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Menstrual Hygiene Matters: A Community Study to Assess the Knowledge, Attitude and Practice of Menstrual Hygiene in Adolescent Girls in Bengaluru

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Abstract

Menstrual hygiene and its management is an issue that is insufficiently acknowledged and has not received adequate attention. The lack of menstrual hygiene among adolescent girls is alarming, and there is an immediate need for policymaking and awareness programs to be initiated. The objective of this study is; (1) to create awareness on practice of menstrual hygiene among adolescent girls; (2) to assess knowledge and attitude towards the practice of menstrual hygiene among adolescent girls. This was an interventional study in which 858 subjects were enrolled based on the inclusion and exclusion criteria from selected schools and colleges in Bengaluru. The subjects experienced puberty predominantly at 13 (28.7%) or 12 (27.9%) years, relying on maternal figures for menstruation knowledge (34.4% from mothers). Sanitary pads were favored by 74%, and a 5-day menstrual cycle was common (61.3%). Post-test results showed a shift from menstrual misconceptions to a physiological understanding (98.4%). The study reveals initial lack of knowledge and misconceptions about menstruation in students, but a significant improvement post-health education. Reproductive health education should be made mandatory in the academics of adolescent girls, addressing knowledge gaps and societal taboos to achieve positive health outcomes and societal change.

Keywords: Adolescent girl Menstruation Menstrual hygiene Sanitary pads Knowledge

Introduction

Menstrual hygiene is a taboo topic that many South Asian women find unpleasant to bring up in public. Those subjects that are not discussed in public are, naturally, more likely to be disregarded. Gender inequality exacerbates this by keeping women and girls out of decision-making processes.

Women's hygiene habits during their periods are very important because they negatively affect their health by making them more susceptible to Reproductive Tract Infections (RTI). It is evident how menstrual hygiene habits, RTI, and socioeconomic position interact. Millions of women today suffer from RTI and its complications, and the infection frequently spreads to the mother's baby during pregnancy **(World Health organisation, 1996)**.

Menstrual hygiene and Reproductive tract infection (RTIs), which have turned into an unnoticed crisis that devastated women's lives, are closely related. In India's rural areas, wearing rags and outdated clothes is the norm rather than the exception. Use of old clothes and disheveled rags instead of sanitary napkins raise the risk of RTIs, such as vaginal, perineal, and urine infections. Serious infections which is untreated, can occasionally result in toxic shock syndrome, that can be fatal. RTIs that is untreated account for 30–50% of prenatal infections and 10-15% of fetal death. RTIs are increasingly associated with HIV/AIDS, ectopic pregnancy, cervical cancer, infertility, and a host of other symptoms **(Gupta and Gupta, 2001).**
The topic of menstrual hygiene and management is one that has not received enough attention or recognition. The alarming lack of menstrual hygiene among adolescent population necessitates the rapid implementation of awareness campaigns and policy changes **(Ranjan and Sharma, 2002).**

Women who are more informed about safe menstruation habits and hygiene are less susceptible to reproductive tract infections (RTIs) and their subsequent consequences. Consequently, better understanding of menstruation from an early age could improve safe practices and lessen the misery of millions of women. Creating awareness, educating people about cleanliness and encouraging it, offering affordable and easily available products and amenities, and managing waste are the initial steps. It is necessary to break the cyclical causal relationship that exists between low levels of awareness among communities, practitioners, and policymakers and the neglect of menstrual hygiene. The detrimental impacts of this disregard for women's lives and the accomplishment of larger development objectives are **extensive (Dasgupta and Sarkar, 2008).**

The main objective of this research is to evaluate hygienic practices followed during menstruation and their relationship with socio-demographic variables. Also, the study will analyse participants understanding and perceptions about menstruation and how to maintain hygiene.

