ORIGINAL ARTICLE

Knowledge, Perceptions, Taboos, and Practices of Menstrual Hygiene among Adolescent Girls in Urban and Rural Areas of Central India

Sakshi Pradip Nimbhorkar[1], Prashil Prakashrao Jumade[2], Nachiket Prashant Rahate[3]

Received on: 18 February 2023; *Accepted on:* 19 May 2023; *Published on:* 04 December 2023

Abstract

Background: Menstrual hygiene has been an issue since antiquity and recently gained some attention. Nevertheless, it is hindered by taboos, myths, and restrictions surrounding it in some rural and urban areas of Central India. Adolescent girls often lack knowledge about practices regarding menstruation, thus affecting their overall health and development. There are discrepancies in the data among pubescent girls in urban and rural India.

Objective: The objective is to assess and compare knowledge, perceptions, taboos, and practices among adolescent girls about menstrual hygiene.

Methodology: In the Wardha district's urban and rural regions, a cross-sectional study was undertaken at schools. A total of 400 girls were selected as study participants between the age group range of 12–16 years by random selection. Data were collected with the help of a semi-structured pre-tested questionnaire. Girls were motivated to complete the questionnaire without any additional information on the subject of interest.

Results: The mean age of our study participants was 15 years, and the mean age of menarches among them was 13 years. We found that around 5% of adolescent girls from rural and urban areas still believe menstruation is linked to God's blessing/curse. A significant portion (18%) of rural girls use just cloth compared to nil cloth usage in urban areas.

Conclusion: While there is a need for improving knowledge about menstruation among urban and rural students, the lack of knowledge is greater in rural areas, and students from rural areas are more distressed during their periods.

Keywords: Adolescent girls, Knowledge, Menstrual hygiene, Myths, Perception, Taboos.

Journal of South Asian Federation of Obstetrics and Gynaecology (2023): 10.5005/jp-journals-10006-2344

Introduction

According to WHO, menstruation is the process in which the uterus sheds blood and tissue through the vagina. Menarche is the onset of menstruation and is often considered the central event of puberty, which usually starts at the age between 11 and 14. Although the term relates to a biological occurrence in the body of adolescent girls, its significance as a sign of reproductive potential signifies a transition from girlhood to womanhood. Consequently, the change frequently necessitates social and psychological adjustment.[1]

Menstruation is a phenomenon that only affects females, but it is typically surrounded by taboos, myths, and sociocultural constraints in society, especially in rural regions, which keep women from participating in many elements of cultural and social life.[2]

The acceptance of such taboos and myths in a country or even a region can indicate its development and an index for female empowerment. Adolescent age is the age from 10 to 19 years of one's life.

Adolescent girls often do not receive special puberty education about menstrual health and hygiene because of culturally specific practices that lead to incorrect and unhealthy behaviors.[3] Such girls are considered to be naive in their orientation toward menstrual knowledge and thus are prone to misleading guidance. It is necessary to assess their knowledge to construct a well-informed generation.

"Menstrual hygiene" is vital to the empowerment and well-being of adolescent girls worldwide. Practices related to menstrual hygiene are of significant concern as it has a health impact. If neglected, it leads to genital tract infections, negatively affecting their development.[4–6] Girls are sometimes unable to distinguish between typical and abnormal signs of menstruation due to a lack of awareness about these consequences on health, leaving them oblivious to impending diseases.

For schoolgirls to participate regularly, the setting must be conducive to managing menstrual hygiene.[7] Information regarding menstruation is often passed down from mother and sister to daughter as a tradition or sometimes from their friends, which

[1,3]Department of Community Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Higher Education & Research, Wardha, Maharashtra, India

[2]Department of Community Medicine, Karpagam Faculty of Medical Sciences and Research, Coimbatore, Tamil Nadu, India

Corresponding Author: Sakshi Pradip Nimbhorkar, Department of Community Medicine, Jawaharlal Nehru Medical College, Datta Meghe Institute of Higher Education & Research, Wardha, Maharashtra, India, Phone: +91 9518320612, e-mail: Sakshinimbhorkar1709@gmail.com

How to cite this article: Nimbhorkar SP, Jumade PP, Rahate NP. Knowledge, Perceptions, Taboos, and Practices of Menstrual Hygiene among Adolescent Girls in Urban and Rural Areas of Central India. J South Asian Feder Obst Gynae 2023;15(6):696–702.

