



## **Knowledge on Menstrual Hygiene among Adolescent Girls Studying in Grade 8-10 in Private School of Dailekh District, Nepal**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. Author HT designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors MKO and Author SA managed the analyses of the study. Author SA managed the literature searches. All authors read and approved the final manuscript.*

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### **ABSTRACT**

**Background:** Adolescence is a significant period in the life of a woman. The beginning of menstruation represents the girls' mild stone of pubertal development or maturity. Good menstrual hygiene is crucial for health. Lack of proper menstrual hygiene in adolescent period can have an effect on their health. (Abisola Monisola Oladimeji, 2014) Menstrual health issue has remained in dark for a longer period of time in Nepal. Lack of proper education and socio cultural barriers has led to knowledge gap on menstrual hygiene and health amongst adolescent female in Nepal.

**Objective:** The main objective of the study was to assess the knowledge on menstrual hygiene among adolescent girls studying in grade 8 to 10.

**Methodology:** This study was conducted in Nayaran Municipality, Dailekh. Study design was descriptive cross-sectional study. The study population was adolescent girls studying in grades 8 to 10 in selected private schools of Dailekh district, Nepal. The sample size in this study was 173

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subjects. Data was taken by self-administered questionnaires. Data analysis was done by SPSS, version 21.0.

**Major Finding:** Only 40.6% of respondents had good knowledge on ideal time to change absorbent. 75.8 % respondents were aware of the importance of bathing during menstruation. Around 83.9 % respondents had good knowledge on significance of using clean clothes during menstruation and more than 88 % respondents had good knowledge on menstrual blood. 40% responded that menstrual blood is unhygienic. Out of five menstrual hygiene related questions, good knowledge was found among 48 % respondents while 52 % had poor knowledge. 10-19 age-group girls had good knowledge on menstrual hygiene than 10-15 years age group. Students of grade 10 had better knowledge among the respondents. Hindu girls had more knowledge than girls of other religion. Similarly, respondents from nuclear family had better knowledge than those of joint family. Higher the monthly income of family, better the knowledge about menstrual hygiene was observed. Girls of parents having higher secondary level education had better knowledge on menstrual hygiene than illiterate, primary and secondary level educated parents.

*Keywords: Adolescent girls; menstruation; knowledge; attitude; practice.*

## ABBREVIATIONS

AFHF	: Adolescent friendly health facility
AFHS	: Adolescent Friendly Health Service
ANC	: Antenatal care
ANC	: Auxiliary Nurse Midwife
ASRH	: Adolescent sexual and reproductive health
BCC	: Behaviors Change Communication
BN	: Bachelor Nursing
BNMT	: British Nepal Medical Trust
CBO	: Community Based Organization
CBS	: Central Bureau of Statistics
CSE	: Comprehensive Sexuality Education
DHO	: District Health Office
DPHO	: District Pupolic Health Office
DWSS	: Department of Water Supply and Sanitation
FHD	: Family Health Davison
GON	: Government of Nepal
IEC	: Information Education and Communication
INGO	: International non government organizations
KAP	: Knowledge Attitude and practice
KII	: Key Informant Inicrvicw
MA	: Medical Abortion
MH	: Menstrual Hygiene
MHHM	: Menstrual Hygiene and Health Management
NAYS	: Nepal Adolescent and Youth Survey
NDHS	: Nepal Demographic Health Survey
PNC	: Postnatal care
SN	: Staff Nurse
SPSS	: Statistical Package for the Social Sciences
WHO	: World Health Organization

## 1. INTRODUCTION

### 1.1 Background

Menstruation signals a girl's entry into womanhood, sexual activity, and reproduction and as it is very important time to learn about

bodily changes and health. Young girls do not properly practise menstrual hygiene because of insufficient knowledge and awareness about menstruation. In contexts of Nepal only 50% of the girls practice good menstrual hygiene because they have some knowledge and education about menstrual hygiene. Lack of

proper care and hygiene during menstruation negatively affects the health and education. Menstruation, also known as a periods is the regular discharge of blood and mucosal tissue from the inner lining of the uterus through the vagina [1-5]. In many societies menstruation is perceived as harmful, dirty and shameful however, it is a normal physiological phenomenon [6-9]. Millions of women and girls do not have adequate knowledge and information about menstrual hygiene. They have no access to health care facility, education centres and schools which has led to problems relating to menstrual health [10]. During menstruation period every women needs safe environment, private and secure space for changing their sanitary pads which is scarce in rural area. In many cultures menstruation is considered a curse and girls and women stay away from their daily household activities during menstruation [11] Many cultures make restriction about cooking, going to school, bathe or touch anyone during their menstruation. [12] This hinders girl's active participation in society and which affects their intellectual development and participation in societal task.

Inadequate practicing of good menstrual hygiene makes girls and women vulnerable to reproductive tract infection which may lead to lifelong infertility and other major reproductive health related problem [13-22]. Infected mothers transmit infection to their newborn if they were not treated [23]. For the betterment of the health of adolescent girls and women, they need to adopt and practice good menstrual hygiene which demands adequate access to quality sanitary pads and other accessories which helps to strengthen their menstrual hygiene and reproductive health [24]. According to UNICEF, one third of South Asian girls do not have any knowledge about menstruation before menstruate; in Iran 48% and in India 10% girls thought that menstruation as a physical disease [12].

Data indicates, approximately 10 % of women all over the world are exposed to genital infections including urinary tract infections and bacterial virginites, and 75 % of women have a history of a genital infection per year [25-33]. The common risk factors for vaginal infections include pregnancy and poor hygiene (both perennial and menstrual hygiene. According to the African studies about the practice of sanitary pads, lower than 18 % amongst Tanzanian women were found using cloth and toilet paper. Likewise, the

other study Studies done at of the school in Nigeria found, between 31 and 56 % using toilet tissue paper or cloth to absorb their menstrual blood besides safety pads.

An Ethiopian study showed that, though 92 % students were aware regarding menstruation before menarche, sanitary napkins utilization was 37.6 %. Likewise, 62.4 % were using rags and pieces of cloth. Eleven percent of girls in Ethiopia exchange their menstrual cloths once a day [34-38].

Ethiopian girls are at the risk of genitourinary tract infections because of their unhealthy practices during the menstruation which may lead to further complication if left untreated [39-44].

As menstrual hygiene gives rise to the RTI, it is very essential for every female to take care of their Personal hygiene related practices in menstruation period [45-47].

