KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) OF MENSTRUAL HYGIENE AMONG ADOLESCENT HIGH SCHOOL GOING GIRLS BETWEEN THE AGES OF 13 TO 18 IN BHUAPUR (TANGAIL), BANGLADESH

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Abstract

Background:

Menstruation is a natural biological process that is experienced by women and it has a great impact on physical and social health. It is important to maintain the menstrual hygiene to reduce different health complications. Due to social norms, lack of menstrual and hygiene knowledge, resources, hygiene products, and menstrual products women and girls can't maintain menstrual hygiene which can increase different health risks for them. Therefore, this study aimed to assess the current KAP of menstrual hygiene among high school-going adolescent girls in Bhuapur (Tangail), Bangladesh.

Methodology:

A cross-sectional study was conducted among four different villages of Bhuapur, Tangail. This study included 300 adolescent girls between the ages of 13 to 18 who were having periods and studying in high school in grades 7 to 10 in Bhuapur. A pre-tested semi-structured questionnaire was used to collect the information from the participants. Data was analyzed by using SPSS software. Besides, the chi-square was calculated to assess the association between independent and dependent variables.

Result:

This study found that 50% of the participants knew about menstruation before their menarche and their source of information was their mother but only 33% knew that menstrual blood came from the uterus. 26% of the participants couldn't do exercises and 15% couldn't eat certain types of food (such as sour, cold water, cucumber, red meat, etc.) during menstruation. Besides, 64% of the participants used sanitary pads 32.7% used reusable clothes and others used new clothes. Among the participants, 73.3% changed their absorbent three times or more in a day and others twice a day. Moreover, only 23% used soap and water to clean their genital area. 76.3% of the participants felt comfortable at school during their menstruation. The result of this study found that those who knew about menstruation before their menarche, were significantly associated with good practices (used sanitary pads) and changed their absorbent regularly means three times or more a day ($P<0.05$).

Conclusion:

According to this study, there was a significant association between menstrual knowledge and practices. Among the participants, who knew about menstruation before their menarche, they showed better hygiene practices. However, many girls still didn't have enough knowledge about menstruation and how to practice menstrual hygiene. Therefore, schools, families and communities can arrange informative workshops for the girls about menstruation and hygiene practices to provide proper information.

1. Introduction

1.1 Background

Menstruation is a natural process of blood loss from the uterus which is experienced by women because of not having fertilization of egg cells by sperm cells (Hastuti et al., 2019). Every 28 days later women go through this menstruation process that stays for 2 to 7 days (Hastuti et al., 2019). When a female adolescent experiences her first menstruation that is called menarche and between 9 to 12 years of age female adolescents experience menarche (Lacroix et al., 2022). It is important to maintain menstrual hygiene during the menstruation cycle because it involves several important aspects and it has an immediate effect on the physical well-being of women who are going through menstruation. Not practicing menstrual hygiene may cause serious health risks including reproductive and urinary tract infections, and due to that women might face infertility and birth complications in their future lives (WBG, 2022). On the other hand, practicing good hygiene by using hygienic and appropriate menstrual products lowers the incidence of pain and infections. It is essential for maintaining mental health and dignity since poor menstrual hygiene can cause insecurity and humiliation, which lowers one's self-worth and limits engagement in everyday activities (Das, 2015). Moreover, menstrual hygiene education is important for developing gender equality because it allows women and girls to make decisions over their bodies and lives. Moreover, comprehending adolescent girls' menstrual hygiene management practices is essential to developing policies that support gender equality, fair education, women's empowerment, health, and the environment by the Sustainable Development Goals (SDGs) (Ha & Alam, 2022). Besides, it is consistent with SDG 3, which strives to guarantee decent health and well-being because poor menstrual hygiene can be the result of infections and other health issues, especially for women and girls. Besides, menstruation hygiene has a big impact on SDG 5 which is women's empowerment and reaching gender equality. Without access to sanitary facilities and period products, women and girls are less able to participate in public life, work, and education. Besides, it also affects SDG 6 which is Clean Water and Sanitation, since maintaining cleanliness during menstruation depends on having access to clean water and sanitary facilities (Sommer et al., 2021).

To maintain proper menstrual hygiene, it is important to have adequate knowledge of how to maintain this hygiene and have to practice it accordingly. Adolescent girls can get information about menstruation from their families, relatives, friends, teachers, and so on. However, the family, relatives, and friends are not willing to provide detailed information

about menstruation to adolescents. Even in many families, both parents and their daughters feel shy to talk about the menstrual cycle. As a result, many adolescent girls get to know about menstruation during menarche. However, girls should have adequate knowledge before menarche about menstruation and how to maintain proper hygiene during the cycle. A lack of high-quality sanitary materials, the social taboo about menstruation, lack of a proper wash, sanitation, and hygiene facilities, and poor facilities for changing the sanitary pads in the school are the reasons for the poor practice of menstrual hygiene among the school-going adolescent girls which increases the risk of health complications (Das, 2015). Menstruation still is a social taboo during menstruation girls can't touch animals, can't touch water pots, or foods that will be eaten by other people, can't attend religious rituals, even many families do not allow girls to go outside during menstruation (Das, 2015). Additionally, while the period cycle is going on, many students miss their school due to feeling uncomfortable, abdominal pain during the cycle, mood swings, fear of leakage of blood and blood stains on clothes, etc., which negatively affects their school performance as well. During menstruation, it is important to clean the genital area properly and change the pads frequently. But most adolescent girls spend a long time around 6-7 hours or more in school and they can't change the sanitary pads for a long time, as a result, they face many health complications in the genital areas.

One study was carried out in Rajshahi, Bangladesh, with the main goal of evaluating the management of menstrual hygiene practices among adolescent girls. Consistent with previous research, this study found a significant statistical association between menstrual hygiene management practices and the following bivariate variables: age at first menstruation, perceived socioeconomic class, fathers' income, family size, age at education, and religion (Ha & Alam, 2022). Another study was carried out in Jashore, Bangladesh, where they found that Most adolescent girls typically learned about their menstruation from their sisters and mothers. Even in this day and age, the majority of school girls still have dreams of clean washrooms, enough water, and safe pad dispensing. However, the majority of them demonstrated proper menstrual hygiene behavior and knowledge (Sultana et al., 2021). But, the limitation of this study is that it focuses only on Rajshahi and Joshore, which is a small geographic area in Bangladesh. Therefore, the conclusions of this study might not accurately show the experiences of all adolescent girls in the entire country. To address this gap, a study was conducted among adolescent high school-going girls in Bhuapur, Tangail to investigate their knowledge and attitude about menstruation, menstrual hygiene, and how they practice maintaining menstrual hygiene. This study was essential to enhancing the lives and

opportunities of adolescent girls in this area since it has broad implications for gender equity, sustainable development, and public health.

1.2 Literature review

According to a World Bank assessment from 2018, at least 500 million women and girls lack appropriate access to menstruation hygiene services (V.G. et al., 2021). Adolescent girls struggle to take care of their menstrual needs in underdeveloped countries because there aren't enough WASH facilities (water, sanitation, and hygiene), they can't get reliable information, the environment isn't right, and there aren't enough support networks. As a result, these obstacles directly affect their basic human rights, such as freedom from discrimination, health care, and education. This results from a lack of knowledge, a lack of awareness, and negative attitudes and actions around menstruation and menstrual hygiene. Moreover, 1.8 billion girls have menstruation each month worldwide; however a significant fraction of this population lacks the knowledge and resources necessary to manage their period suitably and healthfully (Shah et al., 2023).

