menstruation. Two hundred thirty nine (71.3%) girls did not attend any religious occasion, 32 (9.6%) girls did not perform any household work and 83 (24.8%) girls stopped fasting. Their reasons were religious beliefs, 243 (72.5%), and felt discomfort or pain, 100 (29.9%).

Most of the girls reported abdominal pain as the most frequently encountered problem, 227 (49.9%) followed by depression 164 (36%), headache 91 (20%) and loss of appetite 70 (15.4%). Besides these, 147 (32.3%) of them had irregular menstrual cycles and 109 (24%) of them had excessive bleeding.

5.4.2. Influence of menstruation on girls academic performance

Most, 308 (90.1%) of the students didn't felt comfort when they came to school as none menstruation days. Their main reasons were no water source or bath rooms in schools to manage period 178 (43.4%), no private place in school to change menstrual soak ups 160 (39%) and didn't have a disposable sanitary pad to manage menstrual flow, 144 (35.1%). Besides these 308 (67.7%) of girls felt discomfort with male students during menstruation while in school. Their main reason was fear of male students as they might not talk as other days 147 (47.7%), they teased at them 65 (21.1%), they looked them differently 40 (13%) and fearing that they might not interact with them 33 (10.7%).

Three hundred fifty six (78.2%) of respondents said that menstruation had influence on education. Most of the respondents had mentioned that menstrual influence was through on class concentration, 257 (72.2%) followed by class participation, 208 (58.4%). Factors that had influenced girls' education were lack of material/pad to manage period 241 (67.7%), lack of continuous water supply 120 (33.7%), pain during menstruation, 93 (26.1%) and lack of disposal facility for used pad/material in school, 93 (26.1%). The rest factors were severe bleeding, 53 (14.9%) and premenstrual symptoms, 33 (9.3%). (Table 7)

Table 7: Influence of menstruation on girls education in Habru woreda, North Wollo, Amhara Region, Ethiopia, 2013 (n=356)

Influence on (n=356)	Numbers	Percent
Class concentration	257	72.2
Class participation	208	58.4
Sports participation	196	55.1
Homework tasks	20	5.6
Test taking skills	16	4.5

NB: Multiple responses were possible and the percent is greater than 100%

Ninety two (20.2%) students had missed exam during menstruation days. This was because of lack of pads and underwear to manage their menstrual bleeding which had coincided with their exam, severe pain related to menstruation, not prepared for test due to period, excess bleeding and embarrassment due to period.

Over half, 263 (57.8%) of respondents had perceived that menstruation had influenced their academic performance or rank as compared to before they had their menarche. This was due to lack of their class concentration during their period 209 (79.5%), poor class attendance 72 (27.4%), concentration on pain 52 (19.8%), (13) having class tests during their period and did without concentration and (11) didn't prepare for tests due to menstruation related problems.

3-Influence of menstruation on girls' academic performance

Teachers, students and dropout girls from FGD and IDI perceived that menstruation had influence on girls' academic performance. During menstruation students didn't come to school or even if they came, they didn't attend class attentively thinking of the sudden leakage or the pain associated with menstruation. They didn't come to school even they had exam or didn't do test with concentration when menstruation days coincides with exam days. Students didn't participate in the class, rather slept on the bench or thought the pain or sudden leakage and what the students felt by the incident and looking themselves. They didn't stand in front of students to answer questions or to write on the board fearing sudden leakage of blood and staining of their cloth.

*“...Yes menstruation had influence on my education. One day when I was in school the menstrual blood stained my cloth and male students teased at me; then after I went home and decided not to go school the next day and even too dropped out of schooling. Due to this reason I didn’t go to school for one week. I didn’t concentrate in class thinking about whether the blood leak and stained my cloth; ehh ... I didn’t go in front of students to present. In addition, when we went out of class for sport class I didn’t do sport” **IDI-3 (Dropout girl)**.*

*“Ehh ... since they didn’t know, I can say there is educational influence. It might be a cause of school dropout, might have influence on class concentration, class participation. For example if they see period they may not come to school until the cycle is over because they are afraid of being teased. Secondly they didn’t do sport. They didn’t communicate with their teacher since they fear. Therefore, I think there is this kind of influence” **IDI-3 (Teacher)**.*

*“... We didn’t concentrate on class since we concentrate on whether the blood suddenly leaked and stained our cloth. Our attention to education/class is decreased during period” **FGD-1 (R7)**.*

5.4.3. Influence of menstruation on girls school absenteeism

More than half, 248 (54.5%) of the girls were absent from school during their menstrual period. The number of days they were absent from school were one day 69 (27.8%), two days 86 (34.7%), three days 61 (24.6%), four days and above 32 (12.9%). The main reasons for their absence were shame/fear of sudden leakage or staining, 204 (82.3%) followed by didn't have pad, 139 (56%) and no private place to manage period in their school, 78 (31.5%). (Table 6)

Table 8: Reasons for school absenteeism of adolescent school girls during menstruation in Habru Woreda, North Wollo, Amhara Region, Ethiopia, 2013 (n=248)

Reasons (n=248)	Number	Percent
Shame/fear of leakage/staining	204	82.3
Had no pad to manage period	139	56
No private place to manage period at school	78	31.5
Lack of continuous water supply	57	23
Pain/discomfort	52	21
Lack of disposal system for pads/cloths	21	8.5
Lack of separate bathroom for girls	19	7.7

NB: Multiple responses were possible and the percent is greater than 100%.

School absenteeism was more common among those who didn't use disposable sanitary pad, 203 (69.0%) as compared to those who use sanitary pad, 45 (28.0%). Additionally, those girls from rural areas were more likely to absent from school during menstruation, 142 (60.9%) than girls from urban areas, 106 (47.7%).

5.4.3.1 Predictors of school absenteeism

The multivariate logistic regression analysis showed that students who didn't use disposable sanitary pad were 5.4 times more likely to be absent from school than their counter parts [AOR (95% C.I): 5.4 (3.0, 9.6)]. School girls who were learning in Melka Chefe junior secondary school were 59 % less likely to be absent from school during their menstrual period than girls from other schools [AOR (95% C.I): 0.41 (0.18, 0.90)].

On the other hand students from rural areas [COR (95% C.I): 1.7 (1.2 – 2.5)], who lives with relatives [COR (95% C.I): 3.8 (1.6 – 8.9)] and family with monthly expenditure of less than or equal to 300 Ethiopian birr [COR (95% C.I): 1.93 (1.04 – 3.60)] were found to be significantly associated with school absenteeism only in bivariate analysis. In addition students whose mothers education of read and write [COR (95% C.I): 0.61 (0.39 – 0.95)], primary [COR (95% C.I): 0.55 (0.31 – 0.96)], secondary and above [COR (95% C.I): 0.47 (0.27 – 0.88)], mothers occupation of employed [COR (95% C.I): 0.41 (0.20 – 0.86)] and having good knowledge of menstruation and its management [COR (95% C.I): 0.13 (0.03 – 0.60)] were significantly associated with school absenteeism in bivariate analysis but not in multivariate analysis (Table 9).