The interconnection between the socio-economic status, menstrual hygiene practices and RTI are noticeable. The complication of RTI could transfer the infection to the children of pregnant mother. Thus, use of sanitary pads, and frequent cleaning of the genital parts are needed during menstruation [48-52]. Women and girls of the reproductive age group need to use clean as well as soft absorbent sanitary products, to protect their health.

During menstruation, girls do not have easy stigma-free access to sanitary pads and safe disposal of used pads is a problem. The situation is such that girls feel shameful if someone knows of her menstrual state. School girls face many problems while replacement of their used sanitary pads due to lack of clean and private toilets in the school area [53-57]. Many do not go to school during menstruation [58] Lack of concern about menstrual hygiene in school and other public area it is huge unseen problems of the society. During menstruation, every girl needs to use safe and effective sanitary pads, keep proper hygiene of the genital area and have proper nutrition without which they may suffer from reproductive tract infection and pelvic inflammatory diseases and their complications may worsen the girls life further [59].

## 1.2 Justification of the Study

Menstruation signals a girl's entry into womanhood, sexual activity, and reproduction and as the menstrual period is the important time for each and every adolescent girls because at

that time curious bodily change occur in their body. Lack of effective knowledge about menstruation leads to unhealthy menstrual practice. About 50% of the adolescent girls in Nepal do not have good knowledge about menstruation so only limited girls practice good menstrual hygiene. Without proper hygiene many girls face problems such as school education, infectious disease, emotional well-being and overall quality of lives. During menstruation in nepali society many girls face social discrimination; they are devolved from daily normal life. Child marriage is illegal in context of Nepal but, one fourth girls are still married before the age reaching to 19. The average age of marriage in Nepal is around 17 years which is very low in context of the world. In especially rural areas or Nepal about 80% of women bear their child in first 15 – 19 years of age while in urban area is it little bit lower which is about 33%. Large numbers of girls are facing withdrawal and prohibition which is due to a reason of old tradition of Nepal called Chhaupadi, which is most dominant, is in the Midwestern and far western region of the Nepal where menstruating women leave home and live in a chhaugoth (cowshed or hut) is still practicing in somewhere in Nepal. Menstrual restrictions and traditional beliefs vary by ethnicity; for example, Hindu ethnic groups such as Brahmin, Chhetri, and Newer, have more restrictions than Janajatis` (ethnic Nepal's).

In Nepal there are lesser research conducted about the menstrual hygiene among school aged girls. Adolescent girls still lack adequate knowledge and practices of good menstrual hygiene and reproductive health. Without sufficient knowledge and education about the normal physiological process about menstruation and about adopting healthy practices to take care of menstrual blood and inadequate supply of safe water in school and home has led to menstrual disorder and reproductive tract infections. According to UNICEF fewer number of public schools make separate toilet facilities for girls which is about 28%. As per the Central Bureau of Statistic Nepal in 2011, 38% of households did not have a toilet. World Bank report shows in 2015, only 46% of the population in Nepal had access to improved sanitation facilities. The menarche is the time during when the girls feels confusion and experiences fear about it. Many girls use cloths instead of sanitary pad in Nepal one study of water aid shows that around 15% girls only use sanitary pads during menstruation but 83% uses the piece of cloths. They get

information related to menstruation from schools, siblings, mothers, and friends. The school is the main source of key information about menstruation and reproductive health. The knowledge about the reproductive and menstrual health helps each and every girl to manage their menstrual period and make improvement of reproductive health. In this context, our intention for this study is to generate a comprehensive overview of knowledge on menstrual hygiene among adolescent girls of grade 8 to 10, in Nepal. Therefore, this study is aimed to assess the knowledge of menstrual hygiene among high school girls in central Nepal. The information obtained from this study will be used by high level authority of policy making system so that it helps to initiate the educational program related to menstrual hygiene and other several packages for schools, hospitals and community to improve the reproductive health of the adolescent girls and all women.

## **2. OPERATIONAL DEFINITIONS**

### **2.1 Adolescent Girls**

Adolescence is the transitional period between childhood and adulthood. Girls aged 10 to 19 years are adolescents.

### **2.2 Menstruation**

A biological process in a woman where each month blood and other material is discharged from the lining of the uterus. Menstruation occurs from the onset of puberty until the menopause, except during pregnancy. It is also called the "monthly period".

### **2.3 Menstrual Cycle**

The Menstrual Cycle is the regular natural change that occurs in the female reproductive system that makes pregnancy possible.

### **2.4 Menstrual Period**

Menstrual period is the periodic shedding of the lining of a woman's uterus. It is one of the phases of the menstrual cycle. The uterine lining breaks down into a bloody substance. It then passes down through the cervix and exits through the vagina. The process usually lasts from three to five days.

### **2.5 Menarche**

Menarche is the first menstruation bleeding, in female. It is considered as the central event of

female puberty, as it signals the possibility of fertility.

## 2.6 Menstrual Hygiene

The (i) articulation, awareness, information and confidence to manage menstruation with safety and dignity using safe hygienic materials together with(ii) adequate water and agents and spaces for washing and bathing with soap and (iii) disposal of used menstrual absorbents with privacy and dignity. Above the mean right answer of the knowledge on menstrual hygiene will be called the good knowledge on menstrual hygiene and below will be called poor knowledge on menstrual hygiene.

## 2.7 Menstrual Absorbent

It is a sanitary cloth, napkin, towel or pad used by the women during their menstruation as an absorbent item. The material absorbs the flow of blood from her vagina.

## 2.8 Menstrual Waste

Includes a used sanitary cloth, napkin, towel or pad that contains menstrual blood.

## 2.9 Education Level of Parents

Those who are able to read and write are educated and who are not able to read and write are uneducated.

## 2.10 Primary

Who can read and write and who have schooling up to class five.

## 2.11 Lower Secondary

Formal education up to lower secondary level (6 to 8 class).

## 2.12 Secondary

Formal education up to secondary level (9 to 10 class).

## 2.13 Higher Secondary

Formal education up to higher secondary level (11 to 12 class)

## 2.14 Campus

Above the higher secondary level.

## 2.15 Ethnicity

Ethnicity of Nepali will be divided in 7 different groups as; Brahman/ Chhetri, Madhesi, Newer, Dalit, Muslim, Janajatis and others.

## 2.16 Religion

Study group will be categorized as Hindu, Buddha, Christian, Muslim and other religion.

## 2.17 Nuclear Family

Family with their parents & children.

## 2.18 Joint Family

Family with parents & children including other family members.

## 3. RESEARCH METHODOLOGY

### 3.1 Study Design

Study design descriptive cross-sectional study.

### 3.2 Target Population

Students studying in grade 8 to 10 in selected private schools of Dailekh district, Nepal.

