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Original Research Article

A cross sectional study on menstrual hygiene and associated factors among high school girls in rural Mysuru

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ABSTRACT

Background: Menstruation marks the start of a girl's reproductive life and is a significant process in her life. Women's menstrual cycle is directly or indirectly impacted by diet and physical activity. Menstruating women's health and social lives are negatively impacted by a lack of understanding of physiology, an unscientific attitude, myths, and misconceptions. Despite the array of initiatives put up so far, a myriad of challenges remains to be addressed. The study aims to estimate the menstrual hygiene practices, and associated factors among rural high school girls in mysuru.
Methods: A cross sectional study was conducted among 200 rural high school girls from January to March 2022 in rural Mysuru. A pretested and semi structured questionnaire was used for collecting data and analysed using SPSS software version 25.
Results: The mean age of the study participants was 13.8±0.9 years. Out of 200 adolescent girls, 107 (59.4%) had attained menarche at 10-12 years of age. 61.7% of them reported having abdominal pain during menstruation. 71.1% of the girls reported that their diet was altered during menstruation. Only 37.5% of the study participants do regular exercise.
Conclusions: The present study showed that the majority of the girls' diet and physical activity altered after menarche and during menstruation. A focused intervention like behavioural change communication involving the high importance of consumption of fruits and vegetables, iron and calcium rich foods, avoidance of skipping meals, and taking healthy foods should be encouraged.

Keywords: Adolescent, Menarche, Menstrual hygiene, Rural, Sanitary pads

INTRODUCTION

According to the World Health Organization, adolescence (WHO) (10-19 years) is the time between childhood and maturity when the majority of significant physiological changes take place.[1] Menarche is frequently regarded as the main stage of female puberty from both a medical and social standpoint because it raises the likelihood of childbearing. The menstrual cycle can begin at any age between 9 and 18 years old, with an average age of around 12 years in India.[2] Diet, physical activity, and mental stress can all have a direct or indirect impact on a woman's menstrual cycle. Level of school performance, athletic accomplishments, and loss of self-confidence are only a few examples of how these diseases might affect adolescent girls' daily activities.[3] The prevention of numerous current and potential gynaecological issues such as infertility, obesity, and polycystic ovaries depends on improving menstrual health.[3] The basis for optimal health includes adequate nutrition, healthy eating, and exercise habits at this age. In early adolescence,

undernutrition among female students is a persistent issue in rural areas. They split domestic chores that don't even qualify as labour, such as gathering firewood, cleaning the kitchen, and doing the laundry. Adolescents who are chronically malnourished are more likely to be short stature and have lower lean body mass, as well as weaker and less efficient muscular strength. The nutritional status of adolescent girls, who will become mothers in the future, has a substantial impact on the community as a whole. Adolescent girls who are undernourished start the vicious cycle of malnutrition by passing it on to subsequent generations.[4] Adolescent girls who are undernourished and become pregnant are more likely to have low birth weight babies or babies with intrauterine growth restrictions, who are more prone to metabolic disorders, decreased growth performance, organ dysfunction, abnormal organ development, poor neonatal health, cardiovascular disorders, hormonal imbalances, and changes in body composition in adulthood.[5] Adolescents are supposed to be in good health, but in rural areas of developing nations like India, where poverty, malnutrition, and recurrent infections are common, this does not seem to be the case.[2] A crucial component of health education for adolescent females is teaching them about hygiene during menstruation. There are relatively few studies on these concerns affecting the rural population.[6] To absorb or collect menstrual blood, women and adolescent girls should use a clean menstrual hygiene management (MHM) material that can be changed discreetly as often as necessary for the duration of a menstrual period. They also should use soap and water to wash their bodies as needed, and they have access to safe and convenient facilities to dispose off the used menstrual management materials. They should be aware of the fundamental information related to the menstrual cycle and how to handle it with respect, without discomfort or anxiety.[7] Poor WASH facilities in schools, insufficient puberty information, and a lack of clean MHM materials all contribute to poor MHM habits. The Rashtriya Kishor Swasthya Karyakram (RKSK), India's national strategy for adolescent health, was introduced in January 2014 and places a high priority on access to MHM knowledge, assistance, and supplies via counsellors and adolescent friendly health clinics.[8] Girls have historically received less attention in India in many areas of life, including nutrition. Growth and sexual development may be delayed by inadequate nutrition in adolescents, which is similar to the anticipated outcomes of chronic starvation in infancy and childhood. Adolescents are especially prone to acquiring common bad eating habits including skipping meals, dining out, snacking, and consuming fast food. Dietary habits developed in adolescence may raise the chance of developing chronic diseases like cancer, diabetes, and cardiovascular disease as well as obesity and eating disorders. Negative habits developed at this age typically last throughout life.[9] Menstruation is a natural condition for women and necessitates specific care from a physical, psychological, and social standpoint. It is crucial that monthly bleeding is managed hygienically, and free from societal stigma and anxiety so that women and girls can live healthy, productive lives.[10] A girl's reaction to the menarche event may be influenced by how she learns about menstruation and the changes it causes.[11] Menstruating women's health and social lives are negatively impacted by a lack of understanding of physiology, an unscientific attitude, myths, and misconceptions, such as the idea that they are "contaminated," "dirty," and "impure." Unfortunately, it remains forbidden and is surrounded by a culture of shame and silence in many communities.[12] In India, a large portion of the population lacks a scientific understanding; instead, they hold plenty of superstitious beliefs that lead to substandard MHM practices.[8] MHM has been included fully in the Swachh Bharat Mission Principles. For better MHM across the nation, the Ministry of Drinking Water and Sanitation has released operational guidelines for state governments, district level authorities, engineers, and instructors to follow.[13] Accredited social health activists (ASHAs) provide quality and subsidized pads to adolescent girls in rural regions, and they also use the "training module for ASHA on Menstrual Hygiene" to enhance their capacity.[14,15] The Ministry of Women and Child Development's SABLA program now includes MHM awareness raising as a crucial step toward enhancing adolescent girls' health, nutrition, and sense of empowerment.[16] Despite the array of initiatives put up so far, a myriad of challenges remains to be addressed.