Source of support: Nil

Conflict of interest: None

is frequently inadequate and, in some cases, wrong, causing unwarranted restrictions in daily activities, resulting in a variety of psychological problems.[8–10] The lack of discussion around menstruation and hygiene practices makes young girls unprepared for it. Even as groups and non-governmental organizations (NGOs) attempt to make periods a more acceptable topic or subject, there are still tales of traditions and misconceptions about menstruation and menstrual stigmas.

Plentiful studies have specified numerous discrepancies in this data between urban and rural adolescent girls, which may affect hygiene practices during menstruation.[8–12] It has been noted that rural girls are more prone to misconceptions because of the high prevalence of traditional, outdated, or straight-up false knowledge.[7] This can be linked to lower socioeconomic and cultural development in rural areas. On the contrary, urban girls are considered to have a better standard of living, one with better education from parents and peers.[8] Thus, such girls get better and newer modalities to tackle menstrual hygiene. Urban girls are less susceptible to menstruation-related illnesses and, as a result, have higher school attendance rates. These girls get a better education and prosper socioeconomically in society. They impart more menstruation-related information to the next generation, and the cycle continues to improve.

Therefore, proper knowledge about menstruation, hygiene, and practices right from an early age may develop safe practices and help prevent certain infections among adolescent girls.[11,12]

On the one hand, newer and better measures for menstrual hygiene can be beneficial for women, but, on the other hand, conventional and old methods are more accessible and easier to use. Thus, reluctant women getting introduced to newer modalities discredit them easily.

Mohamed Y et al. researched a qualitative exploration of menstruation-related restrictive practices in Fiji, Solomon Island (SI), and Papua New Guinea (PNG). Participants belonging to PNG and SI, which are underdeveloped islands, reported behavioral constraints in menstruating girls that were influenced by religious, societal, and cultural perceptions and behaviors. There were negative impacts of restrictive practices, such as restrictions from participating in religious activities at work and school.[13]

Ajong AB et al. surveyed knowledge of perimenarcheal changes and compared the age at menarche among young adolescent schoolgirls in urban and rural Cameroon; girls in the rural area had better knowledge of puberty, menarche, and menstruation, but the overall level of knowledge was relatively good in both urban and rural areas. It was also observed that the mean age at menarche had dropped over the last two decades.[14]

Abul Tal Ha and Zakiul Alam, in their study, menstrual hygiene management practice among adolescent girls, an urban–rural comparative study in the Rajshahi Division, Bangladesh found that girls using clothes could not use sanitary pads because it was unaffordable. They also found that more than 50% of girls disposed of the pads by burying them in soil.[15]

Hassan M et al., in menstrual hygiene practices and school absenteeism among adolescent girls in Bangladesh, concluded that the prevalence of school absenteeism was higher during menstruation in adolescent girls belonging to low socioeconomic families, lack of wash facilities for bathing and cleaning external genitalia were also responsible for school absenteeism.[16]

So, we aim to assess and compare knowledge and perceptions among adolescent girls about menstrual hygiene.

Objective

- To assess and compare knowledge, perception, and hygiene about menstruation.
- To assess and compare practices among adolescent girls regarding menstrual hygiene in rural and urban areas.
- To put forth the recommendation based on study results.

By comparing and assessing, we would determine the actual percentage of discrepancies in knowledge and perception related to menstruation among rural and urban adolescent girls. We will also get to know if the practices following menstruation in both groups are hygienic and if there are any related taboos and myths.