### 3.3 Study Site and Area

This study was conducted in a Nayaran Municipality of Dailekh District, Nepal. It lies under federal state number 6 as per the new constitution of Federal Democratic Republic of Nepal. The total area of Dailekh district is 1,502 sq. km and had a total population 2, 61,770 in 2011(en.wikipedia.org, 2018)

### 3.4 Study Period

This study was carried out from January 2018 to August 2018.

### 3.5 Sample Size

Sample size needed in the present study was calculated according to the formula

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

z = normal score corresponding to 95% CI i.e. 1.96

P=87% = 0.87(Parajuli P, 2016)

q= 1-p = 1-0.87 = 0.13

d = precision of estimate/ Allowable error limit/  
level of significance = 5%= 0.05.

$N = (1.96)^2 \times 0.87 \times 0.13 / (0.05)^2 = 173$

According to above formula the sample size of the study will be 173.

### 3.6 Inclusion Criteria

- Adolescent girls studying in grade 8 to 10 from selected private schools.
- Respondents should be in the age of 10-19 years students and willing to respond.
- Respondents should be experienced at least menarche.

### 3.7 Exclusion Criteria

Students who deny participation and response.

### 3.8 Sampling Technique

Convenience sampling technique was used for selecting respondents

### 3.9 Data Collection Technique and Tools

Data was taken by self-administered questionnaires. Questionnaires were designated in English for purpose of data collection. A letter of consent was taken from each respondent before given the self-administered questionnaire. A brief review was given verbally by investigator before distribute questionnaire regarding the purpose and importance of the study. Data will be collected myself to minimize the sampling error.

### 3.10 Data Management & Analysis Plan

After collection of the data, all self-administered questionnaires were checked for completeness, correctness and internal consistency to exclude missing or inconsistent data and those will be discarded. Only the complete set of questionnaire will be taken. Data was input in computer software and then analysed.

The computer software named Statistical Package for the Social Sciences (SPSS) version 21.0. Appropriate statistics such as mean,

median and standard deviation was used. Linkert scale was used to analysis the knowledge level of adolescent girls on menstrual hygiene.

### 3.11 Quality Control and Assurance

For maintaining quality control and quality assurance of this study, following strategies were applied:-

- a. Designed questionnaires will be developed according to objectives of study.
- b. For feasibility, approximate standard questionnaires will be tested before going to actual data collection from the field.
- c. The questioner will be administrated in English and Nepali language
- d. Regular check the questionnaires for completeness.
- e. Researcher himself will be employed for the collection of the data.
- f. Data management and cross checking will be assured by the researcher to maintain the quality of data
- g. Data analysis and final report writing will be conducted by researcher

## 4. RESULTS

### 4.1 Part A: Socio Demographic Characteristics

There were 173 respondents who were accessed for their socio demographic character. Inside socio demographic character, age of respondents, number of students in different class, age of menarche, religion of the respondents, caste of the respondent, types of family, education status of father and mother, occupation of father and mother, monthly income and living were noted.

Among 173 respondents, there were 139 respondents (80.3%) girls of age group 14 - 16 years who had participated in the study which was followed by 31 (17.9%) of age group 10 - 13 years and 3 (1.7%) of age group 17 - 19 year. 96 (55.5%) students were studying in class 10 49 (28.3 %) in class 9 and 28 (16.2%) respondents in class 8. Among 173 respondents there were 66 (38.2%) respondents who had menarche at the age of 13 years, 45 (26%) of them had in 12 years, 44 (25.4%) had menarche in 14 years and 2 (1.2%) of them had menarche in 10 years of age. Generally the age of menarche in Nepal is 12-13 years. In the study, 13 years was found average age of menarche (38%) followed by 12 years (26%) girls. Due to the climate change and

nutritional habit, the age of Menarche is reducing. There were 120 girls who followed Hindu religion, 41 of them were following Buddhist and only 1 followed Muslim religion. The ethnicity status was 24 (13.9%) caste of Bahaman followed by 76 (43.9%) Chhetri, 19 (11.0%) Magar, 5(2.9%), Gurung, and 49 (28.2%) others Caste. Similarly, 115 (66.5%) respondents family was Nuclear followed by Joint 58 (33.5%) family. 26 (15.0%) respondents' fathers were illiterate followed by 25 (14.5%) primary, 76 (43.9%) SLC, 20 (11.6%) under graduate, 26 (15.0%), Masters level and above education. Likewise, 46 (26.6%) respondents' mothers' were illiterate followed by 51 (29.5%) primary, 43 (24.9) SLC, 26 (15.0%) under graduation and 7 (4.0%) Masters level or above education. There were 46 (26.6%) illiterate respondents who had participated in the data collection which was

followed by 51 (29.5%) primary, 43 (24.9) SLC, 26 (15.0%) under graduation, 7 (4.0%), education status. 53 (30.6%) of respondents' fathers did business followed by 39 (22.5%) service holders, 27 (15.0%) Agriculture and 54 (31.2%) others occupation. There were 102 (59.0%) respondents' mothers who were housewives followed by 27 (15.6%) in Business, 17 (9.8%) in service, 12 (6.9%) Agriculture, and others 15 (8.7%)., 56 (32.4%) respondents family had monthly income <10,000 who had participated in the data collection, 61 (35.3%) respondents monthly family income was 10,000-25,000, 44 (25.4%), family had 25.000-50,000 income and 12(6.9%) family had >50,000 monthly income. There were 131 (75.7%) respondents with own House and had participated in the data collection which was followed by 42 (24.3%) Rented House.

**Table 1. Socio - demographic character**

<b>Socio Demographic variables</b>	<b>Frequency (n=173)</b>	<b>Percentage (%)</b>
<b>Age of Respondents</b>		
10-13years	31	17.9
14-16years	139	80.3
17-19years	3	1.7
<b>Total</b>	<b>173</b>	<b>100.0</b>
<b>Number of students in different class</b>		
8 class	28	16.2
9class	49	28.3
10 class	96	55.5
<b>Total</b>	<b>173</b>	<b>100.0</b>
<b>Age of the menarche</b>		
10 year	2	1.2
11 year	13	7.5
12 year	45	26.0
13 year	66	38.2
14 year	44	25.4
15 & above 15	3	1.7
<b>Total</b>	<b>173</b>	<b>100.0</b>
<b>Religion of the respondents</b>		
Hindu	120	69.36
Muslim	1	0.57
Buddhist	41	23.7
Christian	6	3.5
Others (non religious)	5	2.9
<b>Total</b>	<b>173</b>	<b>100.0</b>
<b>Caste of the respondents</b>		
Bahaman	24	13.9
Chhetri	76	43.9
Magar	19	11.0
Gurung	5	2.9
Others (Dalit)	49	28.3
<b>Total</b>	<b>173</b>	<b>100.0</b>