Objectives

The study aims to estimate the menstrual hygiene practices, and associated factors among high school girls, in rural Mysuru.

METHODS

The study was a descriptive, cross-sectional study undertaken in the high schools of rural Mysuru, conducted for a duration of 3 months i.e., from January to March 2022. The schools were selected as per convenience. All high school girls in the classes from eighth to tenth, studying in the selected school, who gave assent were chosen for study participation. Students who were absent on the day of data collection and those who did not provide assent were excluded. Likewise, a total of 200 high school girls were surveyed as per inclusion and exclusion criteria. The data was collected through a pre designed and pre tested questionnaire. Questionnaire included sociodemographic profile, menstrual hygiene practices, physical activity, and dietary profile of the study participants. The data was entered and coded in Microsoft Excel 2019 and analyzed using SPSS software version 25 licensed to JSSAHER.

RESULTS

The sociodemographic profile of the girls is depicted in (Table 1). Out of 200 girls, most of the girls (38%) were

of 13 years of age, while 1.5% were of 16 years. The majority of the girls belonged to the nuclear family (58%) followed by the joint families (25.5%). Most of the girls had one sibling (62.5%) while few had no siblings (5%). About 74.5% of girls' mothers had attended schooling and 73% were homemakers. Based on socioeconomic status, most of the girls belonged to the lower class according to B G Prasad scale (68%).

Table 1: Socio-demographic profile of the girls (n=200).

Socio-demographic variables	Categories	N (%)
Age (years)	12	12 (6)
	13	76 (38)
	14	55 (27.5)
	15	54 (27)
	16	3 (1.5)
Family type	Nuclear family	116 (58)
	Joint family	51 (25.5)
	Three-generation family	33 (16.5)
Number of siblings	None	10 (5)
	One	125 (62.5)
	≥Two	65 (32.5)
Education of mother	Illiterate	37 (18.5)
	Attended schooling	149 (74.5)
	Diploma and above	14 (7)
Occupation of mother	Home-maker	146 (73)
	Employed	54 (27)
Socioeconomic status (BG Prasad Scale)	Upper class	7 (3.5)
	Middle class	57 (28.5)
	Lower class	136 (68)

The menstrual hygiene practices among the girls showed the age at menarche ranged from 10 to 14 years of age, with the mean age at menarche being 12.3±0.8 years is depicted in (Table 2). 71.7% of girls stated that they were having a regular menstrual cycle. The duration of menstruation could last between 2 and 10 days. The mean duration of menstrual bleeding was 4.91 days. In 78.9% of respondents, the duration of menstrual blood flow was found to be between 4 and 6 days, and more than 6 days in 10%. During menstruation, 61.7% and 49.4% had abdominal pain and back pain respectively. Pertaining to menstrual hygiene practices, 82.7% of girls used sanitary pads while 10.6% were only using cloth as absorbent. 70.2% of girls used less than 4 pads daily. Only 29.8% changed sanitary pads more than thrice in a day.