Table 9: Factors associated with school absenteeism among adolescent school girls in Habru Woreda, North Wollo, Amhara Region, Ethiopia, 2013 (n=455)

Variables	School absenteeism		Crude Odds Ratio (95% C.I.)	Adjusted Odds Ratio (95% C.I.)	
	No n (%)	Yes n (%)			
School	Sirinka	23 (35.9)	41 (64.1)	1	1
	Kokono	13 (37.1)	22 (62.9)	0.95 (0.40, 2.23)	
	Merto	26 (39.4)	40 (60.6)	0.86 (0.42, 1.76)	
	Sirinka Gerado	16 (39)	25 (61)	0.88 (0.39, 1.97)	
	Mehal Amba	18 (45)	22 (55)	0.69 (0.31, 1.53)	
	Melka Chefe	60 (57.1)	45 (42.9)	0.42 (0.22, 0.80)**	0.41 (0.18, 0.90)*
	Mersa	51(49)	53 (51)	0.58 (0.31, 1.11)	
Residence	Urban	116 (52.3)	106 (47.7)	1	1
	Rural	91 (39.1)	142 (60.9)	1.7 (1.2, 2.5)**	
Live With	Both parents	165 (48.5)	175 (51.5)	1	1
	Mother only	26 (41.3)	37 (58.7)	1.3 (0.8, 2.3)	
	Father only	5 (45.5)	6 (54.5)	1.1 (0.3, 3.8)	
	Relatives	7 (20)	28 (80)	3.8 (1.6, 8.9)**	
	Husband	4 (66.7)	2 (33.3)	0.47 (0.09, 2.61)	
	Mother's Education	Illiterate	73 (37.4)	122 (62.6)	1
Read & write		67 (49.6)	68 (50.4)	0.61 (0.39, 0.95)*	
Primary		35 (52.2)	32 (47.8)	0.55 (0.31, 0.96)*	
Mother's Occupation	Secondary and above	32 (55.2)	26 (44.8)	0.47 (0.27, 0.88)*	
	House wife	123 (44.1)	156 (55.9)	1	1
	Petty trader	59 (44.7)	73 (55.3)	0.98 (0.64, 1.48)	
	Employed	23 (65.7)	12 (34.3)	0.41 (0.20, 0.86)*	
Monthly Expenditure (Eth Birr)	Others †	2 (22.2)	7 (77.8)	2.8 (0.56, 13.52)	
	>1200	33 (50.8)	32 (49.2)	1	1
	<=300	39 (34.8)	73 (65.2)	1.93 (1.04, 3.60)*	
	301-600	51 (40.8)	74 (59.2)	1.50 (0.82, 2.74)	
	601-900	43 (55.1)	35 (44.9)	0.84 (0.43, 1.62)	
Knowledge	901-1200	41 (54.7)	34 (45.3)	0.86 (0.44, 1.66)	
	Poor knowledge	2 (14.3)	12 (85.7)	1	1
	Fair knowledge	63 (33.7)	124 (66.3)	0.33 (0.07, 1.51)	
Disposable sanitary pad use	Good knowledge	142 (55.9)	112 (44.1)	0.13 (0.03, 0.60)**	
	Yes	116 (72)	45 (28)	1	1
	No	91 (31)	203 (69)	5.8 (3.8, 8.8)***	5.4 (3.0, 9.6)***

*Significant at *p-value < 0.05, **p-value < 0.01, and ***p-value < 0.001*

† (farmer, daily laborer)

4-Reasons of school absenteeism

During menstruation some students didn't come to school as the schools are not gender friendly, i.e., schools didn't have facilities like separate toilet for male and female, sanitary disposal facility for used material, private place where they change soak ups, continuous water supply and in some schools there was no club particularly sexual and reproductive health clubs or gender clubs.

*“Yes it had educational influence. Even though it is a natural process, ehh ... they might be shocked especially if it is for the first time. Unless they didn't have the knowledge ... might be absent from school due to embarrassment” **IDI-4 (Teacher).***

They didn't come to school during menstruation because of lack of material or disposable sanitary pad they used. Due to lack of material or even those who had material they didn't come to school fearing sudden leakage and staining of their cloth. They thought that even they came to school they didn't attend carefully and didn't come. Some students didn't come during menstruation days because of embarrassment as they saw menstruation suddenly without their knowledge and became public. They had also pain associated with menstruation.

*“I didn't come to school during menstruation days because I had abdominal pain and I didn't attend class. And also I feared that the blood might soil the bench and therefore absent from school” **FGD-4 (R7).***

*“I was in school during my first period; my cloth was stained and male students follow and teased at me; starting from that occasion I didn't go to school for up to 3-5 days” **IDI-2 (Dropout girl).***

*“I know a girl who didn't come to school when she had period. She didn't come because she didn't have underwear and ashamed to ask money from her parents. She didn't come to school whenever she saw menstruation as she feared sudden leakage of blood and soiling up of her cloth” **FGD-1 (R6).***

5.4.4. Influence of menstruation on school dropout

Regarding school dropout due to menstruation related problems 136 (24.7%) knew a girl or some girls who had dropped out from school while 140 (25.4%) of school girls reported that they have heard about girls who had dropped out of their education. The main cause of school dropout were embarrassment, not having underwear and disposable sanitary pad, no clean and separate toilet for females and lack of water access in their schools.

Among the students included in this study 21 of them were dropped out previously due to menstruation related problems. They were dropped out of their education because they hadn't pad and underwear, embarrassed due to menstruation, and lack of clean and separate toilet for girls in their schools.

5-Reasons of school dropout

Some students were decided to drop out previously since they didn't know or learnt about menstruation as well as its management. Embarrassment leads to school dropout as they saw menstruation while in the class without their knowledge. Following the incident, since other students especially male students didn't have the knowledge, teased by them and they dropped out.

“Yes I know even though they didn't tell you the exact reason. ... She dropped out due to menstruation. She dropped out as other students teased at her” IDI-1 (Teacher).

“When I saw menstruation I didn't know as it interrupts and I assumed as it flow the entire year or till my death. I said I didn't want to learn always soiled with blood. But now when it flew for two days or more, my hope to drop out decreased and I reached here without dropping” FGD-4 (R8).

“Last year in 2004, she was not my classmate, she didn't know about menstruation when she saw her period in the class. When she saw as the blood soiled her cloth and the bench and other students had seen it and teased at her. She was shocked and then after dropped out and now she is not learning” FGD-3 (R3).

Fear of sudden leakage as well as lack of material or disposable sanitary pad was also the main cause of school dropout. As they mentioned that they feared to go to school without menstrual soak ups as they feared that the blood might leak suddenly and stained their cloth. They feared the psychological trauma faced when students teased by them, i.e., embarrassment.

“Ehh ... I knew a friend who dropped out her education due to embarrassment on the occasion of her first period. She dropped out her education fearing that student might tease at me since her cloth was stained and seen by students. We were in class when she saw her period and stained her cloth. She didn't want to go of class during break time fearing students might see it and was shocked. She didn't want to go home and we called her family to take her” IDI-4 (Dropout girl).

“I knew a girl. She was living with her aunt since her family was poor. Her aunt didn't want to buy underwear when she asked and she dropped out” FGD-1 (R6).

6. Discussion

This study had showed that about half the girls in Habru Woreda had knowledge regarding menstruation and its hygienic management. Access and use of sanitary pad was very low especially among girls from rural area, family of lower income, who live with relatives and less educated families. Girls dropped out of school because of having their first menses unprepared as they were teased by boys at school. Absenteeism was common during their menstrual period because of lack of sanitary pads until they finish the cycle.

The mean age at menarche in this study was 14.0 (± 1.2) years; 13.8 (± 1.2) and 14.2 (± 1.1) for urban and rural girls respectively. This is in agreement with a study done in Addis Ababa, where the mean age of 13.7 (± 1.3) years (9). The possible reasons might be due to the advancement of time and improvement in nutritional condition. In addition it is due to the effect of menarcheal age of urban girls which lowers the total age at menarche.

