

How Familiar are our Adolescent School Girls about Menstrual Hygiene – A Cross Sectional Study in Coastal South India

Ramesh Holla¹, Sushmitha S Shetty², Mithun Rao^{1,*}, Jobinse Jose¹

¹Kasturba Medical College, Mangalore, Manipal Academy of Higher Education, Manipal, India

²MM Joshi Eye Hospital, Hubli, India

Received July 31, 2023; Revised October 29, 2023; Accepted November 14, 2023

Cite This Paper in the Following Citation Styles

(a): [1] Ramesh Holla, Sushmitha S Shetty, Mithun Rao, Jobinse Jose, "How Familiar are our Adolescent School Girls about Menstrual Hygiene – A Cross Sectional Study in Coastal South India," *Universal Journal of Public Health*, Vol. 11, No.6, pp. 813-819, 2023. DOI: 10.13189/ujph.2023.110604.

(b): Ramesh Holla, Sushmitha S Shetty, Mithun Rao, Jobinse Jose (2023). *How Familiar are our Adolescent School Girls about Menstrual Hygiene – A Cross Sectional Study in Coastal South India*. *Universal Journal of Public Health*, 11(6), 813-819. DOI: 10.13189/ujph.2023.110604.

Copyright©2023 by authors, all rights reserved. Authors agree that this article remains permanently open access under the terms of the Creative Commons Attribution License 4.0 International License

Abstract Introduction: Menstrual health is defined as a state of complete physical, mental, and social well-being and not mere absence of disease or infirmity in relation to the menstrual cycle. As per the recent National Family Health Survey (NFHS-5), 77.3% of young women in India use hygienic methods. **Objectives:** To assess the knowledge, attitude, and practices regarding menstruation among school-going adolescent girls. **Methods:** A community-based cross-sectional study was carried out among 4 high schools for a period of 6 months. Sample size was calculated to be 350. Among the selected 4 schools, 90 students (45 students studying in 9th std. and 45 students studying in 10th std) were chosen from each school based on convenient sampling method. The data was collected by self-administration of a pre-tested, semi-structured questionnaire that contained questions on demographic characteristics, perception, source of information, and hygiene practices. The collected data was entered into Microsoft Excel and analysed using SPSS version 20.0. **Results:** 62.9% of study participants were studying in 9th standard. Majority of the study participants answered that the normal age at menarche is 11-15 years (77.7%, n=272), the menstrual cycle normally occurs once a month (92.9%, n=325) and menstruation doesn't occur during pregnancy (87.14%, n=305). 82.85% (n=290) of study participants agreed that sanitary pad is the ideal absorbent material during menstruation. Majority of (80.3%, n=281) study

participants used sanitary pads as absorbents during menstruation. 31.70% (n=111) of the adolescent school girls had to miss their school due to menstruation.

Conclusion: Although the knowledge about menstruation is high among the participants, it is of great concern to us that the usage of cloth as an absorbent still prevails among the participants and most of them practice restrictions during menstruation.

Keywords Menstruation, Menstrual Hygiene, School, Adolescent Girls, Sanitary Pads

1. Introduction

Menstrual health is defined as, "A state of complete physical, mental, and social well-being and not mere absence of disease or infirmity in relation to the menstrual cycle"[1]. Hygiene is essential for menstrual health, for the lack of it results in the reproductive tract as well as urinary tract infections[2,3]. Menstrual hygiene management [MHM] includes hygienic materials to collect menstrual blood, soap and water for washing and facilities to dispose of used materials[4]. Several factors influence the MHM such as biological factors (age, intensity of menstruation), personal factors (knowledge, skills, and beliefs),

interpersonal factors (peers, families), environmental factors (water, sanitation), and societal factors (cultural beliefs, National health policy) [5].

Menarche is the marker of puberty among girls and adolescence is the transition (physical, psychological, social) period from childhood to adulthood [6]. India has 253 million adolescents [7], which is 21% of the total population [8]. Girls enter adolescence unprepared to cope with menstruation due to gaps in their knowledge and various misconceptions about menstruation [9]. As per the recent National Family Health Survey (NFHS-5) [10], 77.3% of young women in India use hygienic methods. A study conducted in India reported that 48% of girls didn't have any knowledge about menstruation until their menarche and only 34% had any education in schools regarding menstruation [2]. The stigma around menstruation restricts the discussion about menstruation at home or school [11], seeking help from home or school or health services [11–14] and their movement inside and outside the home [9,15,16].

