

Research Article

# Prevalence of Knowledge, Attitude & Practice Regarding Menstrual Hygiene in High School Girls: A Cross-sectional Study from Belagavi, Karnataka, India

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## A B S T R A C T

**Introduction:** Menstruation is a biological process exclusive to females. It is associated with many misconceptions and practices, which sometimes cause adverse health outcomes. Hence, all aspects of menstruation need to be understood by adolescent girls. In general, an insufficient level of awareness, with widespread myths, misconceptions and taboos about menstruation is harmful to human society.

**Method:** This cross-sectional study was conducted from June 2019 to November 2019. This study was done among 600 adolescent high school girls from 12 different high schools (6 rural and 6 urban) in Belagavi. A set of structured questionnaires was prepared to assess their knowledge, attitude and practices regarding menstrual hygiene.

**Result:** The results showed there was no source of information available for 43.33% (n = 260) of students regarding menstruation before menarche. The overall percentages for knowledge, attitude, and practice about menstrual hygiene were 55.69%, 49.66%, and 47.52% respectively and out of the total, only 38.80% of respondents mentioned that the urination site and menstruation site are different and 22.60% did not know the cause of menstruation. During menstruation, 63.83% of respondents used sanitary pads, whereas 18.50% of girls relied on old clothes as sanitary aid.

**Conclusion:** Despite the government running various educational programmes, high school girls still need health education regarding menstruation, such as the absorbent material used, disposal of the absorbent material, hygiene followed during the menstrual period etc.

**Keywords:** Menstrual Hygiene, Knowledge, Attitude, Practice, Rajaswala

## Introduction

Menstruation is a physiological process that starts with the onset of puberty in females and is accompanied by physiological, mental, and psychological transitions.<sup>1-3</sup> Almost six years of a woman's life are spent menstruating, i.e., approximately 2,100 days.<sup>4</sup> Adolescence is the most delicate and essential period of a woman's life. Large varieties of illnesses are found among adolescents, such as nutritional deficiency disorders, menstrual disorders, etc. Hence, all aspects of menstruation need to be understood by adolescent girls.<sup>5</sup> There are 243 million teenagers in India (20% of the total population), which clearly shows that there are more young people in India. This includes 10% of girls between the ages of 12 and 14 years, most of whom live in rural areas. These girls do not know how to take care of hygiene during menstruation, which negatively affects their health. In general, women have 13 menstrual cycles per year and are fertile about 400 times. The menarche age in India is between 10 and 16 years. Menstruation is a natural process for every healthy woman, but in many societies, it is shrouded in mystery, negativity, and myth.<sup>6,7</sup>

Often, menstruation is associated with many misconceptions and practices, which often cause adverse health outcomes.<sup>4</sup> Social exclusions, cultural restrictions, and physical separation of menstruating women further reinforce the negative narrative about menarche.<sup>2,8,9</sup> Research has shown that most young girls do not know enough about menarche and menstruation. Along with the psychological burden and medical issues associated with hygiene, it also talks about the repercussions of future pregnancy among adolescent girls.<sup>10</sup>

Ayurvedic classics explain the code and conduct of adolescent girls. Rajaswala (female after the menarche till menopause) is the most important and the largest period of a woman's life. In most developing countries, including India, menstruation has been dealt with in privacy despite being a natural process. Rajaswala Paricharya is the code and conduct explained in Ayurveda for the maintenance of proper menstrual health.<sup>11</sup>

Pervasive illiteracy, lack of education, financial poverty, lack of advice, and conditions for girls to have safe menstruation at school are health problems that should be a priority for culturally marginalised communities and the government to take care of health.<sup>12-14</sup>

Each year, nearly 10% of females are affected by genital infections worldwide, such as urinary tract infections (UTI) and bacterial vaginosis, and 75% of women have some kind of history related to genital infections. Being pregnant, poor perineal and menstrual hygiene are the common reasons for vaginal infection.<sup>15</sup> Studies have shown that 64% of adolescent girls have at least one menstrual problem.<sup>16</sup> A

cross-sectional study conducted in Punjab, India indicated that the overall prevalence of different menstrual problems was 60.61%, with dysmenorrhoea being the most common problem.<sup>17</sup> Menstrual practices without proper hygiene may affect their mental and physical health and increase the risk of reproductive tract infections, pelvic inflammatory diseases, urinary tract infections, fungal infections, etc.<sup>18</sup> Menstrual hygiene has a significant role in elevating the quality of life of women.<sup>19,20</sup> Hygiene practices involved during menstruation significantly reduce physiological, psychological, and medical issues like skin abrasion and reproductive tract infections.<sup>1,2</sup>

Therefore, this study may be relevant to obtaining information about existing knowledge and to detect differences in attitudes and habits of rural and urban school girl students. Future goals are to support women through a variety of educational and awareness programmes to support and change their role in society.