Method:
Research Design: A prospective interventional study.
Research Type: Questionnaire based community study.
Study Duration**:** The study was conducted over a period of six months.
Inclusion Criteria:

1. Adolescent girls of age 10-19 were included in the study.

Exclusion Criteria:

1. Women above age of 20 were excluded from the study.
2. Girls not consenting/those not comfortable were excluded.

3. Study site: Selected schools and colleges in Bengaluru.

Study population**:** Eight hundred and fifty-eight students between the age of 10-19 were included in the study.
Study tools and techniques: A pre- designed questionnaire was used in the study. Data collection was done using questionnaire-based survey with each subject.
Methodology: Willingness to participate in the study was obtained through informed consent form from the study participants after explaining the objective of the study. The privacy and confidentiality of the participants was taken care during the survey. The participants were made comfortable by maintaining anonymity in the questionnaire given to them. The pre-questionnaire was given to the subjects under the supervision of the investigator to prevent them from sharing responses. The questionnaire was divided into three sections and it included sociodemographic details, knowledge regarding menstruation and attitude and practices they follow during menstruation. Once the participants answered pre-questionnaire, a structured presentation on menstruation and menstrual hygiene was under taken. The presentation included information on menstruation, menstrual cycle, phases of menstrual cycle, myths and facts about menstrual cycle, menstrual hygiene materials, diseases caused due to unhygienic menstrual practice and good menstrual hygiene practice. Post questionnaire was given after the presentation. Data collected were analysed using SPSS Version 20.0, and findings were reported in the form of descriptive statistics.

Results
The study was carried out on adolescent girls of age 10-19 years in selected schools and colleges in Bengaluru, Karnataka. A total of 858 girls participated in the study and gave a response rate of 100%. Among 858 participants 110 were studying in degree college (12.8%), 350 were studying in PU college (40.8%), 230 in high school (26.8%) and 168 were in primary school (19.6%). Among the study participants 118 girls had not yet attained puberty (13.7%) and 740 girls had attained puberty (86.2%).

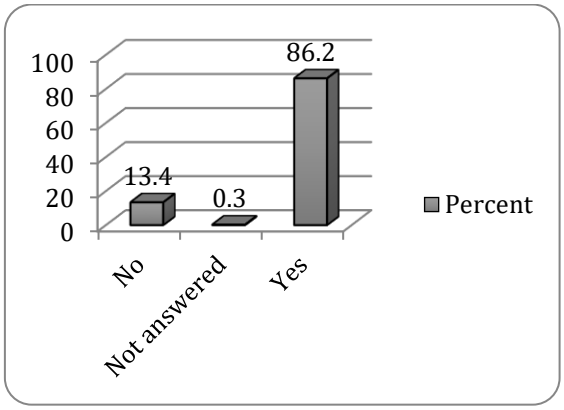

Figure 1: **Distribution of subjects based on their attainment of puberty**

Most of the girls had attained puberty at the age of 13 years (246 girls) 28.7%, at 12 years (239) 27.9%, between 9-11 years (69 girls) 8% had attained puberty, 23.2% attained puberty 14 and above years and 104 girls (12.1%) had not yet attained puberty **(Figure 1)**. 281 (32.7%) girls had no information about menstruation prior to attaining puberty. This number also includes those girls who have not attained puberty at the time of study and 577 girls (67.2%) had knowledge on menstruation prior to their attaining puberty **(Table 1).**

Table 1: Sociodemographic details of the subjects

Sociodemographic details of the subjects	**Results (%)**
Age Group	
11 years	3.3
12 years	7.2
13 years	13.1
14 years	11.6
>/= 15years	64.8
Qualification of the subjects	
Primary school	19.6
High school	26.8
PU college	40.8
Degree college	12.8
Attainment of puberty	
Attained puberty	86.2
Not attained puberty	13.7
Age of attaining puberty	
9-11	8.0
12	27.9
13	28.7
14 and above	23.2
Not attained	12.1
Heard of puberty	
Yes	67.2
No	32.7

Most girls prefer sanitary pads (74%), 9.3% prefer cotton clothes, 3% prefer menstrual cups and only 1% of them preferred tampons. Most girls have regular menstrual cycle once in a month (61.3%), (13.9%) have a week priorly (13.9%), (7.9%) have week later and (5.0%) experience irregular periods **(Figure 2)**.

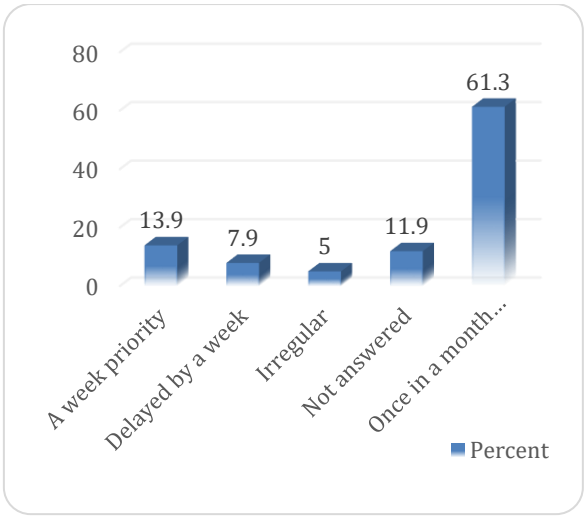

Figure 2: Distribution of subjects based on regularity of menstrual cycle

Around 41.2% of girls change their sanitary napkin every 6 hours, around 39.4% of girls change it every 8 hours and 7.5% of girls change sanitary napkin once a day **(Figure 3)**.