School education is important for the comprehensive development of girls and gender equality [17]. The physical symptoms of menstruation such as headache, tiredness, and abdominal pain result in decreased performance [18,19]. Lack of safe and hygienic facilities in schools for menstrual management results in lower enrolment, dropout, and absenteeism [15]. Lack of knowledge in peers, and teachers leads to a lack of support and bullying/teasing which might cause negative experiences about menstruation [20–23]. Hence the study was conducted to assess the knowledge, attitude, and practices regarding menstruation among school-going adolescent girls.

2. Materials and Methods

A community-based cross-sectional study was carried out among 4 high schools in the field practice area of the Department of Community Medicine, Kasturba Medical College, Mangalore located in the Dakshina Kannada District of Karnataka for a period of 6 months. As per 2011 census of India, Dakshina Kannada district is one of the coastal districts of Karnataka with a favourable male-to-female ratio of 1000 to 980 with a total population of around 20 lakhs. The average literacy rate of the district is around 88%.

The study was carried out during the annual school health examination of the children. The following formula was used to calculate the sample size for the study: $N =$

$\frac{4pq}{d^2}$ where p is the prevalence, q= p-1 and d is the level of precision. The sample size was calculated by taking knowledge about menstruation among adolescent girls to be 36% based on the previous study [24]. By considering 15% relative precision and a confidence interval of 95%, the sample size was calculated as 316. Adding 10% non-response error, the final sample size for the present study was calculated as 350. Among the selected 4 schools, 90 students (45 students studying in 8th standard and 45 students studying in 9th standard) were chosen from each school based on convenient sampling method. More than three fourth of included study participants were from Hindu religion. About half of the parents of the study participants were educated at least till Middle school. The study commenced after obtaining approval from the Institutional Ethics Committee, Kasturba Medical College, Mangalore and obtaining permission from the concerned school authorities. During orientation of the students, class teachers explained the purpose and importance of the present study. Consent was taken from the parents of each study participant after explaining the purpose of the study and giving a complete information about the questionnaire, following which assent was obtained from the students. This was followed by self-administration of a pre-tested, semi-structured questionnaire that contained questions on demographic characteristics, perception, source of information, and hygiene practices. The questionnaire also included information regarding age at menarche and days of missing out on school attendance due to menstruation. After obtaining the filled questionnaire from the study participants, a health education session was conducted by the investigator regarding the physiology of menstruation and hygienic practices that have to be followed during menstruation to all the participants.

The collected data was entered into Microsoft Excel and analysed using SPSS version 20.0. Descriptive statistics was mentioned in terms of mean, standard deviation and percentage. The data was represented using appropriate tables wherever necessary.

3. Results

The mean age of study participants was 13.56 (± 0.625) years and 62.9% of study participants were studying in 9th standard (n=220). The education status of the parents of many participants was middle school (father- 35.40%, mothers-33.70%). The details about baseline characteristics of the study participants are depicted in table 1.

Table 1. Baseline characteristics of the study participants (n=350)

Baseline characteristics	Frequency	Percentage
Class		
8 th	130	37.10
9 th	220	62.90
Religion		
Hindu	276	78.86
Muslim	62	17.71
Christian	12	03.43
Father's education		
Illiterate	36	10.30
Primary school	49	14.00
Middle school	124	35.40
High school	92	26.30
Post high school	16	04.60
Graduate or post graduate	30	08.60
Profession or honors	3	0.80
Father's occupation		
Unemployed	24	06.90
Unskilled worker	176	50.30
Semi-skilled worker	30	08.60
Skilled worker	74	21.10
Clerical, shop owner, farmer	28	08.00
Semi-profession	15	04.30
Profession	3	0.80
Mother's education		
Illiterate	39	11.10
Primary school	61	17.40
Middle school	118	33.70
High school	93	26.60
Post high school	13	03.70
Graduate or post graduate	22	06.30
Profession or honors	4	01.20
Mother's Occupation		
Unemployed	112	32.00
Unskilled worker	200	57.10
Semi-skilled worker	13	03.70
Skilled worker	9	02.60
Clerical, shop owner, farmer	3	0.90
Semi-profession	9	02.60
Profession	4	01.10

The details regarding menstrual history of study participants is presented in Table 2. The mean age of menarche was 12.53 (± 0.865) years. The majority (78%, n=273) of them had 5-7 days of menses while 42% (n=147) of them had 27-29 days of menstrual cycle.