<b>Socio Demographic variables</b>	<b>Frequency (n=173)</b>	<b>Percentage (%)</b>
<b>Types of family</b>		
Nuclear	115	66.5
Joint	58	33.5
<b>Total</b>	<b>173</b>	<b>100.0</b>
<b>Education status of father</b>		
Illiterate	26	15.0
Primary	25	14.5
Secondary	76	43.9
Under graduation	20	11.6
Graduation and above	26	15.0
<b>Total</b>	<b>173</b>	<b>100.0</b>
<b>Education status of Mother</b>		
Illiterate	46	26.6
Primary	51	29.5
Secondary	43	24.9
Under graduation	26	15.0
Graduation and above	7	4.0
<b>Total</b>	<b>173</b>	<b>100.0</b>
<b>Occupation of the father respondents</b>		
Business	53	30.6
Service	39	22.5
Agriculture	27	15.0
Others (Daily wedge)	54	31.2
<b>Total</b>	<b>173</b>	<b>100.0</b>
<b>Occupation of the mother</b>		
Housewife	102	59.0
Business	27	15.6
Service	17	9.8
Agriculture	12	6.9
Others (Daily wedges )	15	8.7
<b>Total</b>	<b>173</b>	<b>100.0</b>
<b>Monthly Income of Family (In NRs)</b>		
<10,000	56	32.4
110,000 - 25,000	61	35.3
26,000 - 50,000	44	25.4
>50,000	12	6.9
<b>Total</b>	<b>173</b>	<b>100.0</b>
<b>Rented or own house or living</b>		
Own House	131	75.7
Rented House	42	24.3
<b>Total</b>	<b>173</b>	<b>100.0</b>

#### **4.2 Part B: Knowledge about Menstrual Hygiene**

There were 173 respondents who were accessed for their Knowledge about menstrual hygiene. In this area, knowledge on menstruation, cause of menstruation, source of menstrual blood, knowledge on menstrual interval, hearing of menstruation before menarche, knowledge on menstrual hygiene, knowledge of foul smelling during menstruation, perception about menstrual

blood, source of information regarding menstrual hygiene, isolation practice during menstruation, first experience of menarche, absorbents used during menstruation, number of absorbents used in a day, were asked and following results were obtained.

##### **4.2.1 Knowledge on menstruation process**

Among 173 respondents 74 (42.8%) perceived menstruation as Physiological Process where as 13 (7.5%) considered it Pathological, 63



(36.4%) thought Curse of god and 23 (13.3%) answered didn't know what.

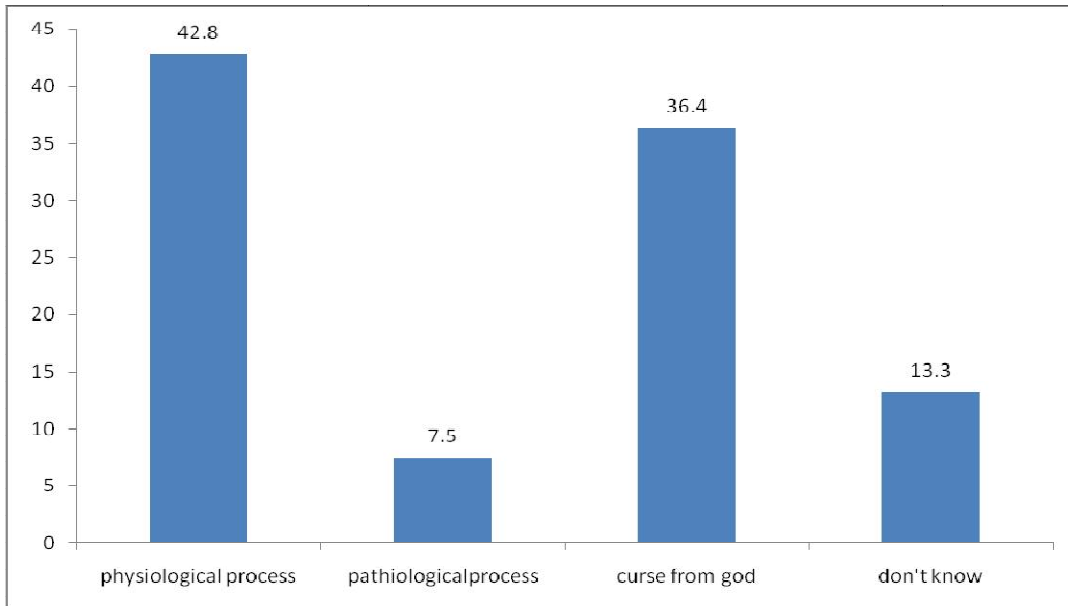
**4.2.2 Cause of menstruation**

Among 173 respondents, 118 (68.2%) of the girls thought that the main cause of menstruation was due to Hormone, 12 (6.9%) said that it is caused by Curse of god, 8 (4.6%) thought it was caused by diseases, and 20.2 % girls didn't know about the causes.

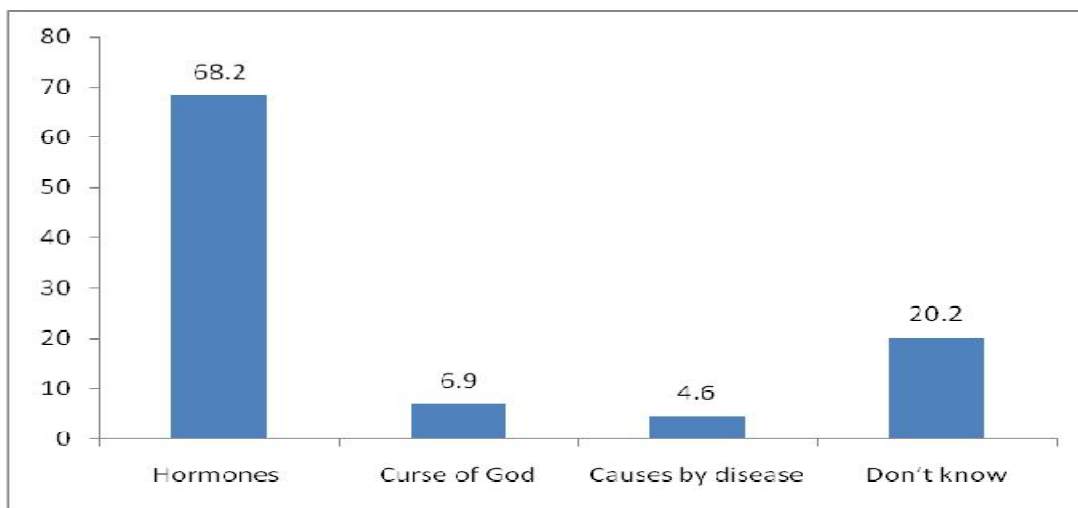
**4.2.3 Source of menstrual blood**

Among 173 respondents, 26.6% (n = 46) said the source of blood is uterus, 39.9% (n = 69) answered vagina, 12.1% (n = 21) said bladder, 0.6% (n = 1) said abdomen and 20.8% (n = 36) said that they didn't know the source of blood.