Merely one out of every two girls in India is aware of menstruation before their first period. Just one out of every two girls gets information about menstruation from their mothers, who serve as the main information source (V.G. et al., 2021). Menstrual Hygiene Management Research has found that one in four women feels pain and itching in the genital area during menstruation (BI, 2015). Moreover, 9% feel pain during urination while the menstrual cycle is going on. This is happening because of using sanitary pads for a long time and using unhygienic clothes, as adolescent girls spend a long time in school, and thus can’t change their sanitary pads for a long time (BI, 2015). Similarly, in India, one study found that a small number of girls use sanitary pads and others use reusable cotton clothes. But most of the time it has been found that reusable cotton clothes are unhygienic as they don’t wash properly and due to social stigma can’t dry those clothes outside under the sunlight and in the open air to kill harmful bacteria. (WA, 2017). Besides, research conducted in Rajshahi, Bangladesh revealed that around 37.7% of adolescent girls regularly used sanitary pads, and 75% of them reprocessed clothing (Ha & Alam, 2022). Due to social taboos and stigma, during menstruation, girls are considered impure, thus they face difficulties talking about menstruation with others. One study has found that in India 10% and in Indonesia 20% of female students think that menstruation is one kind of disease (BI, 2015). Menstruating girls in Pakistan suffer from a lack of knowledge about menstruation and menstrual cleanliness,

which hurts their health (Shah et al., 2023). Many adolescent girls have reported that during menstruation they feel pain, sometimes severe pain, shame, embracement, and fear which leads to absenteeism from school, and many girls drop out as well. Besides, they face bullying by male students and teachers as well during menstruation, thus they decide not to go to school during the menstruation cycle (BI, 2015). Practicing proper menstruation hygiene can decrease many health complications including reducing the infection of the reproductive tract. Not maintaining a good menstruation hygiene practice leads to the infection of the reproductive tract which can bring more complications during pregnancy. According to a study in Pakistan, 38% of participants washed their genitalia and the area around them with soap and water (Shah et al., 2023).

In Bangladesh, many adolescents don't have proper knowledge about menstruation. They feel uneasy talking about this issue with their parents, relatives, or friends as well (Anee et al., 2020). According to the Bangladesh Demographic Health Survey 2014, only 33.7% of girls knew about menstruation before their menarche (Hasan, 2021). Those who know, most of them can't practice proper menstrual hygiene due to lack of access to adequate sanitary materials, and lack of emotional, mental, and physical support during the menstrual cycle (Chandra-Mouli et al., 2017). In Bangladesh, many studies have found that adolescent girls don't maintain their menstruation hygiene properly. Unhealthy practices of menstruation hygiene increase the risk of reproductive tract infections (RTI), sexually transmitted diseases (STD), Human Papillomavirus (HPV) infections, and more health complications during pregnancy (Ha & Alam, 2022). In India, one study found that 86% of girls were not prepared during their menarche, and 64% of girls were scared during the menarche as they didn't have adequate knowledge about menstruation (BI, 2015). In Bangladesh, many adolescent girls feel uncomfortable during their menstrual period and don't participate in many activities and during this period they miss their school as well which interrupts their school performance (Yiadom, 2018). Besides, according to Gujrat's research, 21% of participants avoided exercise while they were menstruating (Parikh & Nagar, 2022).

1.3 Aim of the study

This study aimed to assess the current KAP of menstrual hygiene among high school-going adolescent girls in Bhuapur (Tangail), Bangladesh.

1.4 Objectives

1. To assess the level of knowledge about menstruation and menstruation hygiene among adolescent high school going girls.
2. To assess the attitudes of adolescent girls including perception, beliefs and stigmas associated with menstruation and how these attitudes may affect their menstrual hygiene practices.
3. To evaluate the practices of hygiene maintained during the menstruation cycle in and outside of the school.

1.5 Research questions

1. What was the current knowledge about menstruation and menstruation hygiene among adolescent high school-going girls?
2. What were the attitudes of adolescent girls including perceptions, beliefs and stigmas associated with menstruation?
3. What were the practices of hygiene maintained during the menstruation cycle in and outside of the school?

1.6 Conceptual Framework

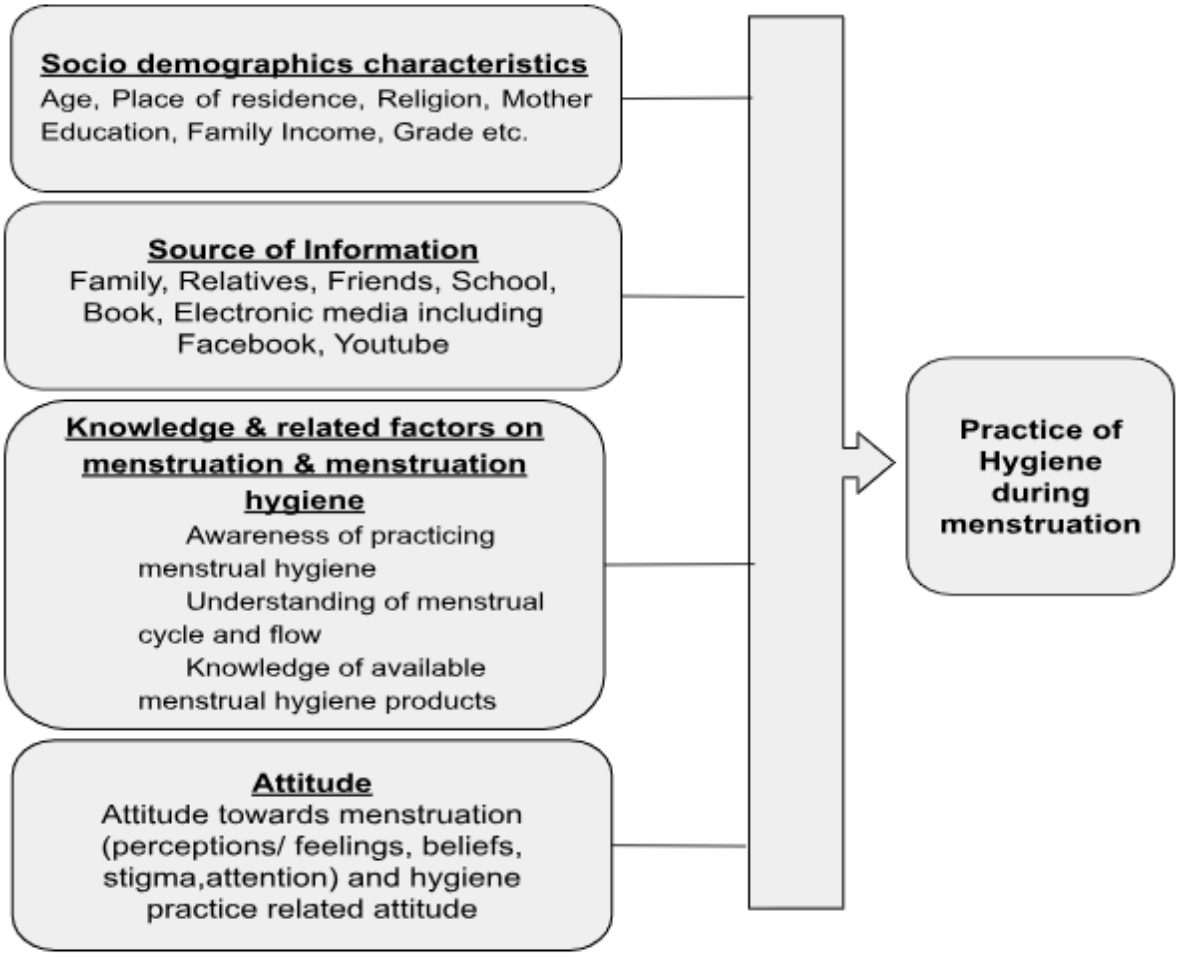

Figure-1: Association between independent and dependent variable

Figure 1 represents the association between independent and dependent variables. Here independent variables are socio-demographic characteristics, source of information, knowledge and related factors on menstrual & menstruation hygiene, and attitude, where the dependent variable is the practice of hygiene during menstruation.

