

Original Research Article

Menstrual health - knowledge, experiences and practices among medical students: a cross sectional study

Narayanappa Shashikala, Bhagyashree Kathari*

Department of Community Medicine, Subbaiah Institute of Medical Sciences, Shimoga, Karnataka, India

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*Correspondence:

Dr. Bhagyashree Kathari,

E-mail: drbhagyashree91@gmail.com

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ABSTRACT

Background: Menstrual hygiene is a noteworthy public health issue that is linked to gender inequality, discriminatory, social norms, cultural taboos, poverty and lack of basic services like toilets and sanitary products, restricting women's participation in community life. Thus understanding the knowledge of the future healthcare providers is imperative.

Methods: A cross sectional study was conducted among 290 female medical undergraduate students during the period of July and August 2023. The data was obtained with the pre-structured questionnaire through Google forms.

Results: Among 290 female medical undergraduates, 93.1% of students had received education about menstruation, 83.4% shared this experience with their mothers. Nearly 42.8% of them could not attend to their daily work and avoided college during menstruation because of menstrual symptoms such as dysmenorrhea, nausea, vomiting and giddiness. However, 94.8% are willing to seek help from a health care provider for their menstrual problems.

Conclusions: Menstrual health education should address the areas where they lack knowledge, attitudes, and beliefs and identify the socio-cultural and environmental barriers to improve menstrual hygiene management (MHM) programme.

Keywords: Disposable sanitary pad, Dysmenorrhea, Hygienic practices, Menstrual health, Undergraduates

INTRODUCTION

Menstrual health plays a vital role among females, especially of women in the reproductive age group relevant to all sustainable developmental goals (SDGs), which aim towards universal access to adequate, equitable sanitation, hygiene and the impact of stigma, shame and stress around menstruation for all.¹ Healthy menstrual hygiene management (MHM) includes the usage of safe materials to adsorb or collect menstrual blood that can be changed as frequently as required and in privacy, cleaning private parts with soap and water, and enabling access to facilities for the safe disposal of the materials used for menstrual management.^{2,3}

Menstruation is considered as a taboo to speak about, thus its social barrier in inculcating hygienic practices in many

developing countries, including India. Thus, menstrual hygiene is a noteworthy public health issue that is associated with toxic shock syndrome, reproductive tract infections (RTI), other vaginal diseases, human rights, social justice, and the education of girls, which are imperative for achieving gender equality.^{4,5}

The environmental impact of menstrual products and awareness regarding menstrual waste disposal which is non-biodegradable in nature is less likely to be addressed in low and middle income countries.⁶⁻⁸ The problem is attenuated not only from lack of options for disposal but also from myths, misconceptions and stigma associated with menstrual waste, leaving poor outcomes for future generations. Understanding the menstrual hygiene practices and knowledge of the undergraduates will provide an insight into the current MHM practices. With

this background, the study was done with the following objectives: to assess the knowledge, experiences and hygienic practices related to menstrual health among female medical undergraduate students in SUIMS, Shivamogga; and also to assess the knowledge regarding the environmental impact of menstrual products used by the undergraduate students.

METHODS

A cross-sectional study was conducted from 01 July to 05 August 2023 among undergraduate female students at Subbaiah Institute of Medical Sciences (SUIMS), Shivamogga, Karnataka.

All the 317 female students from 1st to 3rd year MBBS were included in the study by convenient sampling technique. The estimated sample size for the study was 320, based on 3% prevalence of menstrual cup usage, an allowable error of 2% and 10% non-response rate.⁶

Inclusion criteria

Female undergraduate students present on the day of data collection were included.

Exclusion criteria

Those who were not willing to participate were excluded.

The students were approached after the class hours by obtaining permissions from college authorities', the data was collected from a pre-designed, pretested, structured, self-administered anonymous questionnaire via Google Forms. The purpose of the study was explained to the students present on the day of collection and those who gave consent were included in the study.

The questionnaire addressed various areas like socio-demographic profiles, age of menarche, issues related to the first menstrual cycle, menstrual symptoms, health-seeking behaviour, menstrual hygiene practices, menstrual products, and knowledge of the environmental and economic impact of these products. Informed consent was obtained from participants, and confidentiality was assured. The study was approved by the institutional ethical committee, with reference number IEC-SUIMS/01/2024-25.

Statistical analysis

The collected data were compiled in Microsoft excel and analyzed using statistical package for the social sciences (SPSS) version 20.0. Categorical variables were presented as frequencies and percentages, while quantitative variables were expressed as mean and standard deviation. The chi-square test was employed to determine statistical significance, with a p value of <0.05 considered significant.