Materials and Methods

A school-based cross-sectional study was conducted for this research in urban and rural schools of the Wardha district; one high school each from the urban and rural areas was selected by the chit-block method. Adolescent girls who have attended menarche were selected by a simple random sampling method, and their consent was obtained; they were interviewed using a semi-structured questionnaire in (English/Hindi/Marathi) languages. According to the study conducted by Neha Choudhary and Manoj K Gupta,[8] the awareness regarding menstrual hygiene among adolescent girls ranges from 30 to 75%. So, considering 50% prevalence and 5% allowable error.

$$N = 4pq/L2$$
$$= 4 \times 50 \times 50/52$$
$$= 10000/25$$
$$= 400$$

So, 200 samples were selected from urban and 200 from rural schools. The study was conducted for 6 months, from July to December 2021.

The detailed information regarding menstrual hygiene, knowledge, perceptions, taboos, and practices was assessed.

Inclusion Criteria

- Adolescent girls attending the participating schools.
- Adolescent girls who had attained menarche.
- Adolescent girls are willing to participate in the study.
- Adolescent girls who are fluent in either English/Hindi/Marathi languages.
- Parents who signed the consent forms.

Exclusion Criteria

- Adolescent girls who were absent on the day of the study conducted in school.
- Adolescent girls who cannot understand or provide consent.

Results and Observations

According to Table 1, the average age of the teenage females who participated in the study is 15 + 1.30 years. In comparison to rural parents, parents of adolescent girls in urban areas had greater education.

Table 2 represents the 12.63 + 1.01-year average age of menarche in females. In both urban and rural communities, very few girls were aware that menstruation was a typical biological behavior. The majority of girls learned about menstruation before menarche, however, the proportion was larger among girls from urban areas than among those from rural regions.

From Table 3, we came to know that girls from rural schools, that is, 42% experienced more taboos and restrictions during menstruation in total. Not talking loudly about menstruation was the central taboo circulating in urban and rural areas. As many as 26.5% of girls from rural schools remain absent during menstruation. About 71% of urban girls experience symptoms related to menstruation compared to rural girls, of which cramps were the main symptom.

Table 1: Demographic data

	Rural	*Urban*
Age (years)		
10–13 (early)	28 (14.0%)	71 (35.5%)
14–16 (intermediate)	166 (83.0%)	129 (64.50%)
17–19 (late)	6 (3.0%)	0 (0.0%)
Religion		
Hindu	192 (96.5%)	139 (79.5%)
Muslim	4 (2.0%)	13 (6.3%)
Others	4 (2.0%)	28 (14.0%)
Type of family		
Nuclear	105 (52.5%)	133 (63.5%)
Joint	88 (44.0%)	67 (33.5%)
Extended	7 (3.5%)	0 (0.0%)
Father's education		
Illiterate	6 (3.0%)	0 (0.0%)
Primary school	80 (40.0%)	0 (0.0%)
6–12 class	108 (54.0%)	38 (19.0%)
>12 class	6 (3.0%)	162 (81.0%)
Mother's education		
Illiterate	13 (6.5%)	0 (0.0%)
Primary school	73 (36.5%)	0 (0.0%)
6–12 class	104 (52.0%)	41 (20.5%)
>12 class	10 (5.0%)	159 (79.5%)
Monthly income of the family (in ₹)	<5000: 113 (56.5%) 5000–10,000: 62 (31.0%) >10,0000: 25 (12.5%)	<40,000: 82 (41.0%) 40,000–80,000: 57 (28.5%) >80,000: 61(30.5%)

Table 4 describes more girls from urban areas using pads during menstruation compared to rural areas. A total of 36% of girls used cloth. Disposal of sanitary pads by burying them in soil was used by 45% of rural girls and 22% of urban girls. More girls studying in an urban school were counseled for hygiene during menstruation as compared to rural.