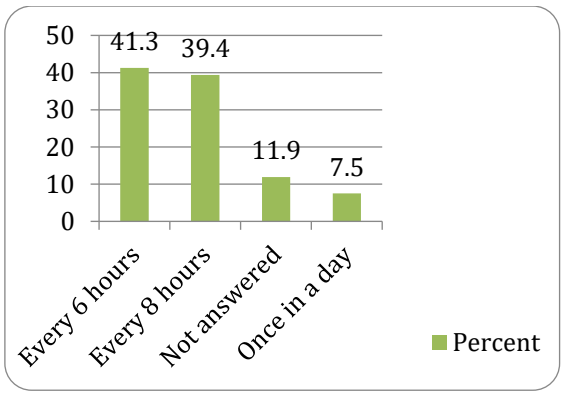

Figure 3: Distribution of subjects based on the duration between change of each sanitary napkins during menstruation

Around 28.8% of girls use three sanitary napkins a day, 25.8% use two sanitary napkins a day, 27% use more than three while 6.6% of girls use only one sanitary napkin per day. For most of the girls (53.7%) the menstrual cycle continues for 5 days, 21.7% of them have it for 7 days, 9.4% of girls have menstrual cycle of 3 days while only 4.3% may have it for more than 7 days **(Figure 4).**

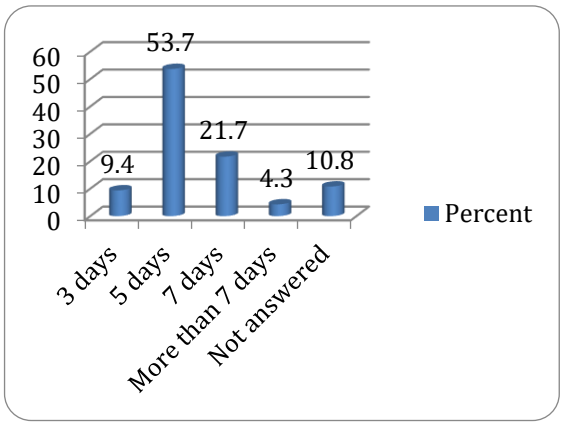

Figure 4: Distribution of subjects based on the length of menstrual cycle

In the pre-test, around 29.1% girls believed it is a curse, 14.1% thought it is a pathological process and 28.3% thought it is a physiological process while in the post-test most of the girls (98.4%) answered that it is a physiological process. Around 53.7% thought menstruation is due to hormones while (18.4%) believed it as a disease. In post-test questionnaire, it was found that 97.7% of the girls answered that menstruation happens due to fluctuations in the level of hormones **(Table 2)**.

Table 2: Attitude and Practice during menstruation

Attitude and practice during menstruation	**Result (%)**
Hygiene material of preference	
Cotton clothes	9.3
Sanitary pads	74.0
Menstrual cups	3.0
Tampons	1.0
More than 2	1.6
Not answered	11.0
Regularity of periods	
A week priorly	13.9
Delayed by a week	7.9
Irregular	5.0
Once in a month regularly	61.3
Not answered	11.9

Changing of sanitary napkins during menstruation?	
Every 6 hours	41.2
Every 8 hours	39.4
Once in a day	7.5
Not answered	11.9
Number of sanitary napkins used in a day	
One	6.6
Two	25.8
Three	28.8
More than three	27.0
Not answered	11.8
Number of days of menstruation	
3 days	9.4
5 days	53.7
7 days	21.7
More than 7 days	4.3
Not answered	10.8

In pre-test questionnaire, 67.9% believed that the menstrual blood is unhygienic and around 26.7% believed it as hygienic. Whereas in post-test questionnaire, 93.4% of them answered that the menstrual blood is not unhygienic.