RESULTS

Socio-demographic profile

This study presents important insights into menstrual hygiene practices and attitudes among medical students. 290 (91.48%) students among 317 female students from 1st, 2nd and 3rd year responded to the survey. Among the surveyed students 242 (83.4%) are residing in the hostel, 199 (68.6%) come from urban areas, 217 (75%) of fathers and 179 (61%) of mothers are graduates (Table 1).

Table 1: Socio-demographic details of the undergraduate students of SUIMS.

Socio-demographic details	Frequency (n=290)	Percentage
Year of study (MBBS)		
1 st	97	33.4
2 nd	92	31.7
3 rd	71	24.5
4 th	18	6.2
Internship	12	4.1
Age in years		
18-20	160	55.2
21-23	125	43.1
24-26	5	1.7
Place of stay		
Hostel	242	83.4
PG	45	15.5
House	3	1
Place of residence		
Rural	91	31.4
Urban	199	68.6
Father education		
Middle school	7	2.4
High school	26	9
Intermediate/post diploma	40	13.8
Graduate/post graduate	217	74.8
Mother education		
Middle school	15	5.2
High school	43	14.8
Intermediate/post diploma	53	18.3
Graduate/post graduate	179	61.7

The average age of the students was 20.46±1.35 years and age of menarche was 13.25±1.302 years. 124 (42.8%) students reported avoiding college during menstruation and 275 (94.8%) are willing to seek help from healthcare providers for menstrual issues.

Out of 270 girls, 93% received menstrual education before their first menstrual cycle. Of these, 61.4% received information from their mothers, 48.3% from secondary school, and 24.1% from friends. When they experienced their first menstrual cycle, 83.4% of the girls shared their

experiences with their mothers, and 93.4% used disposable sanitary pads. Moreover, 74.5% of the girls followed some form of sociocultural restrictions during their first menstrual cycle, with 61% of them experiencing school absenteeism as a result (Table 2).

Table 2: First menstrual cycle experience among undergraduate students of SUIMS.

First menstrual cycle experience	Frequency (N)	Percentage
Received education about menstruation		
Yes	270	93.1
No	20	6.9
Seeking help from doctor for menstrual problems	275	94.8
Work days in the last month that you did not attend?	124	42.8
If yes, source of information		
Primary school	51	17.6
Secondary school	140	48.3
From mother	178	61.4
From a relative	31	10.7
Friends	70	24.1
Shared first menstrual cycle experience		
Mother	242	83.4
Menstrual products used during first menstrual period		
Reusable cloth	14	4.8
Disposable sanitary pad	272	93.8
Rituals followed during first cycle		
Isolated in room	15	5.2
Not allowed to enter the kitchen	5	5.2
Provided non spicy food	19	6.6
School absenteeism	41	14.1
All of the above	136	46.9
None of the above	74	25.5

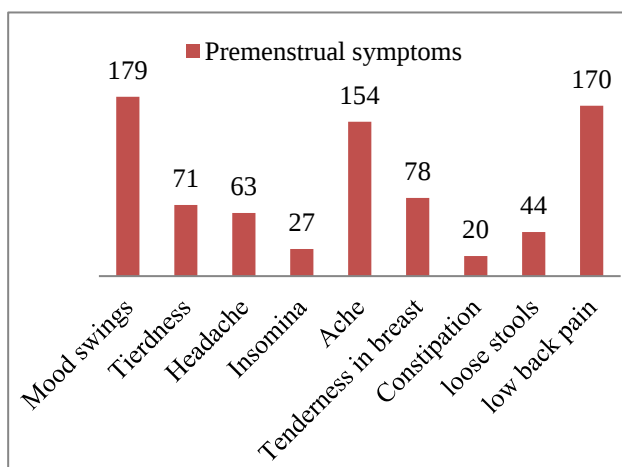


Figure 1: Distribution of premenstrual symptoms among undergraduate students.

Table 3: Distribution according to the menstrual products used and menstrual health practices.

Questions	Frequency (N)	Percentage
Wash and reuse of any menstrual materials during your last menstrual period		
	34	11.7
Materials you used to catch/absorb your menstruation during your last menstrual period		
Sanitary pads	262	90.3
Reusable sanitary pads	12	4.1
Period under wear	4	1.4
Tampons	3	1.0
Menstrual cups	7	2.4
How many times did you change your menstrual material on the heaviest day of your period		
1	3	1.0
2	59	20.3
3	137	47.2
4	74	25.5
5	17	5.9
Wash your hands before changing your menstrual materials during your last menstrual period		
Never	24	8.3
Sometimes	99	34.1
Every time	167	57.6
Wash your hands after changing your menstrual materials during your last menstrual period		
Sometimes	7	2.4
Every time	283	97.6
How often do you wash your genitals during menstruation?		
Twice per day	66	22.8
≥3 times per day	178	61.4
Did you use soap for washing		
Never	88	30.3
Sometimes	152	52.4
Every time	50	17.2
Disposal of menstrual waste		
In household rubbish	268	92.4
Wrapping of menstrual materials		
Plastic cover of pad	170	58.6
In paper	81	27.9
In cloth	35	12.1