## Material and Methods

### Inclusion Criteria

- Girls aged between 13 and 16 years
- Adolescent girls who attained menarche

### Exclusion Criteria

- School girls having cognitive impairment or congenital deformities
- School girls not willing to participate in the study

## Sample and Research Design

### Selection of Schools

Initial permission was taken from the urban and rural BEO (Block Education Officer), Belagavi, who permitted the researcher to conduct the study in a total of 22 high schools. Twelve high schools were selected by lottery method in the presence of the faculty of the department. Two high schools, among these 12, denied the participation of their students in the study. Again, by using the lottery method, two other high schools were selected.

This study was a questionnaire-based cross-sectional study to evaluate knowledge, attitude and practice (KAP) about menstrual hygiene amongst young girls. It included a random sample of 12 high schools (6 rural and 6 urban schools) in and around Belagavi, Karnataka, India and a total number of 600 female respondents, studying in high schools located in rural and urban areas, aged between 13 and 17 years, who had attained the menarche. Out of a total of 600 respondents, 310 were from schools in urban areas and 290 were from schools in rural areas. The sample size was estimated by involving population size (2028), a margin of error (5%) and confidence level (95%) and using the Yamane method, 1967, which gave

the following formula:

$$n = N / (1 + N (e)^2)$$

where,

n: Sample size = 334; more sample size was taken as per the suggestion of the institutional review committee

N: Population size = 2028

e: Allowable error = 0.05

Individuals who did not wish to participate in the study were excluded. The guidelines to protect and evaluate the rights of the participants were followed as per the Institutional Ethics Committee. The ethics clearance was obtained from the Institutional Ethics Committee and the study number allotted by it was BMK/17/PG/SW/1. Written consent, confidentiality of data, freedom from any defects and anonymous participation were included in the study.

A self-administered questionnaire was designed and developed based on the data from several interview-based studies. The questionnaire was prepared in a trilingual medium (English, Kannada and Marathi) to ensure the ease and convenience of the participants. Pre-scheduled field visits were organised after obtaining prior formal approval from the school authorities. Explaining the research purpose and ensuring the secrecy of the obtained information were taken care of by the researcher. The questionnaire was filled out based on the survey. A pilot study was conducted on 147 girls from 3 high schools to validate the self-structured questionnaire. Six hundred high school girls were enrolled for a period of 6 months from June 2019 to November 20, 2019. Data collection was completed using a set of structured questionnaires.

Data were analysed using the SPSS data analysis software.

The mean  $\pm$  SD was calculated for quantitative data (e.g., age), and qualitative data (e.g., for knowledge, attitude, and practices) were calculated as frequency scores and percentages. The chi-square test was used to compare the scores to interpret the KAP factors. P value  $\leq$  0.05 was considered to be significant.

## Results

### Sociodemographic Features of the Participants

The result of sociodemographic characteristics showed the age of respondents varying from 13 to 17 years. Out of the total, most (228, 38.00%) of the respondents belonged to the age group of 15–16 years, followed by 14–15 years and 16–17 years. The result also indicated that more than 70.00% (n = 424) of respondents lived in nuclear families, showing a similar trend among rural and urban respondents. More than 70.00% (n = 432) of respondents stated that they were under the poverty line, out of which, 78.62% (n = 228) were from rural institutes and 65.80% (n = 204) were from urban institutes. Approximately 40.00% (n = 234) of mothers were educated till the primary school level.

Among the 600 female respondents, 13 years was the most common age for menarche with 36.5% (n = 219) of participants, followed by 14 years with 29.0% (n = 173) and 12 years with 23.0% (n = 136) of respondents. Overall, 67.0% of girls had problems related to menstruation. These included 72.9% of urban girls who felt some kind of problem, which is approximately 10.0% higher than the number of rural girls. Abdominal pain was the most common problem associated with menstruation. More urban participants marked abdominal pain as a problem during menstruation, while data showed that back pain was more common among rural participants. Other problems are shown in Table 1.