In this study above half (51.4%) of the students had good knowledge about menstruation and its management; but there is knowledge deficient in specific knowledge areas like menstrual cause, origin of blood during menstruation and discussion freely regarding menstruation. The reported knowledge is closely related with a study done in Nigeria (17). But in contrary to this study a lower knowledge was obtained as most of the girls having good knowledge was very low (4.0%) (16). This discrepancy might be due to a change in time and the advancement of education provision as compared to the previous time.

The study had showed that majority of girls had negative reaction to menarche as they were embarrassed/ashamed, irritated or disgusted, upset or tensioned and scared. This negative reaction towards menarche was supported by other studies (2, 4, 17, 28, 31). It was also supported by the qualitative data, where most girls were shocked, sacred, embarrassed and even worried about what is happening to them. These reactions might be due to unawareness of the biological nature of menstruation as well as unpreparedness leading to soiling up of cloth as they might be teased by others or a reflection of taboos and prejudices in society about menstruation.

This study showed that majority of the girls used cloth pieces rather than disposable sanitary pads as menstrual absorbent. Only 35.4% of girls used disposable sanitary pads during

menstruation; 47.7% and 23.6% for urban and rural girls respectively. This is lower as it is compared to a study done in Northwest Ethiopia and Addis Ababa (7, 9). However, in the qualitative data even girls want to use disposable sanitary pad they didn't use. Their main reasons were lack of money, feeling ashamed to buy from shops, unavailability and some of them didn't know how to use rather than hearing. This discrepancy might be due to residence as these studies were done in urban area as compared to this study. Rural girls might not have access to sanitary materials and poor parental communication. In addition it could be due to knowledge difference as this study was done among primary school girls as compared to the above studies which were done among high school girls.

Disposable sanitary pad utilization was significantly associated and higher among urban residence, having literate mothers and having higher family monthly expenditure. On the other hand it was significantly lower among those living with relatives. In another studies mother's education, residence and socioeconomic status was significantly associated with hygienic management as well as utilization of disposable sanitary pad (15, 17, 26, 33). In urban areas girls might have better knowledge; or access to information and disposable sanitary pad as compared to those from rural areas. In addition girls from urban areas might not feel ashamed to buy sanitary pad from shop. Educated mothers might teach their daughters as well as might have monthly budget for disposable sanitary pad; and therefore pad utilization might be higher. Girls of a family having a higher monthly expenditure might have a probability of using pad as this expenditure might include it and therefore cost might not be their concern. On contrary to these, those who live with relatives might fear asking money, might not discuss openly about menstruation and/or relatives might not give money/buy sanitary pad and therefore they might be less likely to use disposable sanitary pad.

In this study most (91.8%) girls reused cloth material and majority of them used water only (61.1%) during washing of reusable soak ups. After washing they dried in a hidden place without sunlight and some of them kept in bathrooms (11.1%) till the next menstrual period. Similar practices had also been obtained in different studies (3, 26, 33, 35, 48). The qualitative data had also underpinned that as they perceived drying with sunlight will cause itching sensation and some of them didn't want and feared to be seen by people. These practices might be due to lack of access to sanitary materials and proper knowledge or they might not apply the prevailing knowledge into

practice which might be related with attitude. Additionally, it might be due to the prevailing taboos and attitudinal prejudices of keeping underwear out of the reach of human eyes.

With regard to bathing most (54.9%) of the girls took bath when finished period and followed by the third day (14.9%) and daily (13.7%) using soap and water (88.1%). This finding contradicts another studies where most of girls took bath daily (**35, 48**) and the third day (**2**). The qualitative data had also suggested that taking bath in the middle of menstruation aggravates the bleeding and following this they took bath at the end of their menstrual period. This variation might be due to lack of proper knowledge or the prevailing knowledge might not good enough to avert their misperceptions as well as malpractices. This also indicates as that education is not provided in the respective schools regarding menstruation as well as hygiene keeping during menstruation. In addition this indicates that proper information provision through different media is low. Mothers might refrain in talking about menstruation openly or right knowledge might not been imparted; following this they might practiced what their mothers practiced.

Over half (54.5%) of girls had reported school absenteeism during menstruation days. This is in contrast to other studies where school absenteeism was lower than this finding (**1, 7-9, 11, 33**). The qualitative data had supported school absenteeism as most students didn't come to school during menstruation days. They had different reflections towards their absenteeism as they mentioned fear of sudden leakage; lack of material they used and pain associated with menstruation as well as schools didn't have full facility. This discrepancy could be due to schools infrastructure as the schools included in this study were a co-education school. This might also be due to lack of proper knowledge as education about menstruation and its hygienic management could not given in all schools as part of curriculum or in even different school clubs. On the other hand there might be education for girls in some school clubs but might not be inclusive for all girls as it might be opened and function based on will. More over the provided education could not be mass education, i.e., all male and female students, since most of menstruation related problems like embarrassment were due male students as they teased at them. In addition this could be due to differences in age as the study subjects of this study are younger than other studies, i.e., the probability of being empowered or making decisions as well as facing those problems might different.

School absenteeism was significantly associated and higher among those who didn't use disposable sanitary pad as menstrual absorbent. On the other hand school absenteeism was significant and lower among those learning in Melka Chefe junior secondary school. School girls who didn't use disposable sanitary pad might be absent from school fearing sudden leakage as male students might teased at them. On the other hand school girls from Melka Chefe might not absent from school as the school might have good school facilities for females or male students might be aware of menstruation as it is a natural process and might not teased at them as compared to other schools included in this study.

Menstruation had influence on adolescent girls' school performance as over half of girls reported the perceived effect of menstruation on academic performance. Similar studies had also reported effect of menstruation on girls' academic performance (9, 41). The qualitative data explained that during menstruation students didn't come to school or even if they came to school; they didn't attend carefully thinking about pain if there is or whether the blood leaked suddenly. This might be due to the difficulty of breaking the prevailing knowledge gap or misperceptions of girls and more importantly male students who had negative influence. Health facilities might not be youth friendly and might not have outreach services, i.e., education program, particularly in schools. This could also relate with the school facility particularly continuous water flow, private place where they change their soak ups and material provision. Related with pain during menstruation they might not seek medical care which might be due to lack of money or knowledge of medical services or health facilities might not be youth friendly. In schools there could no consultancy services for students particularly for girls and might not ask help or support from their teachers or friends rather kept as their own mystery. Despite having used sanitary pad, they might not attend class attentively thinking the sudden leakage of menstrual blood. All these could lead to poor class attendance, class concentration, missing tests or doing tests without concentration if exam days coincide with menstruation days and might do without concentration.

Menstruation and its related problems had influenced girl students to drop out their education. It is supported by other studies as most girls had dropped out their education due to menstruation related problems (6, 10). The qualitative data had also supported this finding as most of the reasons were embarrassment and lack of menstrual soak ups. These dropouts might be due to poor parental communication regarding sexual and reproductive health issues particularly menstruation and its management. As a result of this they might not have sanitary materials as they fear to ask money and choose dropout as an option. Following to their dropout there might not be anybody who advises them even their family, as menstruation is a natural process and as any woman experience it, to return back to their school. Or girls might not discuss openly regarding their actual reason of dropout; i.e., due to menstruation, and as well as what they need. In addition teachers or schools might not give emphasis in convincing and returning back dropout girls to their schools. On the other hand there could not be disposable sanitary pad provision or self support club in schools for those students who couldn't afford to have it. The last but not the least the available school facilities might have influence as most of the schools are not gender friendly.