Among 173 respondents, 22.5% knew that normal menstrual interval occurs in 28 days



**Fig. 1. Knowledge on menstruation**



**Fig. 2. Cause of menstruation**

interval, followed by 52.0% 28-30-day interval, 25.4% 30-day interval.

155 (90%) of them were had not heard about menstruation before the menarche and 18 (10%) had heard about menstruation

**4.2.4 Source of information on menstrual hygiene**

Among 173 respondents, 64.2% of respondents had heard about mensuration from their Mother, 2.3% heard from Father, 20.2% from sisters, 6.4% from Friends, 2.9 % from school and 4.0% heard from Media.

**4.2.5 Material used as absorbents**

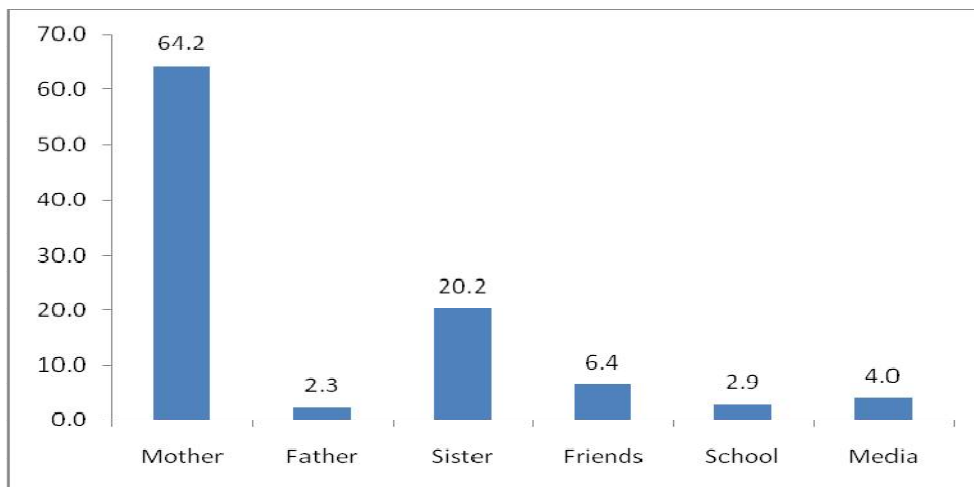
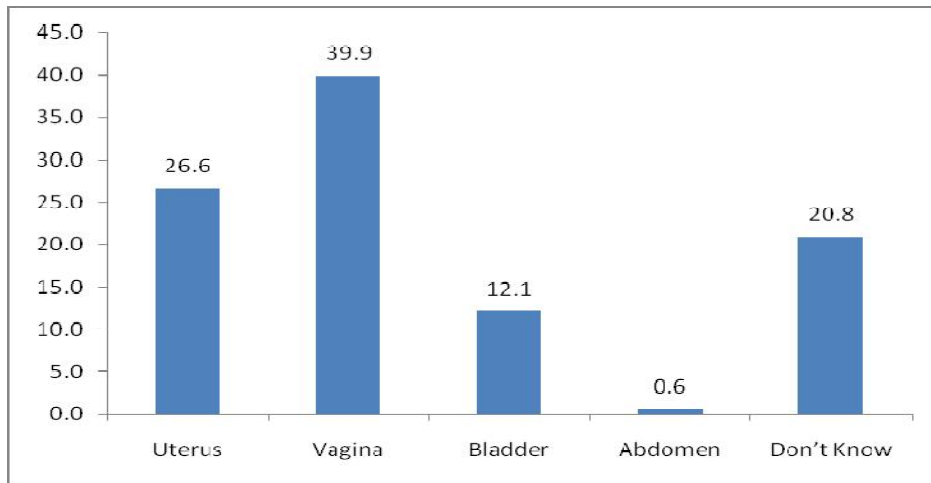
Among all respondents 69 (40%), used sanitary pad as absorbents during mensuration, 37 (21%)

used Clothes, 62 (36%) used both and 5 (3%) use others.

69 (40%) used absorbents once a day, 13 (8%) uses Twice a day, 4 (2%) thrice a day, 87(50%) more than Thrice a day.

**4.2.6 Knowledge on menstrual hygiene**

Forty percent respondents had good knowledge on ideal material and use of absorbent. Only 40.6% of respondents had good knowledge on ideal time to change absorbent. 75.8% respondents had good knowledge on the importance of bathing during menstruation. Around 83.9 % respondents had good knowledge significance of clean clothes during menstruation.