Figure 1 shows that about 18% of study participants from rural schools did not know about menstruation. While in an urban school, all study participants knew about menstruation. It was determined that the difference was statistically significant (*t*-test = 6.609, $p = 0.001$ significant).

As shown in Figure 2, 87.5% of study participants in urban areas said that the uterus was the organ of menstruation. In contrast, a maximum of 65.5% of study participants described the abdomen as the organ of menstruation ($p < 0.001$ significant, *t*-test = 15.519).

Discussion

The average or mean age of girls attaining menarche was 12.71 ± 0.965 years in rural and 12.55 ± 1.055 years in urban study participants, which is similar to other studies.[8,10–12,14,15] However, two studies showed a higher mean age of menarche.[3,6]

Knowledge and Perception

Approximately 64% of urban and 56% of rural girls knew about menstruation before the onset of menarche, which is similar to studies.[3,8,9,11,15] These findings contradict the lack of awareness in studies.[6,7,10,12] According to the study by Ajong AB et al., more rural girls (67%) were aware of menarche before onset than urban girls

Table 2: Distribution related to knowledge and perception about menstruation

Characteristics	*Rural, n (%)*	*Urban, n (%)*	*t-test*	*p-test*
Age of menarche (years)				
<13	173 (86%)	167 (83.5%)		
<15	27 (13%)	23 (11.5%)		
What is menstruation?			2.572	0.011 S
Normal physiological process	6 (3.0%)	53 (26.5%)		
Monthly vaginal bleeding	148 (74%)	131 (65.5%)		
Gods blessings/curse	10 (5.0%)	16 (8.0%)		
No idea about it	36 (18.0%)	0 (0.0%)		
Source of information			5.553	<0.001 S
Family	127 (63.5%)	169 (84.5%)		
Friends	44 (22.0%)	27 (13.5%)		
Teachers	29 (14.5%)	4 (2.0%)		
Information is given at:			1.699	0.09 NS
Before attaining menarche	112 (56.0%)	128 (64.0%)		
During menarche	54 (27.0%)	47 (23.5%)		
After attaining menarche	34 (17.0%)	25 (12.5%)		
The time interval between 2 cycles (days)				
<21	32 (16.0%)	10 (5.0%)	–5.193	<0.001 S
21–28	107 (53.5%)	93 (46.5%)		
28–35	57 (28.5%)	75 (37.5%)		
>35	4 (2.0%)	22 (11.0%)		

S, significant; NS, non significant

Table 3: Experiences related to menstruation

Characteristics	*Rural, n (%)*	*Urban, n (%)*	*t-test*	*p-value*
Experiences occurred			2.145	0.03 S
Absence from school	13 (6.5%)	18 (9.0%)		
Making fun of it	22 (11.0%)	15 (7.5%)		
Not talking loud about it	46 (23.0%)	74 (37.5%)		
Restraint from certain activities	35 (17.5%)	34 (17.0%)		
All of the above	84 (42.0%)	59 (29.5%)		
Absence from school [day(s)]			−1.943	= 0.053 NS
1	21 (15.5%)	23 (11.5%)		
2–3	26 (13.0%)	27 (13.5%)		
4–5	53 (26.5%)	4 (2.0%)		
Never	100 (50.0%)	146 (73.0%)		
Symptoms experienced				
Acne	19 (9.5%)	14 (7.0%)		
Mood swings	10 (5.0%)	16 (8.0%)		
Period cramps	59 (29.5%)	21 (10.5%)		
Tiredness	18 (9.0%)	7 (3.5%)		
All of the above	94 (47.0%)	142 (71.0%)		
Consulted doctor			7.675	<0.001 S
Yes	23 (11.5%)	87 (43.5%)		
No	177 (88.5%)	113 (56.5%)		
Remedies used for symptoms				
Home remedies	59 (29.5%)	33 (16.5%)		
Medicines prescribed by doctors	29 (14.5%)	34 (17.0%)		
Did not use any	48 (29.0%)	49 (24.5%)		
No need	64 (32.0%)	84 (42.0%)		