**Table 1. Problems of Participants related to Menstruation**

(N = 600)

Groups		Rural (N = 290)		Urban (N = 310)		Total (N = 600)	
S. No.	Problems	n	%	n	%	n	%
1	Abdominal pain	97	33.44	152	49.03	222	37.00
2	Back pain	112	38.62	82	26.45	194	32.33
3	Giddiness	8	2.76	3	0.97	11	1.83
4	Vomiting	9	3.10	14	4.51	23	3.83
5	Weakness	24	8.28	31	10.00	55	9.17
6	Others	17	5.86	18	5.81	35	5.83
7	No response	23	7.93	37	11.94	60	10.00
Total		290	100.00	310	100.00	600	100.00

**Table 2. Source of Information of Participants about Menstruation before Menarche**

(N = 600)

S. No.	Source	n	%
1	Teacher	54	9.00
2	Mother	248	41.33
3	Sister	31	5.17
4	Friend	7	1.17
5	No one	260	43.33
6	No response	0	0.00
Total		600	100.00

Data obtained from the respondents showed that out of the total, 403 (67.17%) girls did not know about menstruation before menarche. The data showed that the knowledge about menstruation before menarche, in rural areas, was very low. Among the rural girls, 228 (78.62%) did not know of menstruation before menarche.

The results showed that for 41.33% (n = 248) of girls, the source of information regarding menstruation before menarche was their mother, while most (260, 43.33%) of the students had no source of information. As shown in Table 2, teachers' contribution, as the source of information about menstruation, was found only in the case of 9.00% (n = 54) of respondents.

### Knowledge about Menstrual Hygiene

Results showed that 30.67% (n = 184) of respondents knew about the site of menstruation; other respondents marked the site to be the urinary site (57.33%) and the lower abdomen (10.66%). Among the participants, 73.82% were already aware of the normal duration of menstruation, i.e., 5 days. As far as the knowledge regarding the duration between two menstrual cycles is concerned, 77.67% (n = 466) of respondents gave the correct answer, i.e., 28–30 days, and 54.33% of girls had adequate knowledge about the relationship between excessive bleeding and anaemia as shown in Table 3.

**Table 3. Knowledge of Participants about Menstrual Hygiene**

(N = 600)

Questions	Options	n (%)	School Type		p Value
			Urban (N = 310) n (%)	Rural (N = 290) n (%)	
From which organ does the menstrual blood come?	Lower abdomen	64 (10.7)	51 (16.5)	13 (4.5)	< 0.001
	Urinary site	344 (57.4)	154 (49.8)	190 (65.5)	
	Uterus	184 (30.7)	99 (35.0)	85 (29.3)	
Are the urination site and menstruation site same/ different?	Same	198 (28.0)	105 (33.9)	93 (32.1)	< 0.001
	Different	168 (38.8)	112 (36.1)	56 (19.3)	
	Don't know	233 (0.2)	93 (30.0)	140 (48.3)	
What is the cause of menstruation?	It is a physiological process	463 (77.3)	220 (71.0)	243 (84.1)	0.004
	Curse of God	112 (18.7)	74 (23.9)	38 (13.1)	
	Caused by sin	13 (2.2)	9 (2.9)	4 (1.4)	
	Caused by disease	10 (1.7)	6 (1.9)	4 (1.4)	

Does excessive bleeding lead to anaemia?	No	326 (54.3)	196 (63.2)	130 (44.8)	< 0.001
	Yes	274 (45.7)	114 (36.8)	160 (55.2)	
Is menstruation related to pregnancy?	No	246 (41.1)	115 (37.2)	131 (45.3)	0.044
	Yes	352 (58.9)	194 (62.8)	158 (54.7)	
Knowledge of duration of normal menstruation	Unaware	157 (26.2)	72 (23.2)	85 (29.3)	0.09
	Aware	443 (73.8)	238 (76.8)	205 (70.7)	
Knowledge of duration between two menstrual cycles	Unaware	134 (22.3)	83 (26.8)	51 (17.6)	0.007
	Aware	466 (77.7)	227 (73.2)	239 (82.4)	

### Attitude towards Menstrual Hygiene

The results showed that 41.00% (n = 246) of respondents had a positive attitude towards sanitary pad advertisements and marked them as informative, whereas 35.67% of respondents felt shy and changed TV channels, and 0.50% opined that these advertisements should be banned. Data presented in Table 4 shows that more than 40.00% of girls practised isolation during menses.

