International Journal of Medical and Pharmaceutical Research

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Available online on: https://ijmpr.in/

Research Article

Barriers to Optimal Menstrual Hygiene Practices Among Women of Reproductive Age: Findings from a Tertiary Care Hospital of Southern Uttar Pradesh, India

Anjani Kumar Srivastava[1], Anjali Singh[2], Aparnesh Pandey[1]

[1] Department of Community Medicine, United Institute of Medical Sciences, United University, Prayagraj, Uttar Pradesh, India
[2] Department of Obstetrics and Gynecology, United Institute of Medical Sciences, United University, Prayagraj, Uttar Pradesh, India

OPEN ACCESS

Corresponding Author:

Anjani Kumar Srivastava
Department of Community Medicine, United Institute of Medical Sciences, United University, Prayagraj, Uttar Pradesh, India.

Received: 10-09-2025
Accepted: 28-09-2025
Available online: 20-10-2025

ABSTRACT

Background: Menstrual hygiene is a crucial yet often neglected public health issue in India, especially among reproductive-age women. According to the National Family Health Survey-5 (2019–21), only 64% of women aged 15–24 years in rural India use hygienic methods during menstruation. Inadequate menstrual hygiene has been associated with increased risk of reproductive tract infections (RTIs), with studies indicating that up to 70% of women using unhygienic absorbents experience at least one symptom of RTI. Cultural taboos, low awareness, and socio-economic barriers often compound these challenges.
Objectives:
1. To assess the menstrual hygiene practices among reproductive-age women attending a tertiary care hospital.
2. To identify key barriers to optimal menstrual hygiene management and suggest possible interventions.
Materials & Methods: This prospective observational study was conducted from December 2024 to March 2025 at a tertiary care teaching hospital in Prayagraj, Uttar Pradesh, India. A total of 100 women aged 15–49 years attending the Obstetrics & Gynaecology OPD were selected using simple random sampling. Data were collected using a pretested semi-structured questionnaire through direct interviews. Statistical analysis was performed using R software with chi-square tests to identify associations.
Results: Only 55% of participants used sanitary pads, while 41% relied on cloth. Cost (51%) and embarrassment (29%) were major barriers to pad usage. Awareness of menstruation prior to menarche was low (22%). Significant associations were found between education level and the use of sanitary pads and between parents' education and openness in discussing menstrual issues.
Conclusion: This study highlights the persistent influence of socio-cultural beliefs, low awareness, and economic constraints on menstrual hygiene practices. Public health interventions must prioritize menstrual education, access to affordable sanitary products, and efforts to dismantle cultural taboos to promote safe menstrual hygiene among women of reproductive age.

Keywords: *Menstruation; Menstrual Hygiene practice; socio-cultural beliefs; Reproductive health.*

INTRODUCTION

Menstruation is a crucial biological process that happens routinely in the lives of teenage girls and women. From the onset of menarche to the end of menopause, a woman experiences menstrual cycles for a total of about 35 to 40 years of her life. Worldwide, more than 800 million women aged 15 to 49 are experiencing menstruation on any given day[1].

Although it is universal, menstruation continues to be shrouded in stigma and societal silence. The topic is frequently shrouded in cultural restrictions, which obstruct honest dialogue at personal, family, and community levels[2]. A research study in South Asia revealed that one-third of girls in school had no knowledge of menstruation before their first menstrual experience. Additionally, 98% of them were unaware that menstrual blood comes from the uterus[2]. Menstrual education is still inconsistent, even in wealthy countries such as the United States. Girls frequently hear that menstruation is a natural occurrence, but the implicit message indicates it should be hidden[3].

In numerous African settings, handling menstruation presents extra difficulties. For instance, availability of sanitary menstrual products is greatly restricted. Studies in rural Kenya show that two-thirds of girls using sanitary pads receive them from male partners, revealing an important deficiency in access to safe menstrual supplies.[4] Research in Ethiopian schools revealed that more than 50% of female students were absent from one to four school days monthly due to issues related to menstruation[1].