Table 2. Menstrual history of study participants (n=350)

Menstrual history	Frequency	Percentage
Duration of menses (in days)		
< 5 days	63	18.00
5-7 days	273	78.00
>7 days	14	04.00
Duration of menstrual cycle(in days)		
21-23	34	09.72
24-26	62	17.71
27-29	147	42.00
30-32	34	09.72
33-35	50	14.28
>35	23	06.57

It was observed from table 3 that majority of the study participants answered that the normal age at menarche is 11-15 years (77.7%, n=272), the menstrual cycle normally occurs once a month (92.9%, n=325) and menstruation doesn't occur during pregnancy (87.14%, n=305). While 94.4% of study participants answered that menstruation is a physiological process while only 20.6% (n=72) of study participants answered that the menstrual blood comes from the uterus. On assessing the knowledge regarding genital hygiene, 82.30% (n=288) study participants opined that, a girl should clean the perineal region before changing the absorbent material and 82.85% (n=290) study participants agreed that sanitary pad is the ideal absorbent material during menstruation. For 87.4% of study participants, the source of knowledge regarding menstruation was their mothers.

The practices followed by study participants during menstruation is illustrated in Table 4. The majority of (80.3%, n=281) study participants used sanitary pads as absorbents during menstruation. Among 69 people who used cloth, 42.02% (n=29) of participants used the same cloth for 2-3 cycles while only 59.42% (n=41) dried their cloth in the sun, and 78.26% (n=54) people stored their cloth in plastic bags. Most of the study participants changed the absorbent once in 6 hours (80%, n=280) and 42.9% (n=150) participants practiced burning as the disposal method of the absorbent material. Out of 74.9% (n=262) who followed restrictions during menstruation, 87.7% (n=230) followed restrictions for religious occasions.

It was observed that, 31.70% (n=111) of the adolescent

school girls had to miss their school due to menstruation. On further analysing the reason for missing the school, the study found that, 75.67% (n=84) missed due to abdominal pain and physical discomfort during their menstrual cycle as depicted in Table 5.

Table 3. Knowledge regarding menstrual hygiene among study participants (n=350)

Knowledge	Frequency	Percentage
Age at menarche(years)		
Less than 10	36	10.30
11-15	272	77.70
15 and above	16	04.60
Don't know	26	07.40
Frequency of occurrence of menstrual cycle		
Once in one and half month	10	02.85
Twice a month	7	02.00
Once a month	325	92.85
Don't know	8	02.30
Source of menstrual blood		
Uterus	72	20.60
Vagina	239	68.30
Stomach	5	01.40
Don't know	34	09.70
Occurrence of menstruation during pregnancy		
Yes	7	02.00
No	305	87.10
Don't know	38	10.90
Frequency of cleaning the perineal region during menstruation		
Once a day	10	02.85
At the time of bath	24	06.85
Before changing material	288	82.30
Don't know	28	08.00
Ideal absorbent during menstruation		
Sanitary pad	290	82.85
Cloth piece	60	17.15
Is it necessary to practice restrictions during menstruation?		
Yes	229	65.40
No	84	24.00
Neutral	37	10.60

Table 4. Practices followed by of study participants during menstruation (n=350)

Practices followed	Frequency	Percentage
Absorbent used during menstruation		
Sanitary pad	281	80.30
Cloth	69	19.70
Usage of same clothes during menstruation (n=69)		
One cycle only	20	28.99
2-3 cycles	29	42.02
More than or equal to 4 cycles	20	28.99
Place of drying of cloth when cloth is used as an absorbent		
Under the sun	41	59.42
In bathroom	18	26.08
In darkroom	3	04.35
Under other clothes	7	10.15
Place of storage of cloth when cloth is used as an absorbent		
In plastic bag	54	78.26
In bath room	7	10.15
With other clothes	8	11.59
Frequency of changing the absorbent during menstruation		
Once in 6 hours	280	80.00
Once in 12 hours	58	16.57
Once in 24 hours	9	02.57
Once in 48 hours	2	0.57
Once in more than 48 hours	1	0.29
Mode of disposal of the absorbent material		
Burn	150	42.85
Bury	44	12.60
Dispose in toilet	66	18.85
Public bin	82	23.40
Throw away	8	02.30
Following restrictions during menstruation		
Yes	262	74.90
No	88	25.10
Type of restrictions followed		
Any religious occasion	230	87.65
Marriage	14	05.30
School	7	02.65
Playing	2	0.80
Household work	3	01.20
Any religious occasion, marriage and certain food	6	02.40