7. Strength and limitation of the study

7.1. Strength of the study

- It addresses an important but neglected issue
- The study used a mixed method research which helps to explore sensitive issue
- Using female data collector and supervisor reduces information bias
- The use of standardized questionnaire from different literatures

7.2. Limitation of the study

- Difficult to establish causal relationship
- Recall bias (age at menarche)
- School based study (difficulty of getting appropriate denominator for dropout girls)

8. Conclusion and Recommendation

8.1. Conclusion

The results of this study suggested that utilization of disposable sanitary pad was low, even though about half of them had knowledge regarding menstruation and its management. Menstruation had a negative effect on girls' education as they were absent during menstruation, having scored poor academic performance as compared to before they had menarche and lead to school dropout. Therefore its effect on school absenteeism, poor academic performance as well as school dropout may seriously affect the effort made towards realization of empowering girls and gender equality.

8.2. Recommendation

At National level

- ✓ Adolescent and Youth Reproductive Health Strategy should include details of MHM drafted following clear national consultation with women and or concerned bodies
- ✓ Education curriculum should include MHM in the respective courses or subjects
- ✓ Preparing books addressing puberty in girls, i.e., MHM

At Community level

- ✓ Sexuality education including MHM through Health Extension Workers (HEWs)
- ✓ Local access to hygienic menstrual materials (e.g. disposable sanitary pad)
- ✓ Parental communication regarding SRH and MHM
- ✓ Families should have a budget for MHM materials

Schools

- ✓ Development of a comprehensive school health education program and inclusion of menstrual physiology and its hygienic management (MHM) in the school's curricula
- ✓ Schools should have gender appropriate sanitation facility
- ✓ Providing or availing low cost sanitary pad in schools
- ✓ Schools should have self support club or means of revenue for sanitary materials
- ✓ Sexuality education (MHM) in school clubs or peer education

Health Facilities

- ✓ Outreach services (in schools) providing education regarding SRH and MHM
- ✓ Teaching SRH and MHM in their reproductive health clinics
- ✓ Health facilities should be youth friendly

Role of Mass-media

- ✓ Mass media should have an active role in raising the awareness of adolescent's flames about the physiological, psychological aspects of menstruation and the proper hygiene as well to avoid reproductive health problems.

Further Researches

- ✓ Investigate the relationship between adolescent's knowledge and practices as well as educational influences of menstruation

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Annex I: Questionnaire

**ADDIS ABABA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF PUBLIC HEALTH**

Information Sheet and Consent Form

A. Information Sheet

Greetings! My name is _____. I am here to conduct interviews about determinants of menstrual hygiene management and its effect on school attendance among female adolescent students of Habru Woreda. The evidence (finding) of the operational study is going to feed into the road map of the ranges of partners and stakeholders on how best to strengthen and expand female adolescent health services in the country especially related to school dropouts related to menstruation.

The proposed study is believed to contribute to the eventual improvement of health care service benefits to young people. The aggregate final result is going to get shared to pertinent decision makers at all levels. Therefore, participation in the study is seen as vital citizenry and societal opportunities as well as contributions.

For details: Contact +251-913-12-61-51 (Teketo Kassaw, Principal Investigator)

B. Consent Form

Based on the purpose and objectives of the study, therefore, you are rightfully eligible for the interview. It is only an interview and does not involve anything more. I would like to ask you set of specific questions. I will be grateful if you can spend some time talking with me. The interview is consent-based voluntary, confidential, private and of approximately half an hour's duration. Other than a general serial code, your name and other identification aspects are not going to be recorded on the interview sheet.

The information you provide is strictly confidential and private. You will not be obligated to respond to one or more of the specific questions that you do not want to. But so long as you find it reasonably convincing, it undoubtedly is going to be more helpful when all of the questions of the interview set will get completed. Now, I can only start asking you the set of specific questions after I have confirmed your (willingness) and/or your parents or guardian will with signing. I kindly ask you to take active part and contribute to the study.

Are you willing to participate in the study? Yes, Signature _____ No

For students whose age is below 15 years old

I, the undersigned, am the parent or legal guardian (teacher) of the student being invited to participate in the study. I have read the informed consent or have had the informed consent read to me, was given an opportunity to clarify any questions I have regarding the study, and I give permission for my child or legal ward or student to participate in the study.

Signature _____ Date _____

School: _____ Respondent's code _____

Part 100: Socio-demographic and economic characteristics of respondents

Ques Code	Question (variable)	Response	Skip to	Response code
101	Age of student;	_____ years		
102	Religion of student	1. Orthodox Christian 2. Islam 3. Protestant 4. Catholic 88. Others (Specify) _____		
103	Residential area	1. Urban 2. Rural		
104	Educational status	1. Grade 7 2. Grade 8		
105	Marital status of student	1. Single 2. Married 3. Divorced 4. Widowed 88. Others (Specify) _____		
106	Ethnicity of students	1. Amhara 2. Tigre 88. Others (Specify) _____		
107	With whom do you live?	1. Mother and father 2. Mother only 3. Father only 4. Relatives 88. Others (Specify) _____		
108	Educational status of mother	1. Illiterate 2. Read and write only 3. Grade 1-8 4. Grade 9-12 5. 12+		
109	Educational status of father	1. Illiterate 2. Read and write only 3. Grade 1-8 4. Grade 9-12 5. 12+		
110	Occupational status of mother	1. House wife 2. Farmer 3. Merchant 4. Government employed 5. Private employed 88. Others (Specify) _____		
111	Occupational status of father	1. Farmer 2. Merchant 3. Government employed 4. Private employed 88. Others (Specify) _____		
112	How much birr does your family expend for monthly lives?	_____ Birr		

Part 200: Family or Parental Factors

Ques Code	Question (variable)	Response	Skip to	Response code
201	Is there communication within the family about sexual and reproductive health issues?	1. Yes 2. No -----	301	
202	Do you discuss about menstruation and its hygienic management in the family?	1. Yes 2. No -----	301	
203	If yes, with whom you discuss?	1. Mother 2. Elderly sister 3. Father 4. Brother 88. Others (Specify) _____		
204	If yes, how frequently do you discuss?	1. Always 2. Usually 3. Some times 4. As convenience		

Part 300: Knowledge regarding menstruation and hygienic management

Ques Code	Question (variable)	Response	Skip to	Response code
301	Did anyone tell/advise you about menstruation and its management?	1. Yes 2. No -----	303	
302	(If yes) who told/advise you about menstruation and its management? (More than one answer is possible)	1. Mother 2. Sister 3. Friends 4. Teacher 88. Others (Specify) _____		
303	Is there anyone with whom you would feel comfortable talking openly about menstruation? (More than one answer is possible)	1. Friends/peers 2. Mother 3. Sister 4. Teacher 5. No one 88. Others (Specify) _____		
304	What is the normal age for menstruation to begin?	_____ years		
305	How long does the bleeding usually last during menstruation?	_____ days		
306	How long does the normal cycle last?	_____ days		
307	What kinds of materials do you know of for catching menstrual flow?	1. Homemade cloth/rags 2. Disposable sanitary pad/napkins 3. Underwear 88. Others (Specify) _____		
308	What is menstruation?	1. It is a physiological process 2. It is a curse of God 3. It is punishment for a Sin 4. It is a pathological process 88. Others (Specify) _____ 99. Don't know		
309	What are the causes of menstruation?	1. Aging into puberty 2. Hormones 3. Curse 4. Enzymes 88. Others (Specify) _____ 99. Don't know		
310	From where bleeding occurs during menstruation?	1. Bladder 2. Uterus 3. Fallopian tube 4. Vagina 88. Others (Specify) _____ 99. Don't know		
311	Will a girl be pregnant while she is menstruating if she has sexual intercourse?	1. Yes 2. No 99. Don't know		
312	Have you ever had any class session about menstruation and its hygienic management in your school?	1. Yes 2. No		