2. Methodology

2.1 Study design: Only a specific period was used for conducting the study by using a questionnaire survey. Consequently, the data it provided was limited to the participants' current knowledge, attitudes, and practices of menstrual hygiene at the time of the study, (the expected schedule was for that, December 2023). The data was first collected and analyzed to determine the participant's KAP level of menstrual hygiene practices.

2.2 Study population: Adolescent girls between the ages of 13 to 18 who were having periods and studying in high school in grades 7 to 10 in Bhuapur (Tangail), Bangladesh.

2.3 Study area: This study was conducted in Bhuapur which is a sub-district of Tangail. Tangail is a district under the Dhaka division. The data was collected from four different villages of Bhuapur upazila (sub-district).

2.4 Sampling Method: First of all, a random sampling method was used to select the villages. Then cluster sampling methods were used to select different geographical locations. After that, a few clusters were selected randomly from those geographical locations. Finally, systematic random sampling was used to select the households for collecting the data.

2.5 Sample Size

The sample size was calculated by using a single proportion formula,

n = sample size required for the study

Z = Standard normal distribution (Z= 1.96) with a 95% confidence interval

p = 0.5

d = Acceptable error which is 6% = 0.06

$$n = \frac{Z^2_{1-\alpha/2}\, p(1-p)}{d2}$$

$= \{(1.96)^2 * 0.5\ (1-0.5)\} / (0.06)^2$

$= (3.8416 * 0.25) / (0.06)^2$

$= 0.9604 / (0.06)^2$

$= 266.778$

$= 267$

If we adjust our sample size for 10% non-response then the final sample will be,

$267 + (267 * 0.10)$

$= 267 + 26.7$

$= 293.7$

$= 294$

Therefore, for this study, the sample size was 294.

2.6 Data Collection Tools: Data was collected by using a pre-tested semi-structured questionnaire. Questions addressed things like knowledge of menstruation, attitudes towards menstruation, and menstrual hygiene practices.

2.7 Data Collection Method: To collect the data, a pre-tested semi-structured questionnaire was used. But the questionnaire was translated into Bangla as well. After getting the informed written consent from the participants, the questionnaire was given to them. Continuous variables like age, education level, monthly income, etc. converted into categorical variables for ease of analysis. The analysis method results that were concerned are the knowledge, attitude, and practice scores.

2.8 Data management and analysis: The questionnaire was rechecked and data were entered into SPSS software and evaluated for consistency and errors. Data was analyzed by using SPSS software to find the association between knowledge, attitude and practice of

menstrual hygiene. In that case, mean, standard deviation, frequency, and percentage were used to present the results. Besides, the chi-square was calculated to assess the association between independent and dependent variables. Later, results were compared with other related studies.

3. Result

3.1 Socioeconomic characteristics of the study population

Table-1 describes the general characteristics of the study population living in the community. The (Mean ± SD) age of the participants was 15.5. By religion, Muslim (82.0%) and Hindu (18.0%) participants participated in this study. The distribution of educational status by class shows that 30.3% of students are in Class-7, 27.3% are in Class-8, 21.7% are in Class-9, and 20.7% are in Class-10 and among them 36.7% enrolled in combined schools and 63.3% attending girls' schools. The education levels of the participant's father were Secondary (23.7%), Higher Secondary (40.0%), and Higher Education (36.3%). In contrast, the mothers of the participants completed their primary education (18.7%), secondary education (79.0%), and further higher secondary education (2.3%). The family incomes of participants were 15000-20000 TK (37.3%), 21000-26000 TK (53.3%) and 27000+ TK (4.0%). Menstruation was first discussed with participants when they were 13–14 years old (86.7%) and 15–16 years old (13.3%). Besides, the first menarche occurs for participants between the ages of 12–14 (85.3%) and 15–16 (14.7%).

Table-1: Socioeconomic characteristics of the study population

Sociodemographic status	Total n(%)	Girls school	Combine School	P-value
Age of the participant years				
13-14	93(31.0)	57(61.3)	36(38.7)	0.31

15-16	109(36.3)	75(68.8)	34(31.2)	
17-18	98(32.7)	58(59.2)	40(40.8)	
Religion				
Muslim	246(82.0)	161(65.4)	85(34.6)	
Hindu	54(18.0)	29(53.7)	25(46.3)	0.72
Attending Class				
Class-7	91(30.3)	55(60.4)	36(39.6)	
Class-8	82(27.3)	53(64.6)	29(35.4)	
Class-9	65(21.7)	49(75.4)	16(24.6)	
Class-10	62(20.7)	33(53.2)	29(46.8)	<0.05
Father's Education				
Secondary	71(23.7)	48(67.6)	23(32.4)	
Higher Secondary	120(40.0)	73(60.8)	47(39.2)	
Higher Education	109(36.3)	69(63.3)	40(36.7)	0.64
Mother's Education				
Primary	56(18.7)	38(67.9)	18(32.1)	
Secondary	237(79.0)	147(62)	90(38)	
Higher Secondary	7(2.3)	5(71.4)	2(28.6)	0.64
Family Monthly Income (BDT)				

15000-20000	112(37.3)	76(67.9)	36(32.1)	
21000-26000	160(53.3)	95(59.4)	65(40.6)	
27000+	12(4.0)	6(50)	6(50)	0.24
First Heard about menstruation				
Before 13 - 14	260(86.7)	167(64.2)	93(35.8)	
15-16	40(13.3)	23(57.5)	17(42.5)	0.29
Age at menarche				
12–14 years	256(85.3)	163(63.7)	93(36.3)	
15–16 years	44(14.7)	27(61.4)	17(38.6)	0.44

3.2 Knowledge of young girls regarding menstrual hygiene

Figure-2 describes that for those who knew in the beginning about menstruation, their mothers (29.3%), sisters (13.7%), and teacher/friends/peers (5.7%) were their source of information.