In India, the cultural stigma and silence around menstruation amplify the distress linked to it. Consequently, numerous women find it difficult to adopt safe menstrual hygiene methods[5]. Reports indicate that around 88% of menstruating individuals use makeshift and frequently unsanitary materials like old rags, ash, sand, leaves, or newspapers.[6]

Efficient menstrual hygiene management (MHM) entails utilizing clean, absorbent materials, having access to soap and water, providing private areas for changing, and ensuring suitable facilities for the safe disposal of used items[7]. Women in the reproductive age group (WRA), making up approximately 22.2% of the overall population, are notably susceptible to health hazards associated with inadequate menstrual hygiene[8]. Girls and women in this demographic need nurturing settings that enhance their health, education, and general well-being[9,10].

In India, most of the current research has focused mainly on menstrual hygiene for adolescent girls, frequently overlooking the wider reproductive-age female demographic. Given this context, the current study aims to assess menstrual hygiene practices, examine relevant cultural beliefs and traditions, and pinpoint major obstacles hindering safe menstrual hygiene for women of reproductive age visiting a tertiary care hospital.

Objectives

1. To assess the menstrual hygiene practices among reproductive-age women attending a tertiary care hospital.
2. To identify key barriers to optimal menstrual hygiene management and suggest possible interventions.

MATERIALS AND METHODS

A prospective observational study was conducted at United Medicity, a tertiary care hospital of United Institute of Medical Sciences, Prayagraj, Uttar Pradesh, India from December 2024 to March 2025. Sample size was calculated by using the formula n = 4pq/l2 where p = prevalence of satisfactory menstrual hygiene practice; q = 100-p; l = allowable error for p = 20% of p. Assuming p = 50, sample size comes out to be 100. So, a total of 100 study participants were taken for the study.

Study Participants: Women of reproductive age group i.e. 15 – 49 years, who attended the Obstetrics & Gynaecology OPD of the hospital, were selected for the study by simple random sampling using random number table method.

- **Criteria for exclusion:**

• Participants who refused consent
• Menarche not achieved
• Women who have undergone hysterectomy• Women who have experienced menopause
• Mothers who are pregnant and breastfeeding
• Recognized instance of any mental health disorder

Data collection: was done by direct interview with the help of a semi-structured questionnaire in native language i.e., Hindi and in English. The questionnaire had different sections consisting of socio-demographic profiles, questions about their menstrual cycles, and various problems associated with them, assessing their understanding regarding menstruation and their menstrual hygiene practices. Pre-testing of the questionnaire was done by the investigator on 10 women (10% of the sample size) who were not included in the sample size. Cronbach's alpha and reliability of the questionnaire was tested.

Informed Consent: Before interviewing any study participant, the purpose of the study was explained to the participants and a written informed consent in the native language of the participant was taken for those who were above 18 years of age. For those below 18 years of age, an assent was taken from their local guardian for the study. Participants were informed of their full right to skip or ignore any question or withdraw from their participation at any stage of the study.

Statistical tests: The data was entered in MS Excel and was analysed using R software. Basic descriptive statistics and proportions were calculated and presented. Chi-square test was used to draw associations between variables at a 5% level of significance.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Reference no. UIMS/IEC/EC/2024/14722.

RESULTS

Socio-demographic characteristics of the participants were as follows: for age, the majority (37.0%) falls between 25-34 years old, followed by 36.0% in the 15-24 range, 22.0% in the 35-44 range, and only 5.0% in the 45-49 range. In terms of religion, 83.0% of participants are Hindu and17.0% are Muslim. For education, almost half (48.0%) are categorized as illiterate, while 28.0% have some primary education and 24.0% have had secondary education or higher. In terms of occupation, the majority (69.0%) are housewives, followed by 10.0% private employees and 5.0% labourers. For type of family, most participants (51.0%) are in nuclear families, while 41.0% are in joint families and 8.0% are in three-generation families. Finally, when it comes to socio-economic class as per Updated Modified BG Prasad Socio-economic Classification 2025, the most common (29.0%) is Class V, followed by Class II (21.0%), IV (19.0%), III (16.0%), and I (15.0%). In terms of parental education and occupation among the participants, a vast majority of participants' mothers (79.0%) were illiterate, while nearly half of the fathers (49.0%) also lacked formal education. Occupationally, most mothers (81.0%) were homemakers. Among fathers, the predominant occupation was private employment (32.0%), followed by equal proportions of merchants, farmers, and labourers (each 17.0%), with smaller percentages engaged as government employees (7.0%) or in other occupations (10.0%).