### Practice of Menstrual Hygiene

The study showed that 23.00% (n = 138) of girls used new and old clothes during menstruation as sanitary aid. Among the participants, 55.00% (n = 330) cleaned the external genitalia after void, 259 (43.17%) washed it only during the bath, and 9 (1.50%) girls did not clean it. Only 15.50% (n = 93) of girls were able to change pads during school hours. Head bath was avoided by 85.30% of girls during menstruation as shown in Table 5.

**Table 4. Attitude of Participants toward Menstrual Hygiene**

(N = 600)

Questions	Options	n (%)	School Type		p Value
			Urban (N = 310) n (%)	Rural (N = 290) n (%)	
Reaction of girls on seeing sanitary pad advertisements shown on television	Feel shy and change the channel	214 (35.7)	85 (27.4)	129 (44.5)	< 0.001
	No reaction	87 (14.5)	74 (23.9)	13 (4.5)	
	Informative	246 (41.0)	132 (42.6)	114 (39.3)	
	Feel embarrassed	49 (8.2)	18 (5.8)	31 (10.7)	
	Such advertisements should be banned	3 (0.5)	0 (0.0)	3 (1.0)	
Do you practice isolation during menses?	No	350 (58.4)	188 (60.6)	162 (56.1)	0.310
	Yes	248 (41.4)	121 (39.0)	127 (43.9)	

**Table 5. Practice of Participants regarding Menstrual Hygiene**

(N = 600)

Questions	Options	n (%)	School type		p Value
			Urban (N = 310) n (%)	Rural (N = 290) n (%)	
Choice of sanitary aid during menstruation	Sanitary pad	384 (64.0)	200 (64.5)	184 (63.4)	0.662
	Cloth sanitary pad	76 (12.7)	35 (11.3)	41 (14.1)	
	New cloth piece	27 (4.5)	14 (4.5)	13 (4.5)	
	Old cloth piece	111 (18.5)	60 (19.4)	51 (17.6)	
	Tampons	1 (0.2)	1 (0.3)	0 (0.0)	
	Menstrual cups	1 (0.2)	0 (0.0)	1 (0.3)	
Changing pad in school (if required)	No	507 (84.5)	246 (79.4)	261 (90.0)	< 0.001
	Yes	93 (15.5)	63 (20.3)	28 (9.65)	
Disposal of pad after use	In pits	24 (4.0)	4 (1.3)	20 (6.9)	< 0.001
	Throw away	100 (16.7)	43 (13.9)	57 (19.7)	
	Throw in toilet	60 (10.0)	31 (10.0)	29 (10.0)	
	Throw in dustbin	192 (32.0)	150 (48.4)	42 (14.5)	
	Burn	224 (37.3)	82 (26.5)	142 (49.0)	
Time of cleaning of external genitalia	Every time after void	330 (55.0)	188 (60.6)	142 (49.0)	0.019
	During bathing	259 (43.2)	115 (34.1)	144 (49.7)	
	Do not clean	9 (1.5)	6 (1.9)	3 (1.0)	
Materials used to clean external genitalia	Only water	266 (44.3)	155 (50.0)	111 (38.3)	0.026
	Soap and water	317 (52.8)	147 (47.4)	170 (58.6)	
	Others	16 (2.7)	8 (2.6)	8 (2.8)	
Avoiding head bath during menstruation	No	88 (14.7)	74 (23.9)	14 (4.8)	< 0.001
	Yes	512 (85.3)	236 (76.1)	276 (95.2)	

## Discussion

Regarding the sociodemographic factors, the participants' age ranged from 13 to 17 years. Of all participants, 39.31% of rural girls and 36.77% of urban girls fell in the age group between 15 and 16 years. Most (70.67%) of the respondents lived in nuclear families and only 29.00% of respondents lived in joint families. There was no significant difference in the family distribution of participants regarding rural and urban girls. The educational levels of most of the mothers were primary school (39.00%) and high school (34.50%).

Most (219, 36.50%) of the respondents' menarche age was 13 years. Among 600 respondents, the majority responded

that the source of information about menstrual hygiene was no one (43.33%), followed by mother (41.33%) and teacher (9.00%).