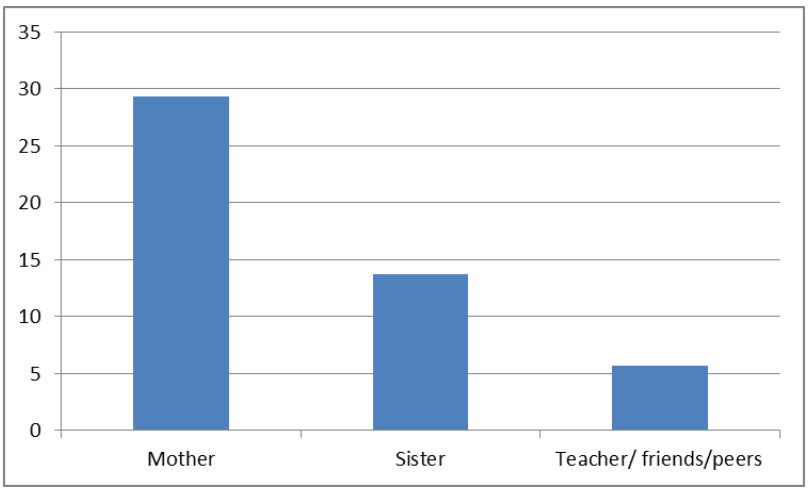

Figure-2: Source of Information on Menstruation

Figure-3 describes that menstruation is a sign that something is wrong or that a person is ready to be married, according to 18.7% of participants, 24.7% of them answered fertility, and 52.7% of them were unaware of this.

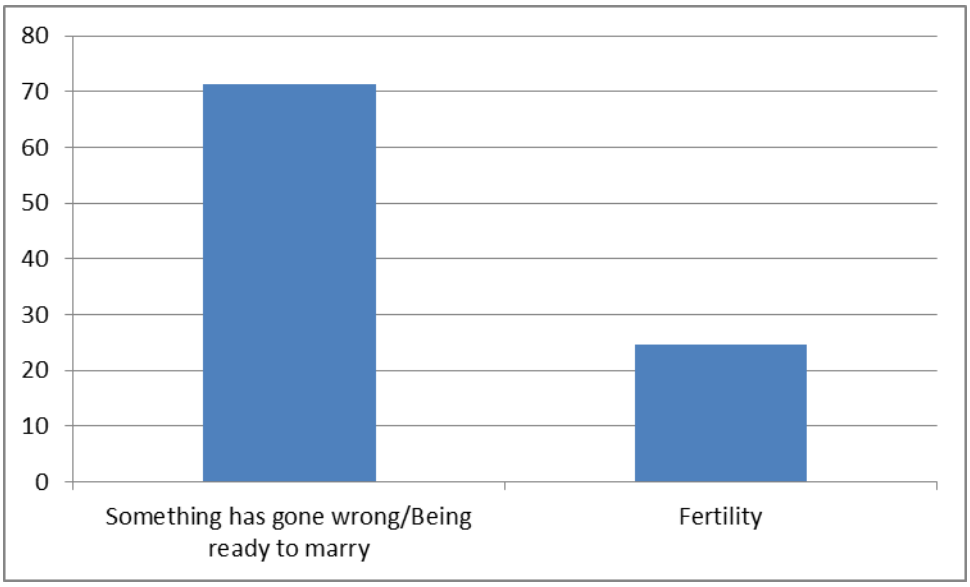

Figure-3: Sign of Menstruation

Table-2 describes the findings related to the knowledge of menstrual hygiene. The participants discussed their first period with their mother (33.0%), sister (27.7%), grandmother (12.0%), and friends (24.3%) but few participants didn't share with no one (3.0%). Besides, half of the participants (50%) were already aware of their first period and another half (50%) were not aware of this. Moreover, they thought that menstrual blood originates in the uterus (33.0%) and the abdomen (48.0%), according to participant responses; however, 19.0% of participants were unsure of this information. Menstruation is a natural process or disease, according to 89.7% of participants, while 10.3% were unaware of this. However, 93.7% of individuals said that they were aware that menstruation often begins in adolescence, whereas 6.3% were unaware of this.

Table-2: Knowledge of young girls regarding menstrual hygiene

Discussed first periods with	Total n(%)	Girls School	Combine School	P-value
Mother	99(33.0)	60(60.6)	39(39.4)	0.49

Sister	83(27.7)	54(65.1)	29(34.9)	
Grandmother	36(12.0)	24(66.7)	12(33.3)	
Friend	73(24.3)	44(60.3)	29(39.7)	
No one	9(3.0)	8(88.9)	1(11.1)	
At first period, Already aware of menstruation				
Yes	150(50.0)	97(64.7)	53(35.3)	
No	150(50.0)	93(62)	57(38)	0.36
Menstrual blood comes from				
Uterus	99(33.0)	60(60.6)	39(39.4)	
Abdomen	144(48.0)	91(63.2)	53(36.8)	
I don’t know	57(19.0)	39(68.4)	18(31.6)	0.62
Menstruation is				
Natural Process/ Disease	269(89.7)	169(62.8)	100(37.2)	
Don't Know	31(10.3)	21(67.7)	10(32.3)	0.37
Menstruation usually starts				
During adolescence	281(93.7)	178(63.3)	103(36.7)	
Do not know	19(6.3)	12(63.2)	7(36.8)	0.58

3.3 Attitudes of young girls regarding menstrual hygiene

Figure-4, 5, and **6** describe the findings related to the attitude of menstrual hygiene. When asked what activities they should avoid while on their period, 52.3% of the participants said they don't avoid anything, but 26% said they couldn't exercise, 15.0% couldn't eat certain foods, and 19.0% couldn't do things like eat sour, cold water, coffee, cucumber, red meat, or shampoo their hair.

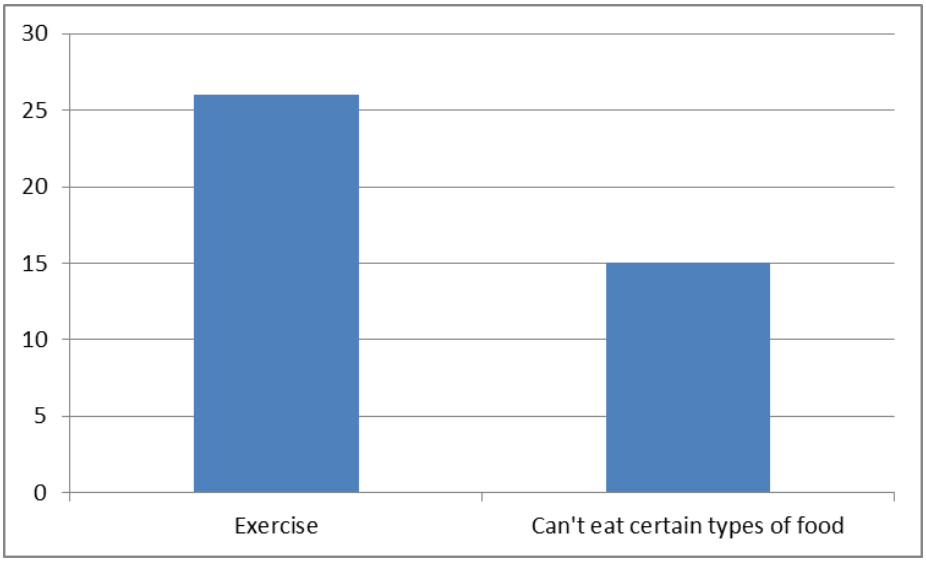

Figure-4: Activities Avoided during Menstruation

Moreover, 21% of the participants felt uncomfortable discussing their periods with anyone, while 19.3% of them felt comfortable talking about them with their teachers, friends, or female contemporaries, 15.0% with their mothers, and 11.7% with their sisters.