In their last menstrual cycle, most women (90.3%) used disposable sanitary pads, while a smaller proportion (7.9%) used reusable menstrual products such as menstrual cups, period underwear, and reusable sanitary pads. When disposing of used sanitary products, a significant number (58.6%) wrapped them in plastic paper provided with the pad, whereas a smaller proportion (34%) used paper or cloth to wrap them before disposal. The majority (92.4%) of women disposed of their sanitary products along with household trash. During their heavy flow days, many

women (72.7%) changed their menstrual products 3-4 times a day. In terms of handwashing practices, 57.6% of women washed their hands before changing their menstrual products, and an even higher percentage (97.6%) washed their hands after changing them (Table 3).

The adequate knowledge among the medical students regarding the time taken for decomposition of the sanitary pad (>500 years) was 22.8%, waste generated by women per year (60 kg) was 27.6%, and average money spent on menstrual products per month was rupees 100-300 in 36.2% of students. However, only around 13.1% of the students knew that the silicon menstrual cup can be used for 5-6 years (Table 4).

Table 4: Knowledge related to environmental and economic factors among undergraduates.

Questions	Frequency	Percentage
How long does it take for a disposable sanitary pad to decompose? (in years)		
5-10	107	36.9
1-2	69	23.8
>500	66	22.8
100-200	48	16.6
Waste generated by women per year (kg)		
150	55	19.0
60	80	27.6
40	89	30.7
100	66	22.8
How long can a silicon menstrual cup be used?		
6 months	131	45.2
Single use	26	9.0
2-3 years	95	32.8
5-6 years	38	13.1
Average amount of money spent on menstrual products per month		
<100	40	13.8
100-300	105	36.2
300-500	85	29.3
>500	60	20.7

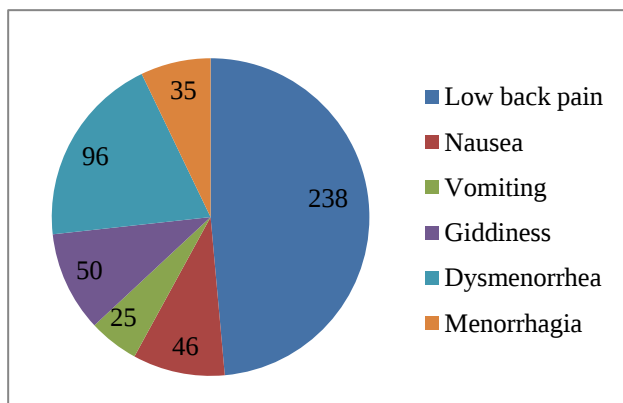


Figure 2: Distribution of menstrual symptoms among undergraduate students.

Impact of socioeconomic factors

Mother's education, place of residence, and income levels did not significantly ($p>0.05$) influence knowledge (including environmental and economic implications), practices, menstrual problems or health-seeking behavior among the students.

This study highlights areas for potential improvement in menstrual hygiene education, particularly around the use of soap for washing, proper disposal methods and encouraging students to seek help for menstrual issues.

DISCUSSION

Women spend approximately 7-8 years of their lives menstruating, making menstrual issues a significant concern, especially for adolescents and young adult females. The mean age of menarche in our study was 13.25 ± 1.3 years, closely aligning with findings from various other studies conducted across different populations in India.⁹⁻¹¹

In our study, nearly 93% of participants were aware of menstruation before experiencing menarche, consistent with the study by Bushra et al. However, our participants demonstrated a higher level of pre-menarcheal knowledge, compared to medical students surveyed from other regions in the country, where awareness ranged from 56.92% to 84.24%.^{9,11-13} Majority of our participants 90.3% used disposable sanitary pads, with only 8% opting for reusable menstrual products like menstrual cups, period underwear, and reusable sanitary pads, consistent with findings from other studies across India.⁹⁻¹³ This suggests an improved awareness among girls about menstruation, as an impact of MHM program.

Premenstrual symptoms such as mood swings (61.7%), low back pain (58.6%), and acne (53.1%) reported by our participants were similar to those observed in studies by Bushra et al and Mohapatra et al.^{10,11} During menstruation, 82% experienced low back pain, 33% reported dysmenorrhea, and 42% missed work or college, findings that align with various other studies.