Around 69.6% of girls knew about sanitary pads, 1% of them heard about tampons, 1.6% of them had heard about menstrual cups and 17.9% heard about all three menstrual materials **(Table 3)**.

Table 3: Knowledge on menstruation and its hygiene among the subjects

Knowledge on menstruation and its hygiene among the subjects	**Pre-test (%)**	**Post-test (%)**

What is Menstruation?		
Physiological	28.3	98.4
Process	14.1	0.3
Pathological	29.1	0.3
Process	22.1	0.1
Curse to women	6.3	0.8
Don't know		
Not answered		
Cause of menstruation		
Hormone	53.7	97.7
Disease	18.4	1.4
Don't know	24.1	0.6
Not answered	3.7	0.2
Menstrual blood is Unhygienic?		
Yes	67.9	6.1
No	26.7	93.4
Not answered	5.4	0.5
Heard of menstrual hygiene materials		
Sanitary Pads	69.6	10.3
Menstrual cups	1.6	0.3
Tampons	1.0	0.2
More than two	3.5	2.6
All of the above	17.9	86.2
Not answered	6.3	0.3
Diseases that occur due to inappropriate menstrual practices		
Bacterial Vaginosis	15.3	77
Candidiasis	2.6	12.3
PCOS	22.5	7.3
Others	21.8	1.7
Not answered	37.8	1.7

In post-test questionnaire, around 86.2% got to know about all the three menstrual materials. In pre-test questionnaire, 15.3% of girls answered bacterial vaginosis, 2.6% of girls answered candidiasis and 22.5% of girls answered PCOS.

In post-test questionnaire, 77% of girls answered bacterial vaginosis, 12.3% of girls answered candidiasis and 7.3% answered PCOS **(Table 3).**

Discussion

In the present study we implemented an intervention in the form of educational video demonstration with a power point presentation to all the participants and assessed its impact on knowledge, attitude and practice among adolescent girls. The results were statistically significant (P value less than 0.05, using chi-square test) after the power point presentation and the educational video intervention.

Socio-demographics of adolescent girls

The study data reveals that majority of the girls 732 (85.3%) attained menarche at the age 11-15 years, followed by 13 (1.5%) at the age of 9-10 years and 9 (1.04%) at the age of 16 and above. The mean age of menarche among adolescent girls is 12.83 years with a standard deviation of 1.15. Similarly, a study by **Kamaljit et al., (2012)** found that the age of menstruating girls ranged from 10 to 15 years with maximum number of girls falling between 12 and 15 years of age, and the mean age of menarche of the subjects has been observed as 12.5 years. A similar study conducted by **Deo et al., (2005)** reported that the age of menstruating girls ranged from 12 to 17 years, with maximum number of girls between 13 to 15 years of age, whereas in a study carried out in Rajasthan by **Khanna et al., (2005)** the mean age at menarche was found to be 13.2 years.

In our study, 67.2% of girls had heard about menstruation before menarche and 32.7% had not heard about menstruation. A study conducted by **Pokhrel S et al., (2014)** showed that 62.0% of the total respondents were aware about menstruation before attaining menarche. Similar to this, a study conducted in West Bengal **(Dasgupta and Sarkar,2008)** reported that 67.5% girls were aware about menstruation prior to attainment of menarche. Similarly, study conducted in **Uttarakhand (Khanna et al., 2012)** also reported that 64.5% adolescent girls were aware about menstruation prior to the attainment of menarche.

Knowledge of adolescent girls towards menstruation and its practices

In our study, we found that knowledge on cause of menstruation and menstrual hygiene practices was poor among the study participants i.e., only 28.3% of them knew that menstruation is normal physiological process among adolescent girls before health education intervention but later the knowledge was significantly increased to 98.4% after the intervention. A study conducted by **Pokhrel S et.al.,** (2014) showed that only 52.1% of them knew that menstruation is normal physiological process among adolescent girls before health education intervention but later the knowledge was significantly increased to 96% after intervention. And a study conducted by **Dixit et.al.,** (2016) showed that 89% girls had the perception that menstruation is a physiological process. In a study

conducted in West Bengal (Dasgupta and Sarkar, 2008), it was reported that 86.25% girls had the same perception regarding menstruation.

In our study, few of the girls 461 (53.7%) had answered the correct cause of menstruation i.e., hormones before intervention. After intervention around 838 (97.7%) of girls had answered the correct cause of the menstruation.