The comparison of girls' present age with age at menarche is represented in (Figure 1). Majority of the girls attained menarche at 12 years (41%), followed by 13 years (34%). It can also be depicted from the figure that, the peak age at menarche for majority of them is between 12 to 15 years, and only few of them attained menarche before 12 and after 15 years. The dietary profile of the girls is depicted in (Table 3). Among 200 girls, 81% followed a mixed diet pattern and 74% had the habit of eating foods between regular meals.

Table 2: Distribution of girls according to menstrual hygiene practices (n=180).

Menstrual hygiene practices	Categories	N (%)
Age at menarche (years)	10-12	107 (59.4)
	13-14	73 (40.6)
Menstrual cycle	Regular	129 (71.7)
	Irregular	51 (28.3)
Duration of menstrual flow (in days)	≤3	20 (11.1)
	4-6	142 (78.9)
	≥7	18 (10)
Abdominal pain during menstruation	Present	111 (61.7)
	Absent	69 (38.3)
Back pain during menstruation	Present	89 (49.4)
	Absent	91 (50.6)
Use of absorbent	Cloth	19 (10.6)
	Sanitary pads	149 (82.7)
	Both	12 (6.7)
Number of sanitary pads used (N= 161)	<4	113 (70.2)
	4-5	48 (29.8)

Three meals per day were consumed among 85% of girls. The study also revealed that 24.5% had a habit of skipping breakfast before going to school. Sweets consumption more than 3 days a week was noted in 52.5% and more than half of them (56.5%) consume carbonated drinks. Iron and folic acid tablets were taken by 61.5% of the girls. The physical activity of the girls is depicted in (Table 4). The majority (61%) travel to school by vehicles. Only 32% and 37.5% do cycling and perform regular exercise other than school hours respectively. The schools had regular physical education training (PT) period in their school schedule. Most of them (91.5%) involve actively and help in household or other activities. 80.5% of girls had adequate sleep of 6 to 8 hours.

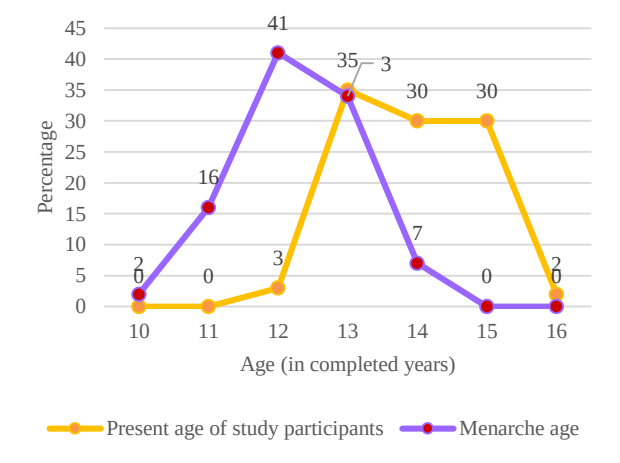

Figure 1: The comparison of girls present age and age at menarche.

Table 3: Distribution of girls according to dietary practices (n=200).

Dietary practices	Categories	N (%)
Dietary pattern	Vegetarian diet	38 (19)
	Mixed diet	162 (81)
Number of meals per day	<3	21 (10.5)
	3	170 (85)
	>3	9 (4.5)
Habit of eating in between regular food	Yes	148 (74)
	No	52 (26)
Skipping of breakfast before going to school (weekly)	Yes	49 (24.5)
	No	151 (75.5)
Frequency of consumption of sweets weekly (days)	<3	105 (52.5)
	≥3	74 (37)
	None	21 (10.5)
Consumption of carbonated drinks	Yes	113 (56.5)
	No	87 (43.5)
Taken Iron and Folic acid tablets	Yes	123 (61.5)
	No	57 (28.5)
Diet altered after menarche/during menstrual periods (N=180)	Yes	128 (71.1)
	No	52 (28.9)

Table 4: Distribution of girls according to physical activity (n=200).

Physical activity	Categories	N (%)
Travel mode from home to school	Walking	58 (29)
	Cycling	20 (10)
	Scooter/Car/Bus	122 (61)
Cycling (other than school hours)	Yes	64 (32)
	No	136 (68)
Regular exercise	Yes	75 (37.5)
	No	125 (62.5)
If yes, duration spent on exercise (N=75) (hours)	<1	56 (74.7)
	≥1	19 (25.3)
Involvement in household/agriculture/other family activities	Yes	183 (91.5)
	No	17 (8.5)
Sleep duration (hours)	<6	22 (11)
	6-8	161 (80.5)
	>8	17 (8.5)
Physical activity restricted/altered after menarche/ during menstrual periods (N=180)	Yes	123 (68.3)
	No	57 (31.7)