Table 5. School attendance during menstruation

School attendance	Frequency	Percentage
Missed school during menstruation		
Yes	111	31.70
No	239	68.30
Reason for missing school during menstruation(n=11)		
Lack of proper disposal facility for the absorbent used	6	05.40
Lack of continuous water supply	3	02.70
Abdominal pain and physical discomfort	84	75.70
Fear of leakage	11	09.90
Lack of privacy	1	0.90
Appreciating that others will know	6	05.40

4. Discussion

This study explored the knowledge, perception, and practices of adolescent girls regarding menstruation among the school girls studying in 9th and 10th standards of Dakshina Kannada District, a coastal city of Southern Karnataka.

Knowledge about menstruation as a physiologic process is high among the study participants (94.4%) like other studies conducted in India [25,26]. Although the study participants were high in knowledge regarding menstruation, there is a gap in knowledge. Most girls didn't know that the uterus is the source of menstrual bleeding [79.4%], which is consistent with past studies conducted in India [25–27]. Mothers were the major source of information for more than four fifth of the study participants in the present study, which is akin to other studies done elsewhere [1,26,27].

About four fifth of the study participants used sanitary pads as absorbents during menstruation in the present study, which is in contrast with studies conducted in other parts of the country [1,25,26]. This increase in use of sanitary pads might be due to the free napkin distribution scheme, improved education status, and improved mobile usage[28]. Most of the study participants used soap and water for cleaning the genitalia [83%], which is consistent with past studies [1,26,27]. About two fifth of study participants in the present study used hygienic methods to dispose of the sanitary pads/absorbents, which is congruent with other study conducted in the central part of India [27]. The unhygienic methods of disposal can be attributed to a lack of gender-specific toilets or other facilities in schools [1,28]. Even though most mothers were educated, more than two third of study participants have an opinion that it is necessary to practice restrictions during menstruation and most of them practiced restrictions for religious

occasions (87.7%). This is consistent with other studies conducted in other parts of the country [15,26,27].

Among the study participants of the present study, 31.70% missed class during menstruation. Major reason for missed class during menstruation was abdominal pain and discomfort (75.67%) followed by fear of leakage (9.90%), which is in line with other studies done in three different states of India amongst school-going girls of public schools [10].

5. Conclusions

Although the knowledge about menstruation is high among the participants, it is of great concern to us that the usage of cloth as an absorbent still prevails among the participants and most of them practice restrictions during menstruation. The study has shown that a significant amount of academic absenteeism among the school-going girls is attributed to menstruation. The study also demonstrated the need for incorporating topics pertaining to physiology of menstruation, safe and hygienic practices to be followed during menstruation in the curriculum to facilitate their menses in a safe, comfortable and dignified manner.