S, significant; NS, non significant

Table 4: Hygiene practices and methods followed during menstruation

Characteristics	*Rural, n (%)*	*Urban, n (%)*	*t-test*	*p-value*
The material used during menstruation			−9.573	<0.001 S
Cloth only	36 (18.0%)	0 (0.0%)		
Both cloth and sanitary pad	23 (11.5%)	3 (1.5%)		
Reusable pad	18 (9.0%)	9 (4.5%)		
Single-use sanitary pad	123 (61.5%)	188 (94.0%)		
Reasons to use specified material			−8.594	<0.001 S
Affordable	33 (16.5%)	6 (3.0%)		
Comfortable	88 (44.0%)	133 (66.5%)		
As instructed	73 (36.5%)	29 (14.5%)		
All of the above	6 (3.0%)	32 (16.0%)		
Method of disposal of sanitary pads			−2.939	= 0.004 S
Burying	90 (45.0%)	44 (22.0%)		
Wrapping and throwing in dustbin	56 (28.0%)	149 (74.5%)		
Throwing randomly/burying in soil	0 (0.0%)	7 (3.5%)		
None of the above	54 (27.0%)	0 (0.0%)		
Proper toilet facilities in school				
Yes	173 (86.5%)	170 (85.0%)		
No	27 (13.5%)	30 (15.0%)		
Sanitary pads provided by schools				
Yes	111 (55.5%)	131 (65.5%)		
No	89 (49.5%)	69 (34.5%)		
Method of cleaning			−6.526	<0.001 S
Only water	108 (54.0%)	67 (33.5%)		
Soap and water	73 (37.5%)	59 (29.5%)		
Medicated soaps (e.g., V-wash)	17 (8.5%)	74 (37.0%)		

(Contd...)

Table 4: *(Contd...)*

Characteristics	*Rural, n (%)*	*Urban, n (%)*	*t-test*	*p-value*
Counseled for hygiene				
Yes				
Done by: Mother	144 (72.0%)	162 (81.0%)		
Sister	15 (7.5%)	3 (1.5%)		
Friends	6 (3.0%)	3 (1.5%)		
Teacher	14 (7.0%)	10 (5.0%)		
No	21 (10.5%)	22 (11.0%)		