In our study, 583 (67.9%) believed that menstrual blood is unhygienic before intervention. After intervention, 801 (93.4%) of girls gained knowledge that menstrual blood is not unhygienic. Similarly, a study conducted by **Arora et al., (2013)** showed that in the pre-test, 98.5% felt that menstrual blood is impure. 98% of the participants felt that there was an influence of hot and cold food on menstrual flow and there was not much difference in their responses during post-test. This is different from the findings of **Patil et.al.,** (2011) who conducted study in rural Pondicherry where 72.5% responded that menstrual blood is dirty. This difference could be attributed to the difference in the socio-economic background of the two regions where these studies were conducted.

In our study, most of the girls knew about sanitary pads. 597 (69.6%), 9 (1%) of them knew tampons, 14(1.6%) had heard of menstrual cups and 154 (17.9%) have knew all the three menstrual hygiene materials before intervention. After intervention, 740 (86.2%) of girls gained knowledge on all the three menstrual hygiene materials.

In our study, most of the girls had no knowledge about the reproductive diseases that can occur due to inappropriate menstrual practice. Only 15.3% of girls answered that bacterial vaginosis can be caused due to inappropriate menstrual practices, 2.6% of girls answered candidiasis, 22.5 % answered PCOS and 21.8% answered others before intervention. After intervention, 77% of girls answered bacterial vaginosis, 12.3% answered candidiasis.

Attitude and Practice towards menstruation and menstrual hygiene:

In our study, 635 (74.0%) of girls prefers sanitary pads, followed by 80 (9.3%) of girls prefer cotton clothes and less than 4% prefer menstrual cups and tampons. Similarly, a study conducted by **Sharma et.al.,** (2013) showed that 86.36% medical students were using sanitary napkins as absorbent material, while 10.79% were practicing cloth during their menstrual cycle that we found in our study which is in accordance with **Adhikari et.al., (2007)** and **Juyal et.al**., (2012).

In the study, 526 (61.3%) of girls experience menstrual cycle once in a month regularly, 119 (13.9%) of girls experience menstrual cycle a week priorly, 68 (7.9%) of girl's menstrual cycle is delayed by a week and 43 (5%) experience irregular menstrual cycle.

In the present study, 354 (41.2%) of girls changed pads every 6 hours, followed by 338 (39.4%) changed pads every 4 hours and 64 (7.5%) change pad once in a day. Similarly, a study conducted by **Dixit et.al., (2016)** showed that 25% girls used the absorbent material for less than 6 hours and 38% girls used the

absorbent material for 6-12 hours. And in a study conducted in Maharashtra **(Khanna et al., 2005)** 2.37% changed pad every 6 hours.
In our study, 232 (27%) of girls are using more than three pads per day, 221 (25.8%) of girls use two pads a day, 247 (28.8%) use three pads a day and 57 (6.6%) of girls one pad per day.
In the present study, 461 (53.7%) of girls experience menstrual cycle for 5 days, 186 (21.7%) of girls' experience for 7 days, 81 (9.4%) of girls' experience for 3 days and 37 (4.3%) of girls' experience for more than 7 days. A study conducted by **Pokhrel S et.al., (2014)** showed that majority 75% of the respondents had menstrual duration between 5 and 7 days, followed by 3 days 18.5% and more than 7 days 6.6%. Similarly, a study conducted in Gujjar pointed out that of total 131 subjects who were having menstruation, 78.6% subjects reported their duration of menstruation between 0 and 6 days while rest of them reported their duration between 7 to 12 days **(Dhingra et al., 2009)** Another study conducted in Nigeria reported that majority (62%) of the respondents were having menstrual duration between 2-4 days followed by 33% between 5 and 7 days **(Esimai and Esan, 2010).**

Recommendations

The result shows that girls had poor knowledge and misconceptions about menstruation and its management in the beginning. On the other hand, the study participants' understanding significantly increased following a health educational intervention. This signifies the importance of health education in enlightening adolescent females on this matter. Schools have been proven to be the best environment for providing menstrual hygiene education to this group. It is crucial to seek more practical techniques that will improve healthy menstrual behavior among young women, bearing in mind, however, that risky beliefs and customs are firmly ingrained amidst them by cultural, social, and economic factors. Besides, considering the necessity of comprehensive approaches reproductive health and menstrual hygiene should be included in curriculum for girls during puberty as proposed. This makes sure that not only would knowledge disseminate but also addresses any existing misconceptions associated with menstruation.

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