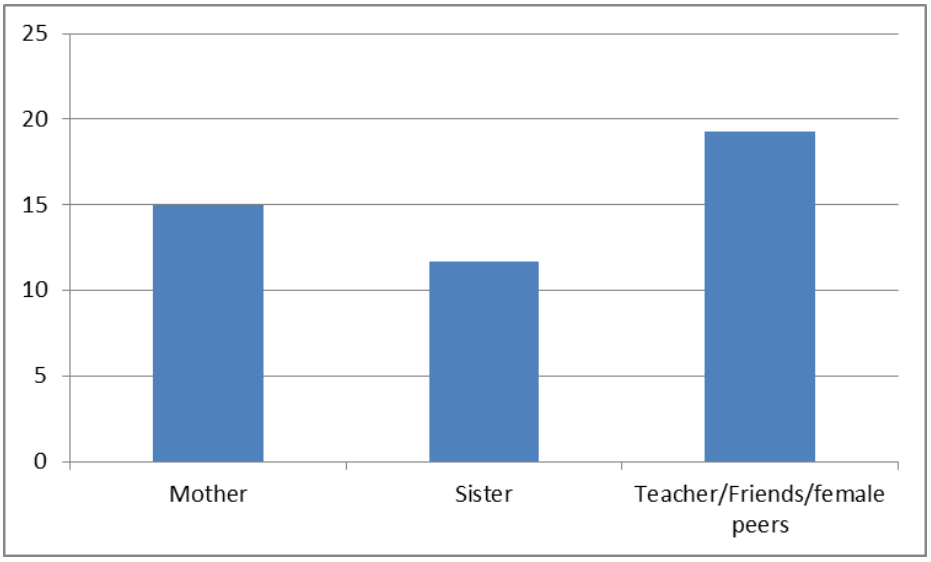

Figure-5: Comfortably talk about menstruation

However, girls experienced a variety of problems at menarche, such as tension and anxiety (32.7%), not knowing what to do (23.3%), not sharing with anybody (1.7%), and believing she has a medical condition (1.0%).

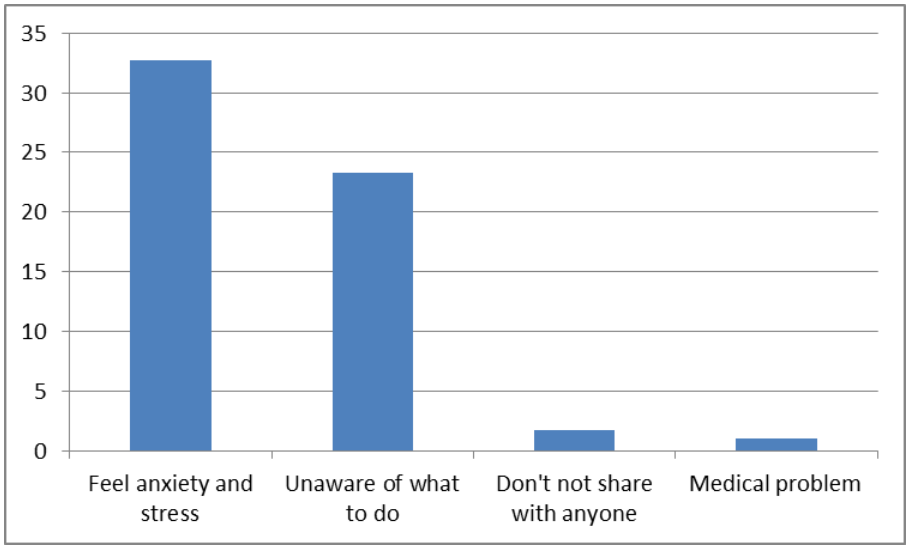

Figure-6: Challenges Faced by Girls at Menarche

The majority of participants (100%) agreed that girls should be made aware of menstruation before the first cycle, and 100% said that mothers, sisters, friends, relatives, or peers should be the ones to inform them about it.

3.4 Practices of young girls regarding menstruation hygiene

From **Figure-7 to 13** describe the findings related to the practices of menstrual hygiene of the participants. The majority of the participants (64.0%) use disposable pads, 32.7% use reusable cloth/towel and 3.3% use new cloth.

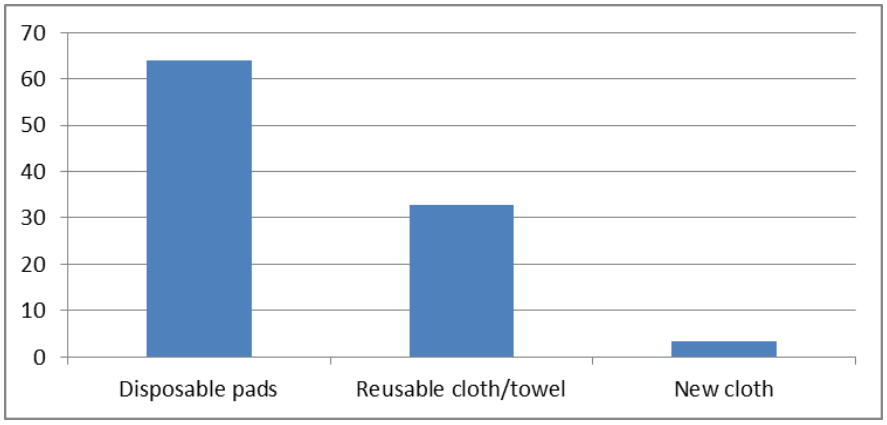

Figure-7: Absorbent used during menstruation

Besides, when it came to participants who used disposal pads, 25.7% used a waste bin to dispose of their pads and 38.3% dumped their pads in a field or bush.

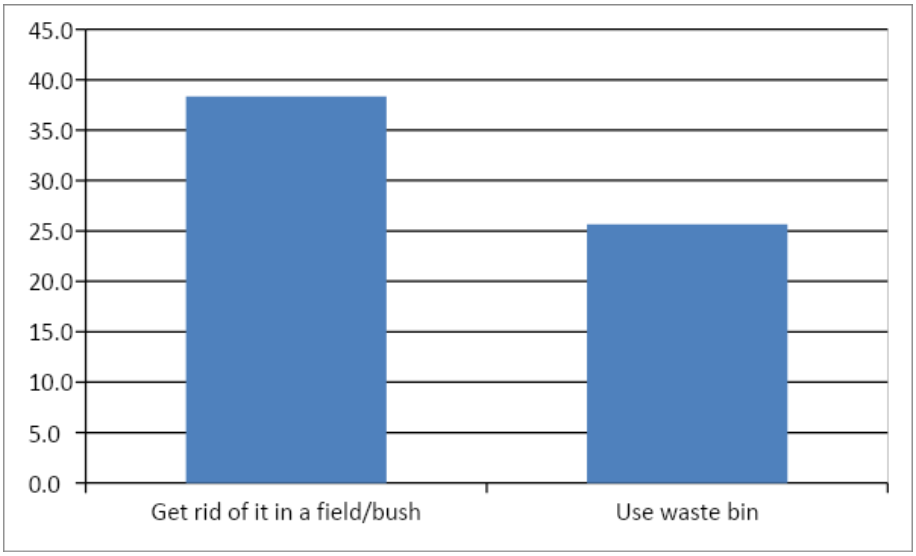

Figure-8: Disposal Practices of Used Material

On the other hand, who were using reusable materials like new clothes or reusable cloth/towels, 36.0% washed them with water or soap/detergent and kept them for next uses, and to dry those reusable clothes 24.0% hide those under other clothes, 8.3% kept those outside under the sun, 2.7% kept those inside the room and 1.0% kept those outside but in the shade.