313	Can girls go to school during period?	1. Yes 2. No		
314	Do you know a friend/sister dropout of school because of menstruation?	1. Yes 2. No -----	316	
315	If yes, what was the reason?	1. She did not have underwear 2. She did not have pad 3. School do not have clean and separate toilet facility for girls 4. School do not have water access or separate bathroom for girls 5. Embarrassment because she had her first menses at school accidentally 88. Others (Specify) _____		
316	Have you heard about a girl who drops out of school because of menstruation?	1. Yes 2. No -----	318	
317	If yes, what was the reason?	1. She did not have underwear 2. She did not have pad 3. School do not have clean and separate toilet facility for girls 4. School do not have water access or separate bathroom for girls 5. Embarrassment because she had her first menses at school accidentally 88. Others (Specify) _____		
318	Did you start to see menstruation?	1. Yes 2. No -----	End Here	
319	At what age did you start to see menstruation?	_____ year		
320	What did you feel when you had menstruation for the first time?	1. As usual 2. Excited 3. Embarrassed/Ashamed 4. Upset and tension 5. Scared 6. Irritation/Disgusted 88. Others (Specify) _____		

Part 400: Menstrual hygiene management practices

Ques Code	Question (variable)	Response	Skip to	Response code
401	Where were you when you have your first period?	1. School 2. Home _____ 3. When I was on the way to or from school 88. Others (specify) _____ 99. Don't know/remember _____	406	
402	If it was in school, did you take action before it soils your cloth?	1. Yes 2. No _____	404	
403	How did you manage to avoid soiling of your clothes?	1. I used leaves 2. I used pages from my exercise book 3. I torn my T-shirt/cloth apart in to pieces and made pad to manage it 88. Others (Specify) _____		
404	If your clothes were soiled and seen by boys or other students what did you fell?	1. Embarrassed/Ashamed 2. Upset and tension 3. Scared 4. Irritation/Disgusted 88. Others (Specify) _____ 99. Don't remember		
405	Did you come to class following this?	1. Yes 2. No		
406	What material did you use during your monthly period?	1. Sanitary napkins/pads _____ 2. Home-made cloth 3. Underwear 4. Alternate use of above 88. Others (Specify) _____	413	
407	If home-made cloth used, do you reuse it?	1. Yes 2. No _____	411	
408	If you reuse the cloth, how do you wash it?	1. With soap and water 2. With water only 88. Others (Specify) _____		
409	If home-made cloth used, where do you dry the cloth after washing it?	1. In the shade outside 2. In the shade inside 3. In the sunlight inside 4. In the sunlight outside 5. Hidden under other clothes 6. Hidden elsewhere 88. Others (Specify) _____		
410	If home-made cloth used, where do you store your cloths in between uses?	1. Near the toilet 2. With other clothes 3. In the bath room 88. Others (Specify) _____		
411	How frequently do you change the cloth per day?	_____ Times		

412	What is your reason for not using sanitary pads/napkins?	1. High cost 2. Unavailability 3. Lack of knowledge 4. Tradition of using cloth 5. Shame 88. Others (Specify) _____ 99. Don't know		
413	If you use pads, how many pads you use during menstruation per day?	_____ pad		
414	Did you change pads/cloth at school?	1. Yes _____ 2. No	416	
415	If you don't change pads/cloth at school, what was your reason?	1. No private toilet 2. No water source/point 3. I fear that others students will see while I change 4. I have no material / pad to change 88. Others (Specify) _____ 99. Don't know		
416	Do you clean genitalia during menstruation (at every visit to toilet)?	1. Yes 2. No _____	418	
417	What did you use while cleaning the genitalia?	1. Soap and water 2. Only water 3. Piece of paper 4. Piece of cloth 88. Others (Specify) _____		
418	Do you take bath during menstruation?	1. Yes 2. No _____	421	
419	How often do take bath during menstruation?	1. Daily 2. First day 3. Second day 4. Third day 5. When finished period 88. Others (Specify) _____		
420	How do you take bath during your period?	1. With soap and water 2. With water only		
421	Where do you dispose of used cloths or pads when you are at school?	1. Open field 2. In the latrines 3. In waste bins 4. Dust bins 5. Go home to dispose 88. Others (Specify) _____		
422	How do you describe regularity of menstrual flow?	1. Regular 2. Irregular		
423	How do you describe the amount of menstrual flow?	1. Normal 2. Scanty 3. Heavy		

424	What health problems faced during menstruation?	1. Abdominal pain 2. Headache /irritation 3. Loss of appetite 4. Depression 5. Sleeplessness 88. Others (Specify) _____		
425	Are there any activities that you do not carry on during your period?	1. Yes 2. No _____	501	
426	(If yes): Which activities? (Tick or list all those apply.)	1. Religious occasion 2. Schooling 3. Household work 4. Keeping fast 88. Others (Specify) _____		
427	What are the reasons for restrictions during menstruation?	1. Religious belief 2. Feel discomfort/pain 3. My culture 88. Others (Specify) _____ 99. Don't know		

Part 500: Menstruation related problems and its effect on girls' education

Ques Code	Question (variable)	Response	Skip to	Response code
501	Do you feel more uncomfortable interacting with male students during your period than at other times?	1. Yes 2. No -----	503	
502	If yes, why?	1. They don't interact with me as other days 2. They look me differently than other days 3. I fear that they may not talk with me 4. They teased at me during my period 88. Others (Specify) _____ 99. Don't know		
503	Do you feel comfortable in school during menstruation?	1. Yes ----- 2. No	505	
504	If no, why not?	1. Nowhere to dispose used material 2. No private place to change pad 3. I have pain 4. No water source or bathroom to manage period 5. I have no pad to manage period 88. Others (Specify) _____ 99. Don't know		
505	Have you ever been absent from school due to menstruation?	1. Yes 2. No -----	508	
506	If yes: How often?	_____ day every cycle		
507	If yes: Why?	1. There is no private place to manage period at school 2. Lack of disposal system for pads/cloths 3. Lack of continuous water supply 4. Lack of separate bathroom for girls 5. Pain/discomfort 6. Fear of leakage/staining 7. Shame 8. I have no pad to manage period 88. Others (Specify) _____		
508	Did menstruation and related problems have influence on educational activities?	1. Yes 2. No -----	511	
509	Which educational activities get affected due to menstruation related problems?	1. Class participation 2. Sports participation 3. Class concentration 4. Test taking skills 5. Homework tasks 88. Others (Specify) _____		

510	What menstruation related problems have influence on educational activities?	<ol style="list-style-type: none"> 1. Pain during menstruation 2. Premenstrual symptoms 3. Severe bleeding 4. Not having material or pad to manage period 5. Lack of sanitary disposal facility for used material / pad in school 6. Lack of continuous water supply 88. Others (Specify) _____ 		
511	Did you ever dropout of school? (related with menstruation)	<ol style="list-style-type: none"> 1. Yes 2. No _____ 	513	
512	What was your reason to drop out of school?	<ol style="list-style-type: none"> 1. I do not have underwear 2. I do not have pad 3. Embarrassment due to menstruation 4. School do not have clean and separate toilet facility for girls 5. School do not have water access 6. School do not have separate bathrooms for girls 88. Others (Specify) _____ 		
513	Did menstruation interfere with your academic performance or rank negatively than before you start menarch?	<ol style="list-style-type: none"> 1. Yes 2. No _____ 	515	
514	If yes, how it interfere with your academic performance or rank?	<ol style="list-style-type: none"> 1. I do not attend class during my period 2. I do not concentrate in the class as usual 3. I do concentrate on the pain 4. I do the test without concentration 5. I do not prepared for the test 88. Others (Specify) _____ 		
515	Have you ever missed test due to menstruation related problems?	<ol style="list-style-type: none"> 1. Yes 2. No 		
516	If your answer is yes for Q ₅₁₅ , why?	<ol style="list-style-type: none"> 1. Excess bleeding 2. Severe pain related to menstruation 3. Not prepared for test due to the period 4. Not having material to manage the period 5. Embarrassment due to period 88. Others (Specify) _____ 		