DISCUSSION

The study on menstruation and menstrual hygiene among high school rural girls received many positive responses to the questions. Thus, the study attempted to find the menstrual hygiene status and the related lifestyle factors such as diet and physical activity. In the present study, age of the girls ranged from 12-16 years with a mean age of 13±0.95 years while in another study by Thakre SB et al, age of the participants ranged from 12-17 years with a mean age of 13.82 years.[17] The majority of our study participants belonged to the lower socioeconomic class according to B G Prasad scale, and in the study by Basavaraju et al 36.5% were from the middle socioeconomic class.[18]

The mean age of menarche was noted as 12.3±0.8 years while the mean age of menarche in other studies i.e., by Suman et al, Mathiyalagan et al, and Aggarwal et al was 12.7 years, 12.9 years, and 13.16 years respectively.[8,19,20] The peak age of menarche in the present study was 12 years. The reason could be attributed to other lifestyle or genetic factors. Distribution of age at menarche can be due to nutritional or genetic factors as well as variations in physical activity. Despite of being in rural area, majority, 82.7% of the girls were using sanitary napkins as absorbent during their menstrual periods. This could be due to mass media awareness about availability of sanitary napkins and also due to distribution of low cost sanitary napkins by ASHA workers. Similar results was found in studied done by Kalita et al and Parikh et al, where 81.5% and 96.06% of adolescent girls use sanitary napkins respectively.[10,21] Contradictory observations were found in studies done by Patel DN et al and Gupta N et al where only 41.32% and 48.6% using sanitary napkins.[22,23] In our study, 78.9% of high school girls had 4-6 days of menstrual flow and in the study by Mathiyalagen et al 76.7% of girls had a menstrual flow for 3-5 days. The variations could be due to changes in their diet and other physical and psychological factors.[20] In relation to the frequency of changing sanitary napkins, it was found that, 70.2% had used less than four napkins daily which can be a risk factor for infections. A study by Gupta et al. found that 61.8% of participants changed sanitary pads more than once daily.[23] In this study, 71.7% of girls had a regular pattern of menstrual cycle and similar results was noted in a study done by Mathiyalagen et al where 71.1% had a regular menstrual cycle.[20] Study carried out by Parikh et al reported that 80.3% of girls had a regular menstrual cycle.[21]

The present study showed only 24.5% had a habit of skipping breakfast whereas a comparatively higher proportion of girls were found (65.31%) to skip breakfast in another study.[3] Also, 71.1% had reported a change in diet pattern after menarche and during periods while restriction/ altered physical activity was reported by 68.3% of girls during periods. Thus, study also showed an altered/ restricted diet and physical activity among the participants. This can be due to changing hormonal levels with dependency of intensity level of physical activity A study by Negi et al found that menstrual irregularities were more prevalent among adolescent girls who perform physical activities for three to seven days.[3] Menstruation was associated with abdominal pain among 61.7% whereas back pain was reported by 49.4% of the girls.

While the study by Parikh et al. reported abdominal pain and lower back pain among 53.33% and 42.52% respectively.[21] It was found that some form of pain/cramps persisted in nearly half of the girls during menstrual periods. The study demonstrates how inadequate hygiene management brought on by a lack of resources and expertise may and does result in health problems related to poor hygiene. Additionally, during their periods, girls are subjected to several cultural and societal constraints that are obstacles to their physical and emotional well-being.

Limitations

The present study was undertaken in the rural high schools of Mysuru. Though the study will enrich the knowledge regarding menstrual hygiene practices, the study population was comparatively small, and thus the results may not be generalisable. These study findings may be used as baseline knowledge for further researchers.

CONCLUSION

The present study was undertaken to know about the status of menstrual hygiene, and the associated factors among rural high school girls. The topic of menstruation and menstrual hygiene is a neglected topic in rural India. There is need to create awareness among rural girls related to menstrual hygiene and use of sanitary napkins instead of cloth as absorbent. Introduction of menstrual cup scheme as a pilot intervention by Karnataka Government under the name "Maitri menstrual cup" is another milestone where it is distributed free of cost to the adolescent girls. More IEC and BCC is required in rural areas as it plays a role in creating the awareness related to menstruation, diet and physical activity where all these are import for the health of the adolescent.