S, significant

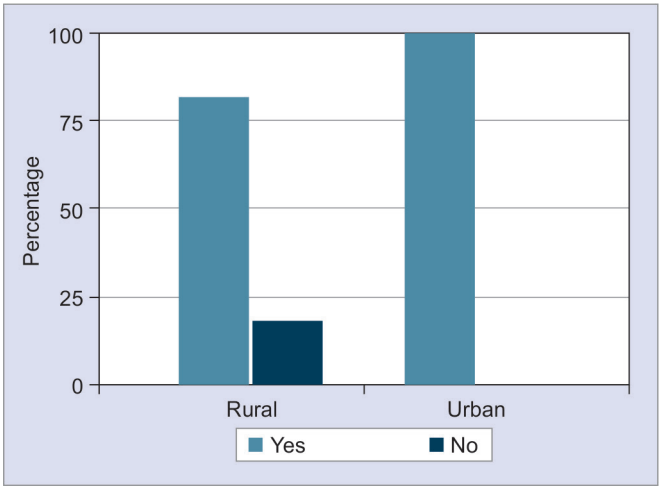

Fig. 1: Knowledge of menstruation among participants

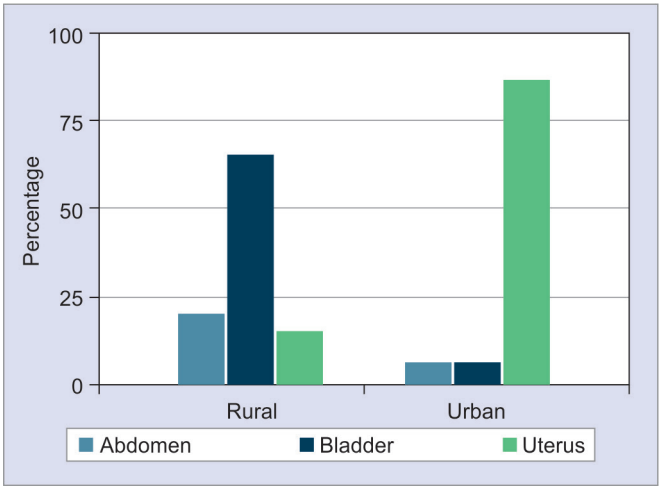

Fig. 2: Knowledge about organ of menstruation about participants

(46%).[14] The difference might be because of the different study settings. This can also be attributed to the higher education level of parents in an urban setting and rural parents being less receptive to discussing menstruation with their daughters.

It was observed in this study that family members were the primary source of information about menstruation in about 84.5% of urban and 63.5% of rural study participants, which was supported by other studies.[3,6–8,10–12,15] The study by Ajong AB et al. reported that the source of information was television (TV) and radio in 35% of urban girls, while school was the source in 51% of rural girls. This difference can be seen because urban girls are more exposed to mass media than their rural counterparts. Less input from school educators in rural areas may lead to adolescent girls being more dependent on their parents for menstruation-related information.

In the current study, more than two-thirds of participants in both rural and urban settings were aware that menstruation is a physiological phenomenon. Other studies also confirmed this.[3,8,11,14,15,17] Teenage girls and their parents' ignorance and carelessness is a reflection of the fact that roughly a third of the girls were not aware that menstruation is a normal biological process.

Taboos and Practices

When the girls were asked about their experience during the menstruation days, it was found that a maximum of 42% of girls in rural study areas had all the enlisted experiences like absence from school, people making fun of it, not talking loud about it and restriction of certain activities followed by 23% experienced only not talking loud about it. While in urban areas a maximum of 37.5% experienced not talking loud about it, followed by all the enlisted experiences. In central India, there was a statistically significant difference between teenage girls' experiences in rural and urban areas ($p = 0.03$ S). These restrictions or experiences were grossly lesser than the results reported by studies.[6,7,11,12] Different geographical areas (irrespective of urban and rural settings) have various sets of cultural taboos and restrictions, which result in numerous restrictions on the expression of menstruation-related issues. This brings about varied interdiction in both areas alike.

The current study shows that half of rural girls and three-fourth of urban girls did not skip school during their menstruation. These results were similar to a study conducted by Mudey AB et al. in which it was reported that only around 12.67% of girls remained absent in school.[6] In comparison, this was opposite to the findings by Hasan M et al.[16] This can be attributed to the fact that most of the girls' menstruation did not hamper their routines.

In this study, it was found that almost all urban girls (94%) and rural girls (61%) used sanitary pads, which was similar to studies.[12,15] These findings were contradictory to that of some studies.[6–8,11,12] Neha Choudhary and Manoj K Gupta reported that 56% of urban girls and 29% of rural girls used sanitary pads.[8] Another study by Dasgupta and Sarkar reported a shocking figure of only 11% of rural girls using sanitary pads.[11] The difference between the present study results and other study results might be because of the change in the locality, more parent' education, and better affordability and availability of sanitary pads.

In this study, most of the girls from urban areas (74%) disposed of their pads by wrapping and throwing them in dustbins, and nearly half of the rural study participants preferred to burn their sanitary pads. These results were similar to studies.[8,10,12] The study

by Chinyama J et al. stated that most rural girls disposed of their pads in latrine pots.[7] Another study by Abul Tal Ha and Zakiul Alam noted that upward of half of the girls buried the pads under the soil.[15] The disposal of sanitary products in rural areas is surrounded by a cloud of secrecy. Therefore, adolescent girls prefer to burn and bury their sanitary pads.