The rising prevalence of dysmenorrhea in the recent past among adolescent girls and young women, has been linked to changes in lifestyle, including diet, sleep patterns, and increased stress levels.¹⁴⁻¹⁷ Given that 94% of students expressed a willingness to seek help from healthcare providers, providing counseling, identifying those with severe dysmenorrhea and providing appropriate treatment would be a step towards improving MHM. However, the focus has shifted towards providing menstrual leaves for women in higher educational institutes and work places. Additionally, the menstrual leave policy may become a barrier towards women empowerment and limit their socially and economically productive roles in society.

The frequency of changing menstrual products was satisfactory, with 196 (67.5%) participants changing them every 6-8 hours on heavy flow days, a practice comparable to the findings of Sharma et al and Patel et al and better than that reported by Bushra et al.^{9,10,12}

However, a study by Pokle revealed that 56.69% of participants changed pads two times or less per day, a concern echoed in our study, where 21.2% of participants reported similar practices. Prolonged use of sanitary pads can be harmful, potentially emitting carcinogens, being bacteriologic ally unsafe, and altering the pH of the female reproductive tract.¹⁸

Menstrual hygiene practices during cycles, including hand washing and genital washing, were found to be lacking among our participants. Only 57.6% washed their hands before changing menstrual pads, among them 82.7% either used soap only sometimes or never at all for hand washing and 15.8% washed their genitals less than two times per day. However, hand washing practices after changing pads were better, with 97.6% following the practice, and 84.1% washing their genitals more than twice a day.^{9,10,12,13} Given the variations in hand washing and genital washing practices observed in various studies, MHM sensitization programs need to address these areas and ensure an enabling environment with soap, water, and adequate privacy.

Menstrual products should be disposed of in a manner that minimizes environmental pollution. In our study 58.6% of participants wrapped sanitary pads in the plastic provided with the pad, and 92.4% disposed of them with household rubbish. Similar disposal practices have been observed in studies across middle- and low-income countries, underscoring the need for regulated sanitary pad disposal methods, such as wrapping in paper, separate disposal, and the establishment of incinerators, particularly in hostels and establishments with large groups of reproductive-age women.^{8,13,19,20}

Knowledge about the degradation of sanitary pads, the amount of waste generated per menstrual cycle from disposable pads, and the reusability of menstrual cups was found to be grossly inadequate among 80% of participants. With only 8% of women using reusable menstrual products, and nearly half spending between Rs 3,600/- to Rs 6,000/- annually on menstrual products, there is a pressing need to raise awareness about the health, economic, and environmental benefits of switching to sustainable menstrual products as part of MHM education for all women of reproductive age rather than just emphasizing on usage of sanitary pads.

Limitations

The reasons for inadequate hand hygienic practices and improper disposal of sanitary pads would have been included in the study.

CONCLUSION

The study highlights several key aspects of menstrual health and hygiene management among young female students as it the most neglected health related issue. While awareness of menstruation before menarche is relatively high, and most students use disposable sanitary pads, there remain significant gaps in knowledge and practices related to menstrual hygiene. Issues such as inadequate hand washing, improper disposal of menstrual products, and insufficient use of reusable menstrual products point to the need for enhanced education and resources. Additionally, the rising prevalence of dysmenorrhea and other menstrual-related problems emphasizes the importance of extending the scope of MHM to improve access to health care contributing to their overall well-being and academic success, rather move towards menstrual leave policy.

Recommendations

Integration of comprehensive menstrual health education into the school curriculum and community based education focusing on hygiene practices, the benefits of reusable products, and the environmental impact of disposable sanitary pads is need of the hour. Institutions should ensure that girls and young women should have access to clean, private facilities with adequate supplies of soap and water. Schools and colleges should offer regular counseling sessions on menstrual health, focusing on the management of dysmenorrhea and other menstrual-related issues.

Relevance to preventive medicine

Menstrual health awareness programs in schools and communities should go beyond merely addressing menstrual symptoms and the use of sanitary pads.

They should also focus on remedies for menstrual issues, promote the use of reusable menstrual products, and educate about the environmental impact of disposal methods. Additionally, these programs should also address the hygienic practices, cultural rituals, seeking medical care, and tackling the stigma and taboos surrounding menstruation. Ensuring access to privacy, soap, and water is also crucial.

The introduction of menstrual leave policies to address painful menstruation requires thorough examination and consultation with all relevant stakeholders, including healthcare professionals, lawmakers, students, educators, employers, governments, and women's empowerment NGOs. Such policies must be carefully considered, as they may impact women's participation in society.

Implications for clinical practice

Premenstrual symptoms (PMS) and dysmenorrhea should be addressed at all levels of healthcare by providing appropriate management and support. This approach will

help prevent the loss of women's participation in various societal activities and improve their overall quality of life.

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