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REFERENCES

1. Health needs of adolescents Report. Available at: https://www.1997 WHO_TRS_609.pdf. Accessed on 5 August 2022.
2. Patil S N, Wasnik V, Wadke R.Health problems amongst adolescent girls in rural areas of Ratnagiri District of Maharashtra India. J Clin Diag Res. 2019; 3(5):1784-90.
3. Negi P, Mishra A, Lakhera P. Menstrual abnormalities and their association with lifestyle pattern in adolescent girls of Garhwal, India. J Family Med Prim Care. 2018;7(4):804.
4. Pandey A. Neutritional Status of rural Adolescent School Girls in_District Raigarh, Chhattisgarh. Int J Recent Sci Res. 2019;10(02):30931-4.
5. Kumar P, Srivastava S, Chauhan S, Patel R, Marbaniang SP, Dhillon P. Associated factors and socio-economic inequality in the prevalence of thinness and stunting among adolescent boys and girls in Uttar Pradesh and Bihar, India. Gopichandran V, editor. PLoS One. 2021;16(2):e0247526.
6. Lalbiaknungi L, Roy S, Paul A, Dukpa R. A Study on menstrual hygiene and dysmenorrhea of adolescent girls in a rural population of West Bengal. J Comprehens Health. 2015;3(2):33-41.
7. Guidance of menstrual health and hygiene. Available at: https://www.unicef.org/media/91341/file/UNICEF-Guidance-menstrual-health-hygiene-2019.pdf. Accessed on 23 August 2022.
8. Aggarwal S, Ambalkar D, Madhumathi J, Badge V, Humne A. Menstrual Hygiene practices of adolescent girls in rural Maharashtra. Indian J Gender Stud. 2021;28(1):127-37.
9. Chandar D, Naik BN, Thumati G, Sarkar S. Assessment of dietary habits and nutritional status among adolescent girls in a rural area of Puducherry: a community-based cross-sectional study. Int J Adolesc Med Health. 2020;32(5):20180001.
10. Kalita D, Pathak G. Study on hygiene practice among adolescent girls with special reference to menstrual hygiene in Barpeta, Assam. Int J Med Sci Public Health. 2019;(2):1-9.
11. Chapparbandi S, Nigudgi S. A cross sectional study on menstrual hygiene of adolescent girls in rural field practice area of Kalaburagi, Karnataka, India. Int J Community Med Public Health. 2016;2233-6.
12. Sinha RN, Paul B. Menstrual hygiene management in India: The concerns. Indian J Public Health. 2018;62: 71-4.
13. Menstrual Hygiene Management: National Guidelines 2015 pdf. Available at: https://jalshakti-ddws.gov.in/sites/default/files/Menstrual-Guidelines.pdf. Accessed on 22 August 2022.
14. Menstrual hygiene scheme. Available at: http://nhm.gov.in/index1.php?lang=1&level=3&sublinkid=1021&lid=391. Accessed on 22 August 2022.
15. Training module for ASHA on menstrual hygiene. Available at: https://www.nhm.gov.in/images/pdf/programmes/mhs/Training_Materials/PDF_English/Training_module.pdf. Accessed on 23 August 2022.
16. Menstrual hygiene. Available at: https://wcd.nic.in/sites/default/files/2-Sabla_PDF_English.pdf. Accessed on 23 August 2022.
17. Thakre SB, Thakre SS, Reddy M, Rathi N, Pathak K, Ughade S. Menstrual hygiene: knowledge and

practice among adolescent school girls of Saoner, Nagpur District. J Clin Diag Res. 2011;5:7.
18. Basavaraju V, Bukanakere CL, Dsouza MJ, Mallenahalli AKS. A study of menstrual hygiene among rural adolescent school girls in rural field practice area of a medical college, Davangere- a cross sectional study. Int J Community Med Public Health. 2019;6(10):4538.
19. Suman SK, Prasad B. Cross-sectional study on menstruation and menstrual hygiene among adolescent girls of RHTC, ANMMCH, Gaya. IAIM. 2017;4(6):196-200.
20. Mathiyalagen P, Peramasamy B, Vasudevan K, Basu M, Cherian J, Sundar B. 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.
21. Parikh V, Nagar S. Menstrual hygiene among adolescent girls studying in a university of Gujarat. J Family Med Prim Care. 2022;11(7):3607.
22. Patel DN, Amin S, Bhajiwala J, Acharya M, Baradia K, Kumar A. A Community-based cross-sectional study on knowledge and belief of menstruation and practices of menstrual hygiene among adolescence girls of Vadodara, Gujarat, India. JCDR. 2022;16(2): LC06-9.
23. Gupta N, Kariwala P, Dixit AM, Govil P, Mahima, Jain PK. A cross-sectional study on menstrual hygiene practices among school going adolescent girls (10-19 years) of Government Girls Inter College, Saifai, Etawah. Int J Community Med Public Health. 2018;5(10):4560-5.

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