This study suggests that the maximum number of girls got access to appropriate toilet facilities. Findings in other studies complemented this finding.[8,12] The study by Dasgupta and Sarkar contradicted that more than half of the girls did not receive proper toilet facilities.[11] Recent strides by the Indian government in providing closed toilet facilities have resulted in bridging the gap between urban and rural areas.

The present study also reveals that more than half of rural girls used only water to clean their external genitalia during menstruation. Nearly half of the urban girls preferred medicated products such as V-wash to clean their private parts. This difference was found to be statistically significant ($p < 0.001$). These study results contradicted other studies.[6,8,10,11,15,17] In a study by Chinyama J et al., girls used cotton swabs to clean their genitalia.[7] This may be due to better medical facilities and medicine affordability in urban areas. Thus, rural girls tend to be inherently less aware of sanitary practices.

Most of the girls experienced menstrual symptoms, and most discussed it with their mothers. Studies show similar observational results[6,8,17,18] This study's most common symptom was period cramps, supported by other studies.[6,8,14,17] Occasional cramps (40%) were followed by acne (23%), mood swings (13%), and tiredness (12%). Due to relative modernization and urbanization, girls have started experiencing more menstruation-related symptoms in rural adolescent girls.

In this study, more girls from urban areas (43%) consulted doctors for their menstrual symptoms than in rural areas (11%). A study by Neha Choudhary and Manoj K Gupta contradicted this, which showed only (10%) of girls consult doctors overall.[8] This disparity in the result may be because girls in urban areas are more exposed to doctors and medical resources than girls in rural areas.

Conclusion

The findings in the current study gave the impression that all of the study participants in the urban setting knew about menstruation, while few of the rural adolescent girls did not know about menstruation. Nearly three-fourth of rural study participants and almost all urban study participants knew that menstruation is a physiological process or monthly vaginal bleeding. For both rural and urban adolescent girls, the most typical age of menarche was in the age between 12 and 13 years. The most frequent source of knowledge regarding menstruation and menstrual hygiene was family members. Well over half of the study subjects learned about menstruation prior to reaching menarche. More than three-fourth of urban study participants had correct knowledge about the organ of menstruation, while less than one-fourth of rural participants knew, showing the gap in knowledge of the organ of menstruation in rural and urban settings. All of the study participants in both rural and urban settings had experienced menstruation like absence from school, making fun of it, restriction of certain activities, etc. Also, all the study participants experienced some symptoms during menstruation. Almost all the study participants in urban areas were using single-use sanitary pads during menstruation. About a fourth of the rural adolescent girls were using cloth as material during menstruation. Comfortability was the commonest reason for the use of materials girls were using in both rural and urban settings. Destroying by burning was the most common mode of disposal of a sanitary pad in rural areas, practiced by nearly half of the adolescent girls. Wrapping and throwing in the dustbin was practiced by almost about three-fourth of urban adolescent girls.

Acknowledgment

Authors would like to acknowledge the school authorities for permitting us to conduct the research and the students participating.