**Fig. 3. Source of information on menstrual hygiene**

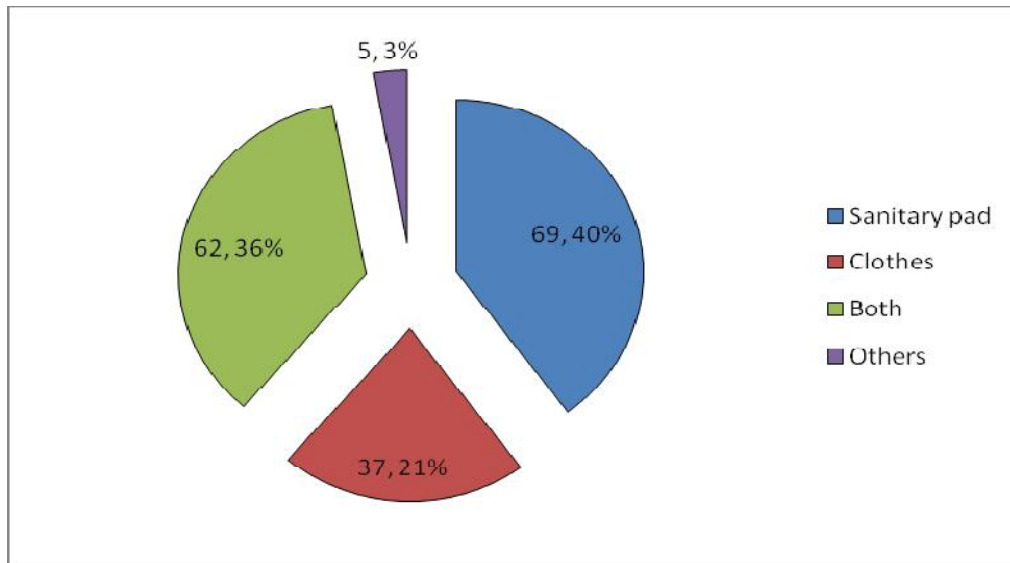


Fig. 4. Material used as absorbents

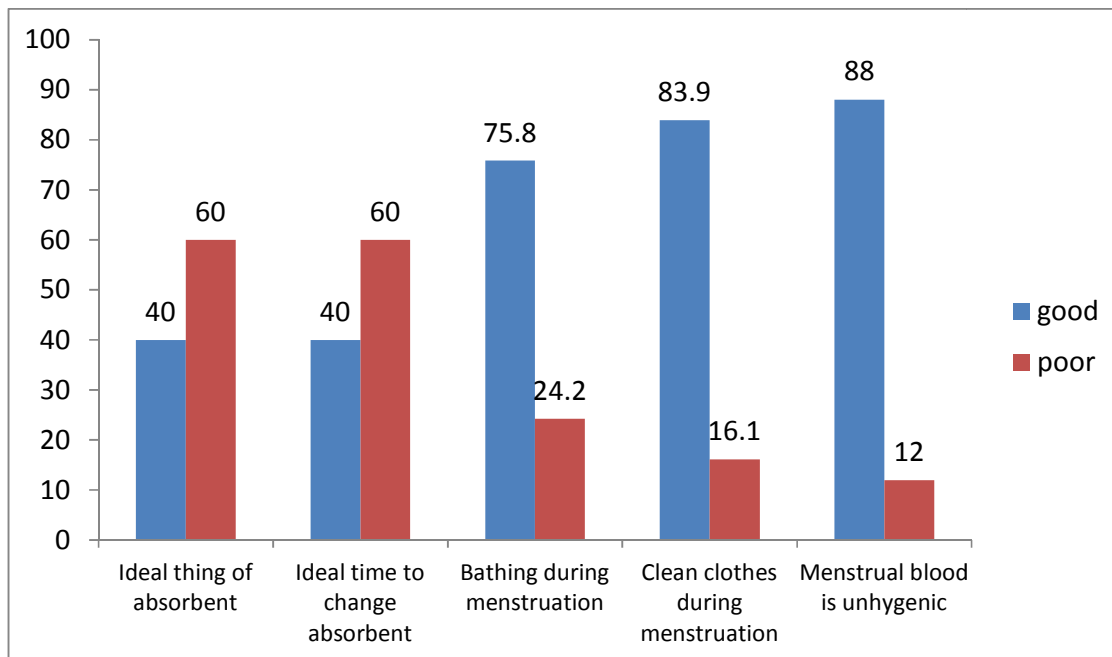


Fig. 5. Knowledge on Menstrual Hygiene

**4.2.7 Comprehensive knowledge on menstrual hygiene**

Out of five menstrual hygiene related questions who correctly answered three or more were categorized as having good knowledge. 48 % had good knowledge and 52 % have poor knowledge.

Respondents from nuclear family had better knowledge than joint family. Higher the monthly income of family, better the knowledge in menstrual hygiene of adolescent girls.

Daughter of with at least higher secondary level education parents had knowledge on menstrual hygiene then illiterate, primary and secondary level educated parents.

Adolescent girls whose mothers occupation was house wife had better knowledge on menstrual hygiene followed by agriculture and job. Fathers whose knowledge was agriculture had more knowledge.

### 4.3 Part C: Knowledge on Menstrual Hygiene

There were 173 respondents who were accessed for their Knowledge about menstrual hygiene. In this area, Knowledge on menstrual hygiene was accessed through 11 questionnaires and following results were obtained.

All respondents agreed on using sanitary pad during menstruation. 44 percent strongly agreed and 39 percent agreed on using commercially made sanitary pad during menstruation. Of all respondents, 49 percent agreed and 2 percent

disagreed on use of clean clothes with soap and water during menstruation. Fifty percent agree and 5 percent strongly disagree on drying cloths under sunlight. 36 percent agreed and 20 percent disagreed on disposal of pads in dustbin . 29 percent agreed and 29 percent disagree on burning of used pads. 34 percent agreed and 19 percent disagreed to wrap and dispose the materials used during menstruation. All most of the respondents agreed on bathing with soap and water during menstruation. 49 percent strongly agreed and 6 percent strongly disagreed on cleaning genital parts during menstruation as well as 50 percent agreed and 7 percent strongly disagreed on cleaning genital parts with soap and water. All most of the respondents agreed on dietary influence on menstruation while 3 percent disagreed in this regards.

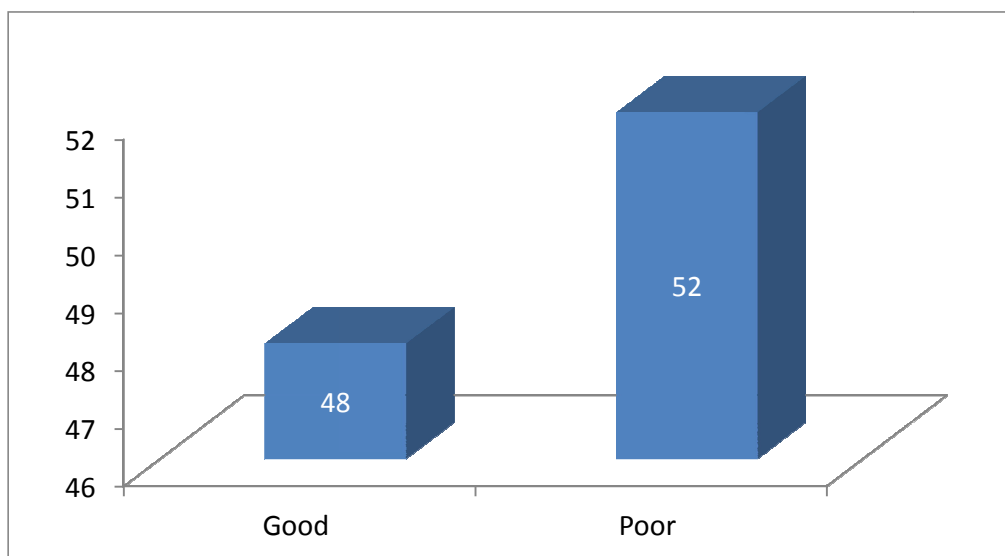


Fig. 6. Comprehensive Knowledge on Menstrual Hygiene

Table 2. Knowledge on Menstrual Hygiene. As per the Educational Status

Variables		Knowledge	
		Good	Poor
<b>Educational Status of Mother of the Respondents</b>	Illiterate	81	19
	Primary	73	27
	Under Graduation	76	24
	Graduation	93	7
<b>Educational Status of Father of the Respondents</b>	Illiterate	81	19
	Primary	76	24
	Under Graduation	75	25
	Graduation	82	18