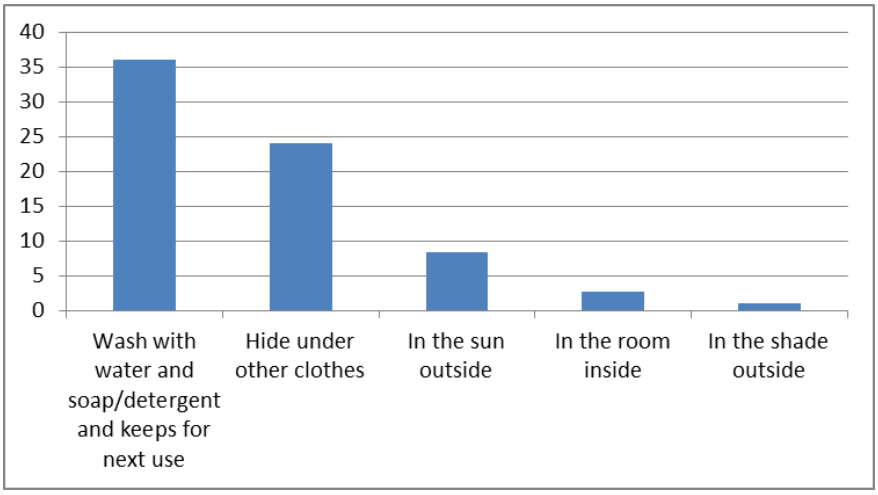

Figure-9: Practices of Used Reusable Material

Moreover, the majority of the participants changed their pads or reusable cotton/towel three times or more a day (73.3%), once a day/twice a day (26.7%).

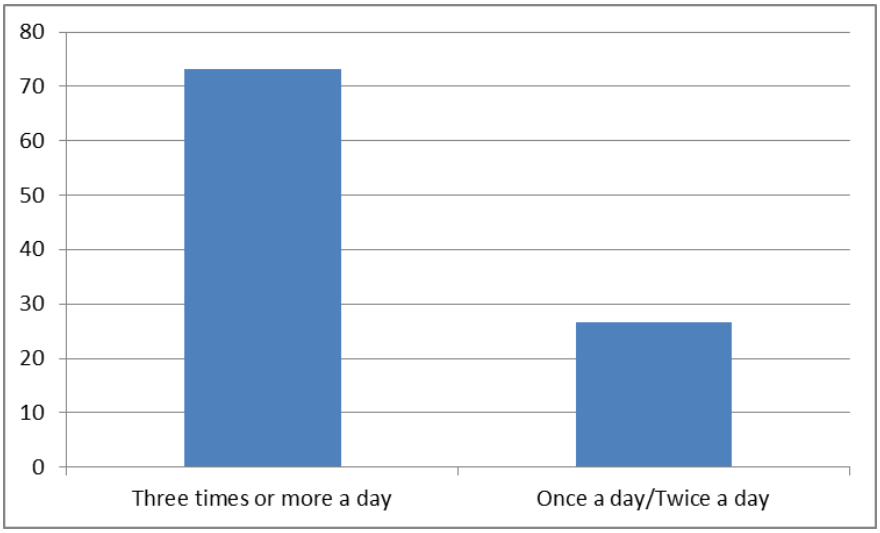

Figure-10: Frequency of Absorbent Changes

Besides, more than half of the participants, 69.3% use water only to clean genitals and areas around the genitals, 23.7% use soap and water and 7.0% use plain paper/tissue.

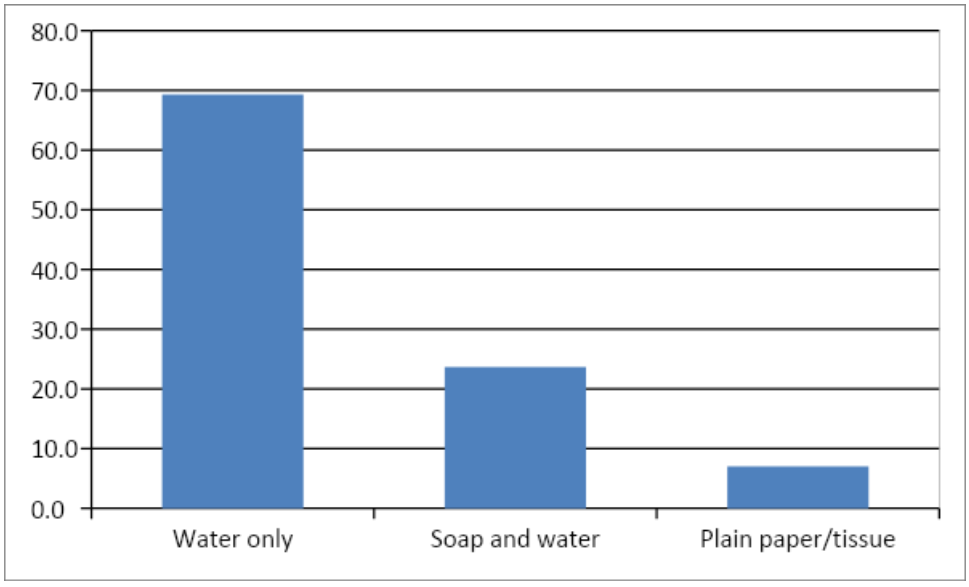

Figure-11: Materials used to clean genitals and area around genitals

Furthermore, during the menstrual cycle, 100% of the participants take their baths daily. However, the majority of the participants' schools (77.3%) have sanitary pad disposal bins in the latrine/ changing room but 22.7% of schools don't have those facilities. Besides, only 31.0% of schools had hygiene kits like Dettol, rag, cotton, and soap for use during

menstruation but 69.0% of schools didn't have those facilities. However, when it comes to their periods, most of the participants (76.3%) feel comfortable going to school, while 23.7% don't feel comfortable.

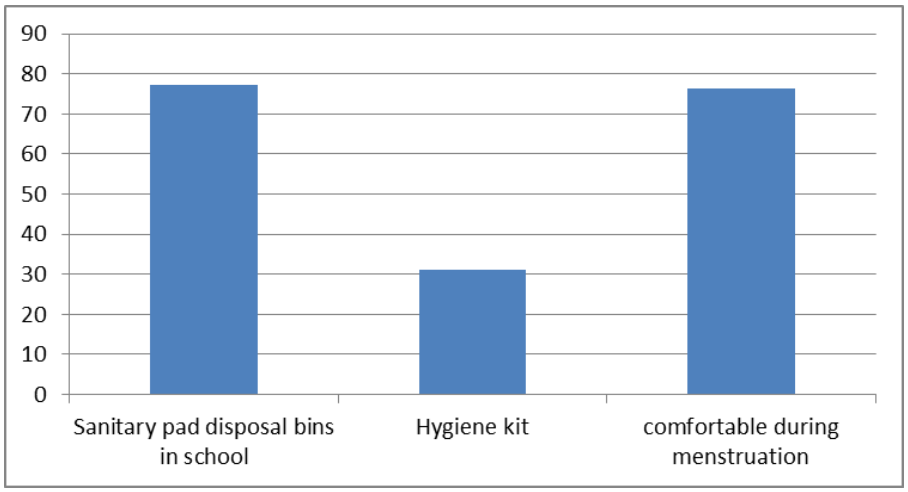

Figure-12: Menstrual Hygiene Facilities and Student Comfort Levels at School

More than half of the participants (62.0%) think that their school facilities are appropriate for managing menstrual hygiene but 38.0% don't think that. Besides, 70.3% knew about the implications of inadequate management of menstrual hygiene but 29.7% didn't have any idea about this. Those who knew about the implications of inadequate management of menstrual hygiene answered the complications are itching in the genitals and area around genitals (33.7%), pain during urination (24.0%), pains at lower abdomen (3.7%), anemia (3.7%), bleeding between menstrual periods (13.0%), White/gray vaginal discharge (0.7%), headache and fatigue (1.0%) and others (0.7%) (Can't be pregnant & Face problem during problem).