References

1. Naples NA, Hoogland RC, Wickramasinghe M, et al., editors. The Wiley Blackwell Encyclopedia of Gender and Sexuality Studies, Vols 1–5. Hoboken, NJ: John Wiley & Sons, 2016.
2. Garg S, Anand T. Menstruation related myths in India: Strategies for combating it. J Family Med Prim Care 2015;4(2):184–186. DOI: 10.4103/2249-4863.154627.
3. Fakhri M, Hamzehgardeshi Z, Golchin NAH, et al. Promoting menstrual health among Persian adolescent girls from low socioeconomic backgrounds: A quasi-experimental study. BMC Public Health 2012;12(1):193. DOI: 10.1186/1471-2458-12-193.
4. Khanna A, Goyal RS, Bhawsar R. Menstrual practices and reproductive problems: A study of adolescent girls in Rajasthan. J Health Manag 2005;7(1):91–107. DOI: 10.1177/097206340400700103.
5. Rajaretham T, Hallad JS. Menarche, menstrual problems and reproductive tract infections among adolscents in the rural and urban areas of nothern Karnataka in India. Proceedings of the European populations Conference, 1–4 September 2010; Vienna, Austria.
6. Mudey AB, Kesharwani N, Mudey GA, et al. A cross-sectional study on awareness regarding safe and hygienic practices amongst school going adolescent girls in rural area of wardha district, India. Glob J Health Sci 2010;2(2):225. DOI: 10.5539/gjhs.v2n2p225.
7. Chinyama J, Chipungu J, Rudd C, et al. Menstrual hygiene management in rural schools of Zambia: A descriptive study of knowledge, experiences and challenges faced by schoolgirls. BMC Public Health 2019;19(1):16. DOI: 10.1186/s12889-018-6360-2.
8. Choudhary N, Gupta MK. A comparative study of perception and practices regarding menstrual hygiene among adolescent girls in urban and rural areas of Jodhpur district, Rajasthan. J Family Med Prim Care 2019;8(3):875–80. DOI: 10.4103/jfmpc.jfmpc_69_19.
9. Patle R, Kubde S. Comparative study on menstrual hygiene in rural and urban adolescent girls. Int J Med Sci Public Health 2014;3(2):129–132. DOI: 10.5455/ijmsph.2013.161020133.
10. Thakre SB, Thakre SS, Reddy M, et al. Menstrual hygiene: Knowledge and practice among adolescent school girls of Saoner, Nagpur district. J Clin Diagn Res 2011;5(5):1027–1033. Available from: https://doi.org/10.7860/JCDR/2011/.1522.
11. Dasgupta A, Sarkar M. Menstrual hygiene: How hygienic is the adolescent Girl? Indian J Community Med 2008;33(2):77–80. DOI: 10.4103/0970-0218.40872.
12. Paria B, Bhattacharyya A, Das S. A comparative study on menstrual hygiene among urban and rural adolescent girls of West Bengal. J Family Med Prim Care 2014;3(4):413–417. DOI: 10.4103/2249-4863.148131.
13. Mohamed Y, Durrant K, Huggett C, et al. A qualitative exploration of menstruation-related restrictive practices in Fiji, Solomon Islands and Papua New Guinea. PLoS One 2018;13(12):e0208224. DOI: 10.1371/journal.pone.0208224.
14. Ajong AB, Tankala NN, Yakum MN, et al. Knowledge of peri-menarcheal changes and a comparative analysis of the age at menarche among young adolescent school girls in urban and rural Cameroon. BMC Public Health 2020;20(1):1661. DOI: 10.1186/s12889-020-09787-y.
15. Ha MAT, Alam MZ. Menstrual hygiene management practice among adolescent girls: An urban–rural comparative study in Rajshahi

division, Bangladesh. BMC Womens Health 2022;22(1):86. DOI: 10.1186/s12905-022-01665-6.
16. Hasan M, Hassan MN, Mita M, et al. Menstrual hygiene practices and school absenteeism among adolescent girls in Bangladesh: A cross-sectional study. Popul Med 2021;3:8. Available from: https://doi.org/10.18332/popmed/133641.
17. Mathiyalagen P, Peramasamy B, Vasudevan K, et al. A descriptive cross-sectional study on menstrual hygiene and perceived reproductive morbidity among adolescent girls in a union territory, India. J Family Med Prim Care 2017;6(2):360–365. DOI: 10.4103/2249-4863.220031.
18. Shoor P. A study of knowledge, attitude, and practices of menstrual health among adolescent school girls in urban field practice area of medical college, Tumkur. Indian J Health Sci Biomed Res KLEU 2017;10(3):249–255. DOI: 10.4103/kleuhsj.ijhs_375_16.