**Table 3. Knowledge on menstrual hygiene**

<b>Details</b>	<b>Total</b>	<b>SA (%)</b>	<b>A (%)</b>	<b>SD (%)</b>	<b>D (%)</b>	<b>Total (%)</b>
Use of absorbents materials during menstruation	173	0%	100%	0%	0%	100%
Use of commercially made sanitary pad as absorbents material during menstruation	173	44%	39%	10%	7%	100%
Clean clothes with soap and water	173	44%	49%	5%	2%	100%
Dry cloths in sunlight	173	46%	50%	5%	0%	100%
Disposes used sanitary pads in dustbin	173	36%	28%	20%	16%	100%
Burn clothes or pad used in menstruation	173	29%	17%	24%	29%	100%
Use paper to dispose the pads in by wrapping	172	34%	34%	13%	19%	100%
Take bath daily with soap during menstruation	173	50%	49%	1%	1%	100%
Clean external genitalia during menstruation	173	43%	49%	6%	2%	100%
Clean external genitalia with water and soap during menstruation	173	54%	38%	7%	1%	100%
The dietary influence in menstruation	173	31%	66%	2%	1%	100%

## 5. DISCUSSION

Menstruation is a normal biological process and a key sign of reproductive health. Good hygienic practice such as the use of sanitary pads and adequate washing of the genital area is required during menstruation. Women and girl of the reproductive age need to use clean and soft observant sanitary product to protect their health in long run. The main objective of the study was to assess the knowledge on menstrual hygiene among adolescent girl studying in grade 8 -10 in private school Dailekh District Nepal.

Study design was descriptive cross-sectional. The study population was all the respondent girls studying in grade eight to ten were selected from private school of Dailekh District, Nepal. This study was conducted in Nayaran Municipality, Dailekh. The sample size in this study was 173. Convenience sampling technique was used for selecting respondents. Data was taken by self-administered questionnaires. All self-administered questionnaire were entered in the computer software named as Statistical Package for the Social Science (SPSS) version 21.0. Appropriate statistical models such as mean, median and standard deviation was used.

The expected outcome of the study was to identify knowledge of respondent girl on menstrual hygiene, identify the relation between knowledge on menstrual hygiene on socio-demographic factor, and identify the source of menstrual hygiene among adolescent girls.

This study shows that 42.8 percent respondents had good knowledge that menstruation is physiological process. Around 42.8 percent respondent thought menstruation as a pathological process and 7.5 percent thought it is curse of the god. Similar study conducted in Chitwan district, Nepal supported the present study's findings where around 61.8 percent respondents had knowledge on menstruation as physiological process. The study in Chitwan district showed that around 61.8 percent respondents were aware about menstruation as pathological process and 7.9 percent believed it as curse of the god.

More than 52 percent respondents had heard about menarche which was about two times greater than study conducted in Chitwan where 26.4 percent respondents had heard about menarche. 10 percent respondent had experienced menstruation as expected, 7

percent were frightened and 87 confused which are slightly different than study done in Chitwan where 18.10 percent respondent had experienced menstruation as expected, 57.3 percent were frightened and 33.6 confused.

Percent of respondent was 40 who had good knowledge on ideal time to change which was almost similar to the study conducted in Chitwan where 40.6 percent of respondent had good knowledge on ideal time to change. 50 percent respondent had good knowledge on bathing during menstruation which was lower than study done at Chitwan where 75.8 percent respondent had good knowledge on bathing during menstruation.

Around 83.9 percent respondents had good knowledge on clean clothes during menstruation. 80 percent had knowledge on menstrual blood is unhygienic which was similar to the study conducted in Chitwan district where 83.9 percent respondents had good knowledge on clean clothes during menstruation and 86.4 percent have knowledge on menstrual blood is unhygienic.

Mothers were the main source of knowledge for adolescent girls about the menstruation hygiene in both studies. 48% percent of respondent had good knowledge of menstrual hygiene which was slightly lower than the study conducted in Chitwan district where we found 77.3% percent of respondent had good knowledge of menstrual hygiene.

Age group of 15 - 19 years had 79 percent knowledge and 75 percent good knowledge was found among the age of 10-15 years adolescents studying in grade nine. 15 - 19 years had more knowledge which was similar to the study conducted in Chitwan district.

Around 79 percent had good knowledge about menstrual hygiene in comparison with grade eight. The result is similar to the study conducted in Chitwan where Around 79 percent had good knowledge about menstrual hygiene in comparison with grade eight.

## 6. CONCLUSION

Among the respondents, 79.8 % said that the cause of menstruation was hormonal and 20.2 percent were unknown about the cause of menstruation. 90% had not heard about the menstruation before menarche. Mothers were the major source of menstruation information as

64.2%. There were 87% respondents who felt confusion, 68.2% felt their menarche as expected and were frightened. 42.8% respondents thought menstruation is a psychological process.

Hygiene related practices of women during menstruation are of considerable importance, as it has a health impact in terms of increase vulnerability to reproductive tract infection (RTI). The interplay of socio economic status, menstrual hygiene practices and RTI were noticeable. Today millions of women are sufferers of RTI and its complication and often the infecting is transmitted to the offspring of the pregnant mother. Good hygienic practices such as the use of sanitary pads and adequate washing of the genital area were essential during menstruation. Women and girls of the reproductive age need access to clean and soft, absorbent sanitary product which can in the long run, protect their health. 21% were found using cloth, 36% were found using sanitary napkin and cloth and 3% were found using other materials than cloth and sanitary napkin during menstruation.