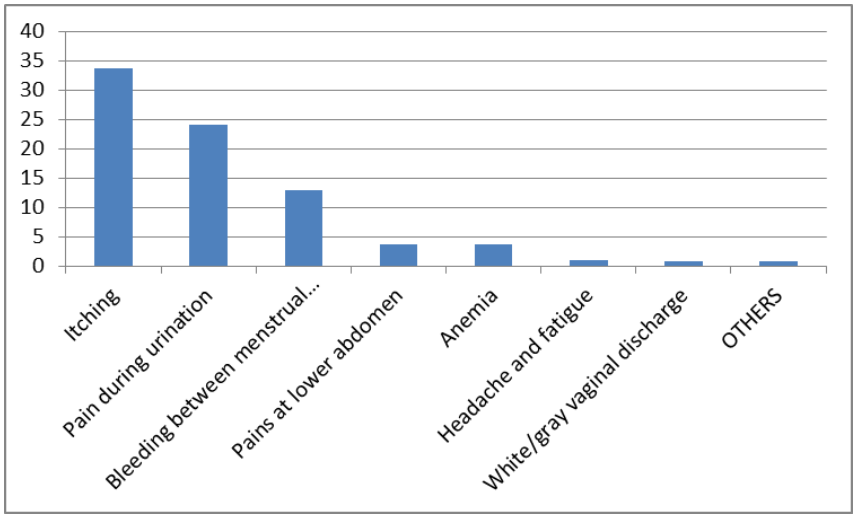

Figure-13: Consequences of Inadequate Management of Menstrual Hygiene

3.5 Table-3: Association between menstrual Knowledge and Practice

Variable list	At first your period, Already aware of Menstruation		P-Value
Absorbent usually used during menstruation	Yes	No	
Good Practices (Used Pads)	126(65.6)	66(34.4)	
Bad Practices (Used reusable clothes)	24(22.2)	84(77.8)	<0.05
Changes the absorbent			
Regular (Three times or more a day)	128(58.2)	92(41.8)	
Irregular	22(27.5)	58(72.5)	<0.05

Table-3 shows the association between those who knew about menstruation before their menarche and the absorbent used during their menstruation (Good practices = used sanitary pads, Bad practices= using reusable clothes or new clothes) and how many times (Regular (Three times or more a day), or Irregular) they changed their absorbent in a day. We found that those who knew about menstruation before their menarche, were significantly associated with good practices (used sanitary pads) and changed their absorbent regularly means three times or more a day ($P<0.05$).

3.6 Table-4: Association between the Education System and Menstruation Practice

Variable list	Education system		P-Value
Absorbent was usually used during menstruation	**Girls School**	**Combine School**	
Good Practices	121(63)	71(37)	0.881
Bad Practices	69(63.9)	39(36.1)	
Change the absorbent			
Regular	136(61.8)	84(38.2)	0.366
Irregular	54(67.5)	26(32.5)	

Table-4 shows the association between girls' schools and combined schools with absorbents used during their menstruation (Good practices = using sanitary pads, Bad practices= using reusable clothes or new clothes) and how many times (Regular (Three times or more a day), or Irregular) they changed their absorbent in a day and here we found these are not significantly associated.

3.7 Table-5: Association between Sociodemographic Status and Menstrual Hygiene Practice

Sociodemographic status	Absorbent was usually used during menstruation		P-Value
Age of the participant years	**Good Practices**	**Bad Practices**	

13-14	35(37.6)	58(62.4)	
15-16	76(69.7)	33(30.3)	
17-18	81(82.7)	17(17.3)	<0.05
Religion			
Muslim	162(65.9)	84(34.1)	
Hindu	30(55.6)	24(44.4)	0.153
Attending class			
Class-7	33(36.3)	58(63.7)	
Class-8	55(67.1)	27(32.9)	
Class-9	53(81.5)	12(18.5)	
Class-10	51(82.3)	11(17.7)	<0.05
Education system			
Girls School	121(63.7)	69(36.3)	
Combine School	71(64.5)	39(35.5)	0.88
Father's Education			
Secondary	8(11.3)	63(88.7)	
Higher Secondary	81(67.5)	39(32.5)	
Higher Education	103(94.5)	6(5.5)	<0.05
Mother's Education			
Primary	2(3.6)	54(96.4)	<0.05

Secondary	183(77.2)	54(22.8)	
Higher Secondary	7(100)	0(0)	
Family Monthly Income (BDT)			
15000-20000	43(38.4)	69(61.6)	
21000-26000	136(85)	24(15)	
27000+	12(100)	0(0)	<0.05
First Heard about period			
Before 13 - 14	158(60.8)	102(39.2)	
15-16	34(85)	6(15)	<0.05
Age at menarche			
12–14 years	155(60.5)	101(39.5)	
15–16 years	37(84.1)	7(15.9)	<0.05

Table-5 shows the association between sociodemographic status such as Age of the participant, Religion, Attending class, Education system, Father's Education, Mother's Education, Monthly Income, First Heard about period, Age at menarche with absorbent used during their menstruation (Good practices = used sanitary pads, Bad practices= uses reusable clothes or new clothes). We found that the Age of the participant, Attending class, Father's Education, Mother's Education, Monthly Income, First Heard about period, Age at menarche are significantly associated with absorbent used during their menstruation (Good practices = used sanitary pads, Bad practices= uses reusable clothes or new clothes) ($P<0.05$).