In-depth Interview Guide –Female adolescents who dropout schooling

Respondent ID: _____

Date of Contact: _____

School: _____

Make sure that all the necessary preparations to the session get fulfilled in advance. Always, proper preparation, introduction and explanation as per the following:

- ✓ Arrive early enough (before . . .)
- ✓ Extend courteous/generous salutation
- ✓ Ask consent (willingness and permission to proceed)
- ✓ Introduce clearly (who/whom, from where, when, why, how?)
- ✓ Ensure convenience: privacy and confidentiality.
- ✓ Conduct (in aim-full, relaxing and interesting manner)
- ✓ Actively gauge the proceeding (process) and act or manage accordingly
- ✓ End the session with grateful thanks

Okay, now I would like to talk with you a little bit about menstruation and your experience with your period.

1. How did you learn about menstruation?
 - ✓ Did it come as a surprise to you when you got your first period?
 - ✓ What methods do you know to manage menstrual flow?
 - ✓ What has been your main source of information?
 - ✓ Do/did you learn about menstrual health issues in school? If so, what kind of things do/did you learn?
2. How did you learn the ways to hygienically manage your own period?
 - ✓ What method do you use to catch your menstrual flow?
 - ✓ Do you think there are adequate toilet facilities and water sources at school for girls to manage their periods comfortably and hygienically? If NOT, what do you think is needed?
3. Before you dropped out, has menstruation ever interfered with your ability to either attend or perform optimally at school?
 - ✓ If so, please elaborate.
 - ✓ Before you dropped out, have you ever been absent from school during menstruating days? Why? What makes it different from other days?
4. Why did you dropout of schooling?
 - ✓ Is it related with menstruation? If so, what was your reason?
 - ✓ Lack of sanitary pads, because of embarrassment, interference with class participation, lack of sanitary disposal facilities in the school, lack of water, etc?
 - ✓ Males do not treat us as usual days during menstruation? Privacy?
5. Do you know a friend, sister/someone dropped out of school because of menstruation related problems?
 - ✓ If so, what was their reason?
6. Have you heard about a girl who drops out of school because of menstruation?
 - ✓ If so, what was their reason?
 - ✓ In general, how do you feel about menstruation?

In-depth Interview Guide – Female teacher

Respondent ID: _____

Date of Contact: _____

School: _____

Make sure that all the necessary preparations to the session get fulfilled in advance. Always, proper preparation, introduction and explanation as per the following:

- ✓ Arrive early enough (before . . .)
- ✓ Extend courteous/generous salutation
- ✓ Ask consent (willingness and permission to proceed)
- ✓ Introduce clearly (who/whom, from where, when, why, how?)
- ✓ Ensure convenience: privacy and confidentiality.
- ✓ Conduct (in aim-full, relaxing and interesting manner)
- ✓ Actively gauge the proceeding (process) and act or manage accordingly
- ✓ End the session with grateful thanks

Okay, now I would like to talk with you a little bit about menstruation and your students experience with their period.

1. Do you think the issue of female hygiene (menstrual hygiene management) is a problem among the girls you teach?
 - ✓ If YES, Please elaborate.
 - ✓ Do you have any specific experiences to share in this regard?
2. Is information on the menstrual cycle or issues of menstrual hygiene taught to adolescent girls as part of your curriculum?
 - ✓ If YES, what kinds of information and in what format?
 - ✓ If NO, what do you see as the main barriers to provision of such information?
 - ✓ Do you think it might be useful to add such information to the curriculum? Why?
3. Do you think the school has adequate facilities for adolescent girls to manage their menstruation while they are in school? (clean and separate toilets, water access, bathroom, disposal facility for used pad or cloth, etc)
 - ✓ If YES, what are the facilities?
 - ✓ Do you think the available facilities are regularly used? If NO, why not?
 - ✓ If there is no adequate facility, what do you think is lacking?
4. Do you think menstruation has effect on girls' education?
 - ✓ If YES, in what way(s)? (School attendance, ability to concentrate in the classroom, class participation, sports participation, academic performance, dropout, etc)
5. Did students absent from school during menstruating days?
 - ✓ If YES, what was their main reason?
 - ✓ Did you know students who drop out of schooling due to menstruation related problems? If YES, what was their main reason?
6. What do you think could or should be done to make the experience of menstruation in the school a more positive one for adolescent girls?

Focus Group Discussion Guide – Female students

School: _____ Date: _____

Facilitator: _____ Note-taker: _____

Number of participants: _____ Age range: _____

Starting time: _____ Ending time: _____

Introduce Moderators, Record Keepers

Introduce topic of research

Thank you for taking the time to join our discussion. We are interested in learning about some of the main health and hygiene needs of women/girls like you living in your community. We would like your permission to talk with you about your views on issues related to women's health and hygiene. You are not required to respond to any of the questions if you feel uncomfortable. However, please be assured that the information you share will remain confidential, so you should feel comfortable about sharing your thoughts and ideas freely. There are no 'right' or 'wrong' answers, because everyone experiences things differently. We are interested in the full range of experiences, so please feel free to share your point of view even if it differs from what others have said.

The information will help us to learn more about the health and well-being of young girls/women in the community and to advocate for improved services and assistance. I expect our conversation to last for about an hour.

Discussion group ground rules

Before we begin, let me suggest some guidelines that will make our discussion more productive.

- Please speak up—but only one person should speak at a time. We are recording the session because we don't want to miss any of your comments.
- My role here is to ask questions and to listen. I won't be actively participating in the conversation, only guiding it. I want you to feel free to talk to the group and not just to me. I'll move the discussion from one question to the next to try to keep us on track so that we can finish by [insert time].
- Any questions before we begin?

Introduction of Participants – name, age, ice-breaker

(Let's start by going around the group – tell us your name, how old you are, your current position, and what your favorite dish/movie/past-time is.)

Okay, now I would like to talk with you a little bit about menstruation and your experience with your period.

1. How did you learn about menstruation?
 - ✓ Did it come as a surprise to you when you got your first period?
 - ✓ What methods do you know to manage menstrual flow?
 - ✓ What is/was your main sources of information?
 - ✓ Do/did you learn about menstrual health issues in school? If so, what kind of things do/did you learn?
2. Is there anything that you do differently during your monthly period for reasons of personal comfort or habit?
 - ✓ Like what? (Bathing more frequently/less frequently, missing school or exam, home work, etc.)
3. What method do you use to catch your menstrual flow?
 - ✓ Why you choose this method?
 - ✓ Where and how do you dispose of used pads or cloths at home, school, or elsewhere?

- ✓ In the case of reusable cloths, where do you hang them to dry? Where do you store the cloths between uses?
- 4. Do you think there are adequate and separate toilet facilities and water sources at school for girls to manage their periods comfortably and hygienically?
 - ✓ If NOT, what do you think is needed?
- 5. Has menstruation ever interfered with your ability to either attend or perform optimally at school?
 - ✓ If so, please elaborate.
 - ✓ Have you ever been absent from school during menstruating days?
 - ✓ Do you know a friend, sister/someone who have ever been absent from school during menstruating days?
 - ✓ Why? What makes it different from other days?
- 6. Is there a time that you want to dropout schooling due to menstruation related problems?
 - ✓ If YES, what was the reason?
- 7. Do you know a friend, sister/someone dropped out of school because of menstruation related problems? Have you heard about a girl who drops out of school because of menstruation? If YES, what was the reason?