This cross sectional study on knowledge on menstrual hygiene among adolescent girls studying grade 8, 9 and 10 in public school of Dailekh showed that 55.5 percent adolescents girls found good knowledge, 90 percent heard about menstrual hygiene, major source of information was mother then sister and schools, 6 percent frightened and 25 percent confused in menarche and remaining were expectant, 75.8 percent had good knowledge on clean clothes, 40 percent had good knowledge about bathing, 79 percent have good knowledge on absorbent to use during menstruation, 16-19 years girls have more knowledge (79 percent) than below 16 years, girls from grade 8 have more knowledge than grade nine. Girls from nuclear family have more knowledge about menstrual hygiene.

Seventeen percent have knowledge on menstrual hygiene of age group 16 - 20 years than 11-15 years as 75%. Hindu girls have more knowledge and Dalit have better knowledge have better knowledge. Respondent who have own house have more knowledge on menstrual hygiene than residence in the rental house. Higher the monthly income of family, better the knowledge of menstrual hygiene of menstrual girl. Fathers and mothers who had higher secondary level of education had more knowledge on menstrual hygiene than that that had completed primary and secondary level of education. Adolescent girls whose mothers

occupation was house wife had better knowledge on menstrual hygiene followed by agriculture and job. Fathers whose knowledge was agriculture had more knowledge.

## 7. RECOMMENDATIONS

1. Most of the respondents had not heard about menstruation before menarche, so government should design and implement curriculum including information on menstruation in grade 8 to 10.
2. Mothers (64%) were the major source of information on menstruation, so NGOs and INGOs should focus mothers to implement program on menstrual hygiene.
3. Sanitary pads should be available at schools.
4. In this 21st century, till now females are isolated from home during their menstruation period, NGOs and INGOs should make awareness program on menstruation which prevents females from staying in 'Chaugoth' during their menstruation period.

## CONSENT AND ETHICAL APPROVAL

- a. Informed consent has been taken from each respondents before the data collection
- b. Permission has been taken from the authority of North South University.
- c. Permission has been taken from the authority of School.
- d. Privacy and confidentiality has been maintained.

A letter of consent was taken from each respondent before given the self-administered questionnaire.

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Respondents have the right to refuse and withdraw from the study any time

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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**APPENDICES**

**APPENDIX-A**

**INFORMED DECISION MAKING CONSENT FORM**

**North South University**

**Dhaka, Bangladesh**

Code:

Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Name of the respondent:

I am **Haikali Thapa** student of MPH program in North South University Dhaka, Bangladesh. According to the course requirement, I am conducting a thesis entitled "**Knowledge on Menstrual Hygiene among adolescent girls studying in grade 8 to 10 in private schools of Dailekh district, Nepal**". I would like to invite you to participate in this research study as a respondent. I need some variable information from you for the part of my academic purpose. Your co-operation will be highly appreciable. You can refuse to answer any question(s) or may leave any time you feel like. If your refuse or leave you will not face any problem.

All the information presented here will be kept confidential. Your identity will not be disclosed. Only study-related personnel will be allowed to see the information.

I would appreciate your co-operation. If you agree to join the study please sign at the space indicated below.

.....  
Volunteers Signature and Date

.....  
Investigators Signature and Date

**APPENDIX-B**

**QUESTIONNAIRE**

**Questionnaire for data collection**

**Please fill the blanks and tick where necessary**

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

DD MM YY

Respondent Identification Number:

**Part-A: Questions related to socio-demographic and economic variables**

Name: \_\_\_\_\_

1. Age: ..... Years  
a. 10-13                      b.14-16                      c.17-19
2. Grade.....  
a. 8                                      b. 9                                      c. 10
3. What was your age at first menstruation (in years)? .....  
a.10    b.11    c.12    d. 13    e. 14    f .15 &Above 15
4. What is your Religion?  
a)Hindu    b) Muslim    c) Buddhist    d) Others (Specify).....
- 5 .What is your caste?  
A) Brahmin b) Chhetri c) Magar d) Gerung e) Other (Specify).....
- 6 . Types of family?  
a) Nuclear            b) Joint
7. What is the educational status of your father?  
a)Illiterate b) Primary c) SLC d) Under graduation e) Graduation and above
8. What is the educational status of your mother?  
a)Illiterate b) Primary c) SLC d) Under graduation e) Graduation and above
9. What is the Occupation of your father?  
a) Business    b) service    c) Agriculture d) Others
10. What is the Occupation of your mother?  
b) Housewife b) Business    c) service    d) Agriculture    e) Others
11. What is the Monthly family income of your family (in rupees)?  
a)<10,000    b)10,000 to25,000    c)25,000 to 50,000    d) above 50,000
12. Are you living in own house or rented house?  
a) Own house            b) rented house

**Part B-Knowledge about the menstrual hygiene**

13. What is the menstruation?

- a) Physiological process
- b) Pathological process
- c) Curse from God
- d) Don't know

14. What is the cause of menstruation?

- a) Hormones
- b) curse of God
- c) causes by disease
- d) Don't know

15. What is the Source of menstrual blood?

- a) uterus
- b) vagina
- c) bladder
- d) abdomen
- e) Don't know

16. What is the menstrual interval?

- a) 28 days
- b) 28 -30 days
- c) >30 days

17. Did you hear about menstruation before attaining menarche?

- a) Yes
- b) No

18. Do you know about menstrual hygiene?

- a) Yes
- b) No

19. Do you know that is foul smelling during menstruation?

- a) Yes
- b) No

20. Do you know that menstrual blood is unhygienic?

- a) Yes
- b) No

21. What was the source of information?

- a) Mother
- b) Father
- c) sister
- d) Friends
- e) school/class
- f) TV
- g) Radio
- h) Internet
- i) Books

22. Do you Practice isolation during menstruation?

- a) Yes
- b) No

23. What was your the first experience of menarche?

- a) Confusing
- b) Expectant
- c) Frightened

24. What is the ideal thing to use during menstruation?

- a) Sanitary pad
- b) cloths
- c) both
- d) Others

25. What is the ideal number of absorbents changed in a day in a normal blood loss?

- a) Once a day
- b) Twice a day
- c) Three times a day
- d) more than 3 times a day

### Knowledge on Menstrual Hygiene

S.N	Knowledge on Menstrual Hygiene	Strongly disagree	Disagree	Strongly agree	Agree
26	Use absorbent materials during menstruation				
27	Use commercially made sanitary pad as absorbent material during menstruation				
28	Clean clothes with soap and water				
29	Dry cloths in sunlight				
30	Disposes used sanitary pads in dustbin				
31	Burn clothes or pad used in menstruation				
32	Use paper to dispose the pads in by wrapping				
33	Take bath daily with soap during menstruation				
34	Clean external genitalia during menstruation				
35	Clean external genitalia with water and soap during menstruation				
36	The dietary influence in menstruation				

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