This study involved a sample size of 600 adolescent girl respondents, which is higher than other similar studies where sample sizes varied from 150 to 314.<sup>1,6,20,21</sup> In terms of inclusion criteria, most studies included school populations consistent with the present study.<sup>22</sup> In this study, female respondents studying in urban (n = 310) and rural (n = 290) schools reached the age of menarche at 13 years, which is almost similar to other studies with mean menstruation ages of 12.3 years for urban girls and 11–13 years for rural girls.<sup>6</sup> Several other studies have reported that the average

menarche ages for government and private school girls were 15.1 and 16.26 years.<sup>23</sup>

A study conducted in Nepal showed that 67.40% of females had satisfactory knowledge and 26.40% of girls had sufficient knowledge about menstrual hygiene.<sup>24</sup> However, the present study found that respondents' overall percentages for knowledge, attitude, and practice concerning menstrual hygiene were 55.69%, 49.66% and 47.52% respectively. However, Hennegan and Sol found in their study that more than 50.00% of respondents had poor knowledge (53.30%) and practice (52.80%) regarding menstrual hygiene.<sup>25</sup> In a study conducted in a similar setting by Shanbhag et al., 99.60% of students had heard of menstruation and 79.70% had knowledge that menstruation is a normal biological process.<sup>26</sup> It was seen that 30.67% of girls had knowledge about the exact organ from which the menstrual blood comes. A study conducted in Gandhinagar showed that 51.10% of girls did not know about the organ from which the menstrual blood comes.<sup>27</sup> The present study showed that only 38.80% of respondents mentioned that the urination site and menstruation site are different and 22.60% did not know the cause of menstruation.

Some of the KAP studies investigated the use of different brands of commercially available cotton, sanitary napkins, and cloth pads during menstruation. Thakre et al. found that 49.35% of participants used sanitary napkins, with old clothes being used by 45.74% and new clothing being used by 4.90% of participants as absorbent material during menstruation.<sup>1</sup> Another study showed that a strong trend was observed in nearly half of the urban schools (46.80%) using sanitary napkins as absorbents, followed by rural school respondents (45.00%). These findings are in agreement with those of our study, where 63.83% of respondents used sanitary pads followed by old clothes, which were used by 18.50% of respondents. Similarly, in another study, a large portion of urban girls (60.58%) followed by rural girls (30.82%) used sanitary napkins. Various studies have shown that most teenage girls prefer absorbent sanitary napkins, but sanitary napkins are difficult to access due to their high cost.<sup>20,28-30</sup>

Regarding the disposal practice of sanitary pads, our study revealed that 37.33% of respondents burnt the pad, while 31.83% threw it in dustbins. A proportionally high percentage (49.31%) of rural girls opted to burn the used absorbent material as compared to urban school girls who burnt it, i.e., 26.13%. This current study also showed that the tendency to throw absorbent material in the dustbin was more common among urban females (48.40%) than rural females (14.50%). This also corroborates the results of the study where the tendency of throwing pads was found to be more common among urban girls (45.23%) than rural girls (12.33%).<sup>1</sup> This indicates a social stigma

surrounding the rural population regarding the disposal of sanitary pads and their visibility. Also, poor garbage collection and disposal in rural areas has left burning as the only option for the users.

This study has shown that the overall knowledge, attitude and hygienic practice are lower in the vicinity of Belagavi. The varied results of the urban and rural female population may indicate various factors. In the rural population, the lack of modernisation, educational opportunities, low socio-economic backgrounds and primitive thinking can be a possible cause for the lack of awareness regarding menstruation among adolescent girls. In contrast to this, the urban population gets exposed to the Westernised culture that promotes unhealthy eating habits and an erratic lifestyle that affects the attitudes of females. An individual who educates these young girls at this tender age plays an important role. This person remains the most trusted individual in the lives of these adolescents, preferably the biological mother. The educational status, upbringing, KAP and overall awareness of this person matter the most, as these adolescent girls, once educated, follow the same menstrual practices and make it a part of their lifestyle.

## Conclusion

Menstruation, being a natural phenomenon in an adolescent girl, marks the beginning of her reproductive years. This phase, even though natural, requires prior education regarding the process of menstruation. This becomes necessary as a number of reproductive disorders, which can also have permanent adverse effects like infertility etc. in a female, can be prevented with proper awareness. There are various parameters that need to be considered in the process of health education regarding menstruation, like the absorbent material used, the disposal of the absorbent material, hygiene followed during the menstrual period etc. In a developing country like India, these factors need to be studied in depth to mark a positive change and to increase the KAP regarding menstruation. This natural phase in a woman's life no longer stands as a taboo and should be viewed as a primordial prevention of innumerable diseases. This will not only improve the physical and mental strength of females but will also help in building a healthy progeny in the country.

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