Close the session

Thank you all for your time and ideas. This has been extremely helpful. As I said in the beginning, the purpose of this discussion was to help us learn more about what women/girls want and need so that we can think of ways to make your lives healthier and more comfortable!

Annex II: Stratified Sampling with proportionate Allocation (Sample Size)

School	Grade and section	Total number of students	Sample size	School	Grade and section	Total number of students	Sample size
SIRINKA	7A	36	25	MELKA CHEFE	7A	22	15
	7B	33	23		7B	24	17
	Total	69	48		7C	26	18
	8A	22	16		Total	72	50
	8B	17	12		8A	20	14
	8C	19	13		8B	24	17
	Total	58	41		8C	19	13
	Sum	127	89		8D	22	15
KOKONO	7A	36	25	8E	21	15	
	8A	32	23	Total	106	74	
	Sum	68	48	Sum	178	124	
SIRINKA GERADO	7A	25	18	MERSA	7A	22	15
	7B	20	14		7B	21	15
	Total	45	32		7C	23	16
	8A	20	14		7D	24	17
	8B	23	16		Total	90	63
	Total	43	30		8A	22	15
	Sum	88	62		8B	23	16
MERTO	7A	26	18	8C	24	17	
	7B	25	18	8D	20	14	
	7C	23	16	Total	89	62	
	Total	74	52	Sum	179	125	
	8A	25	17	MEHAL AMBA	7A	34	24
	8B	27	19		7B	29	20
	Total	52	36		Total	63	44
Sum	126	88	8A		22	15	
OVER ALL TOTAL SUM		851	595	Sum	85	59	

Annex III: Primary Schools of Habru Woreda during 2005 E.C Academic Year

Schools of Habru Woreda During 2005 E.C Academic Year

Cluster	Schools	Grades																								Total		
		1			2			3			4			5			6			7			8					
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
Mersa	Mersa	105	101	206	65	69	134	62	54	116	83	81	164	88	98	186	76	69	145	116	90	206	105	89	194	595	550	1145
	Mersa Night	15	7	22	14	4	18	6	4	10	3	1	4	4	2	6	3	4	7	4	3	7	5	2	7	39	20	59
	M/Abagetiye	33	28	61	20	17	37	19	20	39	21	24	45													60	61	121
	Kokono	70	57	127	73	56	129	50	50	100	60	44	104	90	84	174	49	45	94	42	36	78	29	32	61	393	347	740
	Kule	62	46	108	54	48	102	62	42	103	80	47	127	63	70	133	54	56	110	32	52	84	28	22	50	373	336	709
Melka Chefe	Melka Chefe	147	142	289	90	129	219	93	71	164	102	116	218	106	90	196	102	119	221	102	72	174	140	106	246	735	703	1438
	Tatayitu	42	38	80	46	54	100	40	37	77	38	33	71	47	53	100	34	55	89	35	52	87	10	26	36	250	310	560
	Korane	43	42	85	33	29	62	29	25	54	32	45	77	39	40	79	12	23	35	16	18	34	17	17	34	178	197	375
	Abiyot Fire	58	43	101	43	42	85	54	43	97	48	44	92	30	32	62	20	27	47							195	188	383
	Eihisan	40	51	91	45	41	86	53	39	92	29	18	47	27	24	51										154	122	276
	Agamsa K.01	16	10	26	13	15	28	27	13	40	23	17	40													63	45	108
	Adey Abeba	9	7	16	5	5	10	5	0	5	1	4	5													11	9	20
Srinka	Srinka	34	28	62	35	22	57	26	30	56	42	39	81	96	76	172	40	67	107	87	66	156	102	58	160	428	361	789
	Gola	36	20	56	31	19	50	29	16	45	20	24	44													80	59	139
	Abuare	27	24	51	30	34	64	25	23	48	28	18	46													83	75	158
	S/Gerado	31	25	56	63	28	92	40	36	76	43	25	68	43	26	69	58	50	108	52	45	97	49	43	92	348	253	601
	Gubara	51	35	86	31	45	76	36	21	57	39	37	76	32	40	72	24	30	54							162	173	335
Wurgesa	Wurgesa	106	75	181	83	73	156	98	74	172	75	90	165	73	84	153	64	54	118	85	51	136	90	70	160	568	496	1064
	Amsale	78	70	148	73	65	138	56	47	103	70	80	150	59	51	110	45	58	103	48	47	95	73	48	121	424	396	820
	Burka	27	42	69	50	54	104	46	43	89	42	56	98	26	38	64	17	33	50	22	39	61	7	26	33	210	289	499
	Gubaroba	12	19	31	11	14	25	7	12	19	10	6	16													28	32	60
	Genfo Chefe	30	26	56	36	34	70	40	25	65	45	31	76	48	24	72	44	49	93	29	34	63	40	31	71	282	228	510
SrinkeAvo	S/ Aygebir	33	13	46	36	20	56	17	20	37	28	24	52	52	43	95	63	50	113	55	34	89	54	48	102	305	239	544
	Senbo	29	16	45	29	25	54	17	24	41	26	17	43													72	66	138
	Merto	41	42	83	45	37	82	59	43	102	42	30	72	66	49	115	30	30	60	78	74	152	57	52	109	377	315	692
	Chefemedda	14	23	37	27	11	38	19	14	33	26	15	41	39	36	75	18	17	35							129	93	222
Kosero	Kosero	24	15	39	19	22	41	23	17	40																42	39	81
	Sub Total	1213	1045	2258	11002	21138	10388	8438	18808	10566	9668	20228	10288	9608	19848	7538	8368	15898	8038	7138	15198	8068	6708	14768	65846	60026	12586	