3.8 Table-6: Association between Sociodemographic Status and Menstrual Hygiene Practice

Sociodemographic status	Change the absorbents		P-Value
Age of the participant years	**Regular**	**Irregular**	
13-14	49(52.7)	44(47.3)	
15-16	81(74.3)	28(25.7)	
17-18	90(91.8)	8(8.2)	<0.05
Religion			
Muslim	177(72)	69(28)	
Hindu	43(79.6)	11(20.4)	0.24
Attending class			
Class-7	46(50.5)	45(49.5)	
Class-8	60(73.2)	22(26.8)	
Class-9	57(87.7)	8(12.3)	
Class-10	57(91.9)	5(8.1)	<0.05
Education system			
Girls school	136(71.6)	54(28.4)	
Combine School	84(76.4)	26(23.6)	0.36
Father's Education			

Secondary	34(47.9)	37(52.1)	
Higher Secondary	90(75)	30(25)	
Higher Education	96(88.1)	13(11.9)	<0.05
Mather's Education			
Primary	24(42.9)	32(57.1)	
Secondary	189(79.7)	48(20.3)	
Higher Secondary	7(100)	0(0)	<0.05
Family Monthly Income (BDT)			
15000-20000	60(53.6)	52(46.4)	
21000-26000	139(86.9)	21(13.1)	
27000+	12(100)	0(0)	<0.05
First Heard about Menstruation			
Before 13 - 14	187(71.9)	73(28.1)	
15-16	33(82.5)	7(17.5)	0.15
Age at menarche			
12–14 years	185(72.3)	71(27.7)	
15–16 years	35(79.5)	9(20.5)	0.31

Table-6 shows the association between sociodemographic status such as Age of the participant, Religion, Attending class, Education system, Father's Education, Mother's Education, Monthly Income, First Heard about period, Age at menarche with how many

times (Regular (Three times or more a day), or Irregular) they changed their absorbent in a day. We found that the Age of the participant, Attending class, Father's Education and Mother's Education are significantly associated with how many times (Regular (Three times or more a day), or Irregular) they changed their absorbent in a day.

4. Discussion

This study provided an understanding of knowledge, Attitude and Practice of menstrual hygiene among adolescent high school-going girls between the ages of 13 to 18 in Bhuapur (Tangail), Bangladesh. The study was conducted based on three objectives collecting information and finding the correlation between them. In this cross-sectional study, half of the participants already knew about menstruation before their menarche and their source of information was their mother. On the other hand, more than a quarter of participants couldn't do any kind of exercise during their menstruation. Besides, more than half of the participants used disposal pads and more than one-third used reusable clothes. Furthermore, around three-fourths of the participants changed their absorbent three times or more in a day. Besides, less than one-fourth of the participants used soap and water to clean their genitals and the area around their genitals.

The study found that half of the participants knew about menstruation before going through menarche & the major source of information was mostly their mothers. As per findings from the Bangladesh Demographic Health Survey 2014, only 33.7% of girls knew about menstruation before they experienced their menarche. Besides, mothers were the primary source of knowledge for just one in every two girls regarding menstruation (V.G. et al., 2021). The variation of knowledge differences we can see might be due to the differences in methodology such as sample size, study area, questioning patterns, etc. Besides, the availability and quality of menstrual health education can be another reason for the resulting variations in both studies. In that case, girls who attend those educational programs in their schools or community might learn about menstruation before their menarche. Furthermore, maternal education is another important factor that can influence the knowledge about menstruation and hygiene practices. However, socioeconomic factors are another reason that can affect people in terms of access to information about menstruation and this can create a difference between our study and Bangladesh Demographic Health Survey. Because, girls from well-belonging families might have better access to school, healthcare facilities, and menstrual products and might encourage their parents to talk about menstruation easily.

Over a quarter of the adolescent girls were unable to exercise in any way when they were menstruating. One study in Gujrat found that 21% avoided exercising when they were menstruating (Parikh & Nagar, 2022). Bangladesh and Gujrat are two different areas; therefore the result variation might happen due to cultural differences in exercising and menstruation. Besides, the comfort level of exercising during menstruation might differ from adolescent girls to girls based on cultural norms, physical activity, gender equality etc. Similarly, accessibility to exercise resources, healthcare facilities, and educational facilities can influence exercise habits during menstruation. However, the percentage differences between both studies might be due to different geographical locations and accessibility and availability of exercise facilities, healthcare facilities, menstrual hygiene products, sports facilities, menstrual education in school and physical activities.

The disposal pads were used by over half of the participants, and over one-third used reusable clothing. A study in Rajshahi, Bangladesh found that around 37.7% of adolescent girls used sanitary pads regularly and 75% used reused clothes (Ha & Alam, 2022). The percentage difference among these studies might be due to the socioeconomic status of the participants' families and the cultural norms between the participants of both studies. Socioeconomic status and cultural norms might influence the accessibility and availability of menstrual products and uses of menstrual products. Moreover, due to the availability and better distribution of disposal pads in terms of area, the use of disposal pads percentage might be increased.

Three-quarters of the participants changed their absorbency at least three times a day. One finding suggests that in Yendi, 52.1% of adolescent girls changed their pads twice a day (Yiadom, 2018). The variation in the frequency of changing the absorbent might be the result of the socioeconomic status of the participants or the cultural norms. In that case, the accessibility, availability, and affordability of pads, menstrual hygiene products, cultural norms on menstruation, and lack of knowledge might influence the girls on how frequently they will change their absorbents. However, due to using different methodologies such as geographic location, sample size, questing patterns, study population, data collection and analysis might be the reason for different results in both studies.

Among the participants, less than one-fourth cleaned their genitalia and surrounding region with soap and water. A study in Pakistan found that 38% cleaned their genitalia and the surrounding region with soap and water (Shah et al., 2023). The disparities among both

studies of the participants might be the result of socioeconomic status, cultural norms, access and availability of hygiene products and lack of knowledge about how to practice menstrual hygiene. There is a big impact of cultural views on hygiene practices but still few people give more priority to cleanliness than any other things. Besides, the lack of accessibility to hygiene products such as soap, and clean water, and the lack of proper knowledge might influence the differences of hygiene practices between both studies. Moreover, good income levels and living conditions might increase the practices of good hygiene during menstruation.

5. Strength & limitations

The questionnaires of this study included socio-demographic information, knowledge about menstruation and guidance on practicing menstrual hygiene which makes the study valid and can be generalized within that area. Besides, different literature reviews were used and the sample size was calculated.

However, the study was conducted based on a specific geographical location; in that case, this study can't be generalized in all the areas of Bangladesh. Besides, this study was a cross-sectional study design which cannot provide a cause-and-effect relationship in the data. Moreover, a big part of the responses were based on self-reported questionnaires, so there might be a change of information bias.

6. Recommendations

This study found that half of the participants didn't know about menstruation before their menarche and many girls didn't have proper knowledge about menstruation. In that case, increased maternal education, and menstrual health education need to be established in schools and communities to provide information about menstruation and how girls can practice menstrual hygiene before they reach their menarche. Besides, we found that 32.7% of the participants were using reusable clothes and they couldn't dry them properly under the sunlight, which means it was an unhygienic practice for them. In that case, the government and private sector should work together to increase accessibility to affordable menstrual hygiene products such as reusable pads, menstrual cups, or sanitary pads. Moreover, we found that 21% of the participants couldn't talk comfortably about menstruation with anyone. Therefore, the parents should talk about menstruation with their girls before they reach their

menarche and should create a supportive environment so that girls can comfortably talk about menstruation, and hygiene needs and can ask for any kind of help whenever they need.

7. Conclusion

To sum up, the study found that there was a significant association between menstrual knowledge and practice. Among the participants, who knew about menstruation before their menarche, they had more good practice, meaning they used sanitary pads and changed their absorbent three times or more in a day. But according to this study, still many girls don't have enough knowledge about menstruation and menstruation hygiene and many of them are not practicing proper hygiene during their menstruation cycle. Therefore, the schools, families and community can arrange workshops, and seminars on menstruation and menstruation hygiene to provide the girls with proper information. Besides, the government can also help by arranging informative sessions with the parents so that they can talk with their girls in detail about menstruation and how to practice menstruation hygiene and can make their children comfortable so that they can easily talk about their hygiene needs.

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