Conflict of Interest

None to declare

REFERENCES

- [1] Hennegan J., Winkler IT., Bobel C., Keiser D., Hampton J.,

- Larsson G., Chandra-Mouli V., Plesons M., Mahon T, "Menstrual health: a definition for policy, practice, and research," *Sex Reprod Health Matters*, vol. 29, no. 1, pp. 1911618, 2021. DOI: 10.1080/26410397.2021.1911618.
- [2] Anand E., Singh J., Unisa S., "Menstrual hygiene practices and its association with reproductive tract infections and abnormal vaginal discharge among women in India," *Sex Reprod Healthc*, vol. 6, no. 4, pp. 249-54, 2015. DOI: 10.1016/j.srhc.2015.06.001.
- [3] UNICEF. <https://www.unicef.org/media/91341/file/UNICEF-Guidance-menstrual-health-hygiene-2019.pdf>. 2019. Guidance on menstrual health and hygiene.
- [4] Maulingin-Gumbaketi E., Larkins S., Whittaker M., Rembeck G., Gunnarsson R., Redman-MacLaren M., "Socio-cultural implications for women's menstrual health in the Pacific Island Countries and Territories (PICTs): a scoping review," *Reprod Health*, vol 19, no. 1, pp 128, 2022. DOI: 10.1186/s12978-022-01398-7.
- [5] Omidvar S., Amiri FN., Bakhtiari A., Begum K., "A study on menstruation of Indian adolescent girls in an urban area of South India," *J Family Med Prim Care*, vol 7, no. 4, pp. 698-702, 2018. DOI: 10.4103/jfmpc.jfmpc_258_17.
- [6] UNICEF. <https://www.unicef.org/india/what-we-do/adolescent-development-participation>. Adolescent development and participation.
- [7] Sivagurunathan C., Umadevi R., Rama R., Gopalakrishnan S., "Adolescent health: present status and its related programmes in India. Are we in the right direction?" *J Clin Diagn Res*, vol. 9, no. 3, pp. 01-6, 2015. DOI: 10.7860/JCDR/2015/11199.5649.
- [8] Chandra-Mouli V., Patel SV., "Mapping the knowledge and understanding of menarche, menstrual hygiene and menstrual health among adolescent girls in low- and middle-income countries," *Reprod Health*, vol. 14, no. 1, pp. 30, 2017. DOI: 10.1186/s12978-017-0293-6.
- [9] Karjee S., Rahaman M., Biswas PC., "Contextualizing the socio-economic and spatial patterns of using menstrual hygienic methods among young women (15–24 years) in India: A cross-sectional study using the nationally representative survey," *Clin Epidemiol Glob Health*, vol. 20, pp. 1-9, 2023. <https://doi.org/10.1016/j.cegh.2023.101253>
- [10] Sivakami M., Maria van Eijk A., Thakur H., Kakade N., Patil C., Shinde S., Surani N., Bauman A., Zulaika G., Kabir Y., Dobhal A., Singh P., Tahiliani B., Mason L., Alexander KT., Thakkar MB., Laserson KF., Phillips-Howard PA., "Effect of menstruation on girls and their schooling, and facilitators of menstrual hygiene management in schools: surveys in government schools in three states in India, 2015. *J Glob Health*, vol. 9, no. 1, pp. 010408, 2019. DOI: 10.7189/jogh.09.010408.
- [11] Hennegan J., Torondel B., Phillips-Howard PA., Sommer M., Montgomery P., "Time to talk about menstruation: a response," *Lancet*, vol. 390, no. 10097, pp. 845-846, 2017. DOI: 10.1016/S0140-6736(17)31950-5.
- [12] Wilbur J., Kayastha S., Mahon T., Torondel B., Hameed S., Sigdel A., Gyawali A., Kuper H., "Qualitative study exploring the barriers to menstrual hygiene management faced by adolescents and young people with a disability, and their carers in the Kavrepalanchok district, Nepal," *BMC Public Health*, vol. 21, no. 1, pp. 476, 2021. DOI: 10.1186/s12889-021-10439-y.
- [13] Chaudhuri A., Singh A., "How do school girls deal with dysmenorrhoea?," *J Indian Med Assoc*, vol. 110, no. 5, pp. 287-91, 2012. URL: <https://pubmed.ncbi.nlm.nih.gov/23360019/>
- [14] Sharma P., Malhotra C., Taneja DK., Saha R., "Problems related to menstruation amongst adolescent girls," *Indian J Pediatr*, vol. 75, no. 2, pp. 125-9, 2008. DOI: 10.1007/s12098-008-0018-5.
- [15] Van Eijk AM., Sivakami M., Thakkar MB., Bauman A., Laserson KF., Coates S., Phillips-Howard PA., "Menstrual hygiene management among adolescent girls in India: a systematic review and meta-analysis," *BMJ Open*, vol. 6, no. 3, pp. e010290, 2016. DOI: 10.1136/bmjopen-2015-010290.
- [16] Wagh R V., Upadhye AJ., Upadhye JJ., "Menstrual hygiene practices in young girls of urban India," *Int J Reprod Contracept Obstet Gynecol*, vol. 7, no. 5, pp. 1897, 2018. DOI:10.18203/2320-1770.ijrcog20181925
- [17] Blum RW., Boyden J., Erulkar A., Kabiru C., Wilopo S., "Achieving Gender Equality Requires Placing Adolescents at the Center," *J Adolesc Health*. vol. 64, no. 6, pp. 691-93, 2019. DOI: 10.1016/j.jadohealth.2019.02.002.
- [18] Schoep ME., Adang EMM., Maas JWM., De Bie B., Aarts JWM., Nieboer TE., "Productivity loss due to menstruation-related symptoms: a nationwide cross-sectional survey among 32 748 women" *BMJ Open*, vol. 9, no. 6, e026186, 2019. DOI:10.1136/bmjopen-2018-026186
- [19] Alam MU., Luby SP., Halder AK., Islam K., Opel A., Shoab AK., Ghosh PK., Rahman M., Mahon T., "Unicomb L. Menstrual hygiene management among Bangladeshi adolescent schoolgirls and risk factors affecting school absence: results from a cross-sectional survey," *BMJ Open*, vol. 7, no. 7, pp. e015508, 2017. DOI: 10.1136/bmjopen-2016-015508.
- [20] Mason L., Sivakami M., Thakur H., Kakade N., Beauman A., Alexander KT., van Eijke AM., Laserson KF., Thakkar MB., Phillips-Howard PA., "'We do not know': a qualitative study exploring boys perceptions of menstruation in India," *Reprod Health*, vol. 14, no. 1, pp. 174, 2017. DOI: 10.1186/s12978-017-0435-x.
- [21] Coast E., Lattof SR., Strong J., "Puberty and menstruation knowledge among young adolescents in low- and middle-income countries: a scoping review," *Int J Public Health*, vol. 64, no. 2, pp. 293-304, 2019. DOI: 10.1007/s00038-019-01209-0.
- [22] Sommer M., Caruso BA., Torondel B., Warren EC., Yamakoshi B., Haver J., "Menstrual hygiene management in schools: midway progress update on the "MHM in Ten" 2014–2024 global agenda," *Health Res Policy Syst*, vol. 19, no. 1, pp. 1, 2021. DOI: 10.1186/s12961-020-00669-8
- [23] Sharma S., Mehra D., Brusselsaers N., Mehra S., "Menstrual Hygiene Preparedness Among Schools in India: A Systematic Review and Meta-Analysis of System-and Policy-Level Actions," *Int J Environ Res Public Health*, vol. 17, no. 2, pp. 647, 2020. DOI: 10.3390/ijerph17020647.