Schools of Habru Woreda During 2005 E.C Academic Year

Cluster	Schools	Grades																					Total					
		1			2			3			4			5			6			7			8			M	F	T
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T			
Mehal Amba	Wrekalo	27	24	51	27	28	55	30	23	53	28	27	55	21	29	50	22	29	51	10	29	39	28	10	38	166	175	341
	GetawKeye	35	25	60	26	28	54	21	30	51	26	30	56	6	20	26	3	7	10	18	17	35	13	12	25	113	144	257
	Selelkula	35	33	68	28	29	57	32	19	51	22	19	41	16	19	35										98	86	184
Mehal Amba	Meh/Amba	105	94	199	107	120	227	76	104	180	90	102	192	86	111	197	40	70	110	57	63	120	39	22	61	495	592	1087
	Guni	22	34	56	38	24	62	30	17	47	20	22	42													88	63	151
Dule Chefe	Dule Chefe	50	42	92	53	49	102	44	38	82	60	70	130	67	43	110	75	75	150	88	42	130	66	38	104	453	355	808
	Sidakeye	28	22	50	34	28	62	35	20	55	15	40	55													84	88	172
	Mari/Meret	22	16	38	27	29	56	19	29	48																46	58	104
	Woinwuha	22	21	43	20	20	40	27	16	43	17	24	41													64	60	124
Girana	Girana	136	134	270	116	151	267	84	82	188	64	80	144	90	122	212	67	75	142	57	59	116	45	48	93	523	617	1140
	Guba	35	26	61	25	22	47	12	18	30	21	23	44	15	33	48	10	13	43							83	109	192
	Adekemer	25	32	57	14	24	38	14	15	29	26	17	43													54	56	110
	Denbelguba	15	14	29	6	10	16	14	14	25	12	14	26													32	35	67
	Waytekilo	53	45	103	27	42	69	28	41	69	28	40	68	31	48	79	24	35	59	12	38	50	6	16	22	156	260	416
Zufan Abo	Zufan Abo	44	34	78	70	38	108	56	30	86	46	35	81	37	61	98	39	55	94	59	52	111	41	16	57	348	287	635
	Ab/ Meda	26	21	47	25	35	60	18	22	40	20	14	34													63	71	134
	Juru Genda	34	16	50	24	30	54	27	20	47	17	22	39													68	72	140
	A/ Shola	31	29	60	52	35	87	33	20	53	22	24	46													107	79	186
Tinoo Amaba	T/ Amaba	68	47	115	66	67	133	56	63	119	40	37	77	40	36	76	27	28	55	15	17	29	25	21	46	269	266	535
	Woydu	16	19	35	25	13	38	17	17	34																42	30	72
	Abbeyne	31	19	50	16	19	35	20	22	42	24	16	40													60	57	117
	Diko	20	13	33	27	22	49	45	36	81	29	29	58	37	40	77	28	20	48	13	14	27	15	42	27	194	173	367
	Jarota	66	43	109	34	27	61	35	34	69	35	38	73	19	27	46	14	12	26							137	138	275
Gorarba	Gorarba	69	47	116	37	44	81	45	38	83	49	45	94	59	50	109	29	39	68	27	25	52	10	24	34	256	265	521
	Denbel	23	27	50	30	28	58	20	20	40																50	48	98
	Dudarba	24	29	53	26	26	52	13	15	28	25	7	32	49	38	87	39	41	80	34	50	84	26	63	89	212	240	452
	Wolteke	18	9	27	23	18	41	15	16	31	20	15	35													58	49	107
Goalhalo	Goalhalo	41	42	83	42	43	85	31	42	73	40	54	94	45	63	108	53	74	127	36	42	78	15	35	50	262	353	615
	Goshwuha	23	22	45	28	22	50	22	16	38	18	21	39	14	17	31	28	24	52							110	100	210
	Wachota	17	27	44	29	36	65	23	22	45																52	58	110
	HM/ulawula	33	23	56	28	22	50	21	20	41	12	22	34													61	64	125
Sub Total		119	102	228	113	112	229	963	919	1901	826	887	1713	632	757	1389	498	597	1115	426	448	871	329	347	646	4804	5048	9852

Schools of Habru Woreda During 2005 E.C Academic Year

Cluster	Shools	Grades																								Total					
		1			2			3			4			5			6			7			8								
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T			
Kilole	Kilole	26	24	50	26	11	37	18	23	41	31	49	80	27	30	57	22	22	44										124	135	259
	Birayle	9	8	17	7	6	13	4	9	13																			11	15	26
	Korkie	23	30	53	30	18	48	28	23	51	17	20	37																75	61	136
	Kerem	25	25	50	42	23	65	23	23	46																			65	46	111
	Dana	22	18	40	46	52	98	31	28	59	35	36	71	44	58	102	31	26	57										187	200	387
Haro	Darimo	6	6	12	12	5	17	17	10	27																			29	15	44
	Haro	27	18	45	36	40	76	30	35	65	40	49	89	94	77	171	55	72	127	64	95	159	24	26	50	343	394	737			
	Alimenta	13	9	22	12	13	25	19	3	22	11	16	27	20	9	29	11	13	24	25	20	45							98	74	172
	Haro Buke	10	11	21	23	17	40	27	11	38																			50	28	78
	Agamsa K.02	7	8	15	13	10	23	12	8	20																			25	18	43
Tilife	Hamaro	14	21	35	24	11	35	20	18	38	19	17	36																63	46	109
	Tilife	29	19	48	32	31	63	15	22	37	22	21	53	31	34	65	40	40	80	11	31	42	4	13	17	155	202	357			
	Worewollo	10	12	22	14	9	23	10	16	26	23	9	32																47	34	81
	Dodota	10	9	19	13	12	25	9	4	13																			22	16	38
	Jimaber	13	9	22	28	12	40	23	10	33																			51	22	73
Habru Ligo	Habru Ligo	30	34	64	62	82	144	53	44	97	27	32	59	36	41	77	47	47	94	28	55	83	28	78	106	281	379	660			
	Ligo	29	44	73	39	30	69	23	28	51	19	31	50	10	21	31										91	110	201			
	Kulbayne	26	26	52	41	44	85	34	31	65	27	55	82	27	51	78	31	45	76	25	60	85	13	26	39	198	312	510			
	Jejeba	18	13	31	11	22	33	12	10	22	9	20	29	10	8	18	10	20	30										52	80	132
	Kiltu	36	41	77	25	50	75	22	26	48	23	33	56	21	26	47													91	135	226
Meneyo	Suba	10	15	25	19	14	33	17	13	40	17	15	32																53	42	95
	Meneyo Ruga	36	57	73	35	36	71	28	23	51	16	26	42	40	25	65	50	36	86	39	57	96	33	38	71	241	241	482			
	Meneyo Kelina	22	18	40	30	23	53	14	16	30	22	10	32	23	17	50	16	25	41										105	91	196
	Kolobo	28	29	57	26	29	55	17	17	34	26	19	45	36	40	76	17	38	55										122	143	265
	Merkota	11	9	20	12	8	20	10	7	17	7	7	14																29	22	51
Ficrano	Fignano	27	21	48	47	38	85	25	42	67	26	13	39	54	68	122	51	63	114	19	20	39	27	49	76	249	293	542			
	Chancho	20	20	40	20	29	49	14	16	30	21	21	42																55	66	121
	Jelalaber	13	17	30	16	10	26	13	16	29	21	16	37	19	17	36	19	30	49										88	89	177
	Denbi	20	21	41	22	23	45	15	16	31	20	18	38	23	20	43	35	40	75	33	31	64	22	38	60	170	186	356			
	Wilagoba	16	41	57	30	25	55	18	16	34	25	20	45	22	11	33	25	20	45	6	10	16	33	45	78	159	147	306			
Belino	Abegar Genda	26	16	42	23	13	36	16	9	25	10	14	24	26	16	42	15	18	33										90	70	160
	Wachu	13	11	24	14	15	29	11	8	19																			25	23	48
	Belino	28	12	40	19	16	35	23	23	46	22	24	46	13	25	38	21	25	46	11	33	44	2	15	17	111	161	272			
	Kejima	14	16	30	17	19	36	10	19	29	41	44	85	13	13	26	30	28	58										111	123	234
	Chisa	19	16	35	28	21	49	32	22	54																			60	43	103
Direroka	Hudadu	32	21	53	48	49	97	21	20	41																			69	69	138
	Hochochoch	16	17	33	16	17	33	20	29	49	25	27	52	18	16	34	13	29	42										92	118	210
	Direroka	43	34	77	41	40	81	40	42	82	25	38	63	29	43	72	45	62	107	35	45	80	12	11	23	227	281	508			
	Karalecha	14	20	34	20	14	34	14	15	29	5	13	18																39	42	81
	Ajomedda	21	19	40	23	23	46	14	14	28	14	18	32																51	55	106
Sub Total	Rebu	17	16	35	29	20	49	21	22	43																			50	42	92
		829	831	1642	1071	980	2051	823	787	1620	646	731	1387	636	666	1312	584	699	1283	296	457	753	198	339	537	4254	4669	8923			
Total		324	288	6128	3301	312	6422	282	254	5369	252	259	5122	229	238	4679	183	213	3967	152	161	314	133	132	265	1564	1571	3136			
		3	5		1			4	5		8	4		6	3		5	2		5	8		3	3	6	9	2	1			