- [24] Keerthi J., Pravin Y., “A community based study on menstrual hygiene among adolescent girls,” *Indian Journal of Maternal and Child Health*, vol. 13, no. 3, pp. 1-6, 2011. URL: <https://www.ircwash.org/sites/default/files/Jogdand-2011-Community.pdf>
- [25] Sarkar I., Dobe M., Dasgupta A., Basu R., Shahbabu B., “Determinants of menstrual hygiene among school going adolescent girls in a rural area of West Bengal,” *Journal of family medicine and primary care*, vol. 6, no. 3, pp. 583–588, 2017. DOI: 10.4103/2249-4863.222054.
- [26] Bobhate P., Srivastava S., “A Cross Sectional Study of Knowledge and Practices about Reproductive Health among Female Adolescents in An Urban Slum of Mumbai,” *Journal of Family and Reproductive Health*, vol. 5, no. 4, pp. 119-126, 2011. URL: <https://www.proquest.com/docview/928749824?parentSessionId=wey%2BbvL6UWAMILvfDWIzq%2FEIFHAGpY%2B5DfAtZu8OJA%3D>
- [27] Thakre S., Thakre S., Reddy M., Rathi N., Pathak K., Ughade S., “Menstrual Hygiene: Knowledge and Practice among Adolescent School Girls of Saoner, Nagpur District,” *Journal of Clinical and Diagnostic Research*, vol. 5, no. 5, pp. 1027-1033, 2011. URL: <https://www.ircwash.org/sites/default/files/Thakre-2011-Menstrual.pdf>
- [28] Singh A., Chakrabarty M., Singh S., Chandra R., Chowdhury S., Singh A., “Menstrual hygiene practices among adolescent women in rural India: a cross-sectional study,” *BMC Public Health*, vol. 22, no. 1, pp. 2126, 2022. DOI: 10.1186/s12889-022-14622-7.