TABLE 1: Knowledge of Menstruation and Sources of Information among Study Participants

Awareness regarding Menarche prior to Menstruation	**Frequency**	**Per cent**
Yes	22	22.0
No	78	78.0
Source of information about Menstruation	**Frequency**	**Per cent**
Mother	81	81.0
School	5	5.0
Health Professional	2	2.0
Others	12	12.0
Menstruation is a	**Frequency**	**Per cent**
Physiological Process	36	36.0
Pathological Process	4	4.0
Curse of God	2	2.0
I do not know	58	58.0
Total Sample Size (N)	100	100.0

Table 1 provides data on awareness and perceptions about menstruation among the study participants. The first category is awareness about menarche before the first menstrual period. The majority (78.0%) of the participants were not aware of menarche beforehand, while only 22.0% were aware. For majority (81.0%) of the participants, the source of information about menstruation was mothers. The majority (58.0%) of the participants said that they didn't know what it was. However, a significant percentage (36.0%) understands menstruation to be a physiological process.

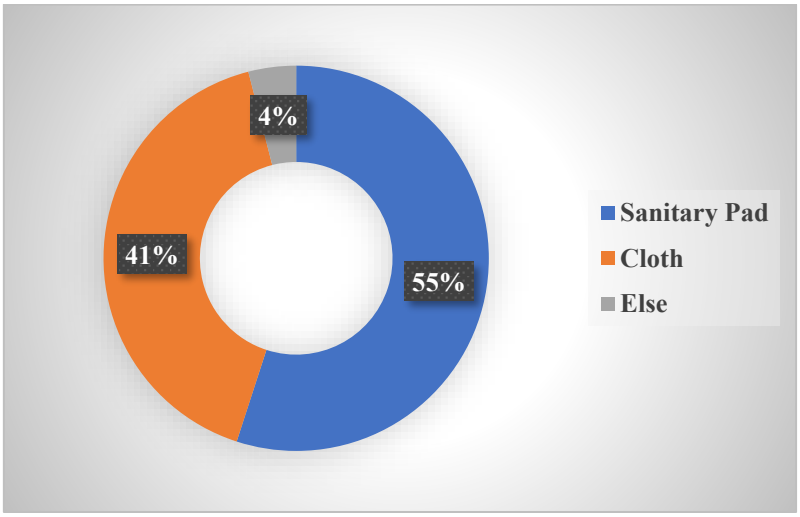

FIGURE 1: Distribution of participants based on the Menstrual material used

Figure 1 provides information that majority (55.0%) of the participants were using sanitary pads during their menstrual periods, while 41.0% use cloth. A small percentage (4.0%) uses other materials.

TABLE 2: Distribution of Study Participants Based on Cloth Reuse as a menstrual material

If cloth is used as a menstrual material, then whether it is reused or disposed after single use	**Frequency**	**Per cent**
Re-used	16	39.0
Disposed after single use	25	61.0
Total	41	100.0
If cloth is reused; THEN is it washed & dried in sunlight before use	**Frequency**	**Per cent**
Yes	14	87.5
No	2	12.5
Total	16	100.0

The table 2 provides information on the practices of cloth as a menstrual absorbent. 16 (39.0%) women reuse this cloth. 25 (61.0%) women dispose of the cloth after a single use. If the cloth is reused then 87.5% of participants were able to wash and dry the cloth in sunlight before the second time use.

TABLE 3: Distribution of Participants Based on Environmental Factors for the management of menstrual hygiene

Access to clean water	**Frequency (%)**	**Lack of a place where girls exchange absorbent materials**	**Frequency (%)**
Yes	80 (80.0)	Yes	59 (59.0)
No	20 (20.0)	No	41 (41.0)
Sanitary toilet at home	**Frequency (%)**	**Lack of container to dispose used absorbent materials**	**Frequency (%)**
Present	67 (67.0)	Yes	37 (37.0)
Absent	33 (33.0)	No	63 (63.0)
Privacy of the toilet	**Frequency (%)**		
Yes	63 (63.0)		
No	37 (37.0)		
Total Sample Size (N)	100 (100.0)		

Table 3 depicts that 20.0% participants do not have access to clean water, highlighting the need for improvement in this area. 33.0% of respondents do not have a sanitary toilet at home, 37.0% of respondents do not have privacy when using the toilet, The majority (59.0%) of respondents reported that there is no place where girls can exchange absorbent materials, 37.0% of respondents reported that they do not have a container to dispose of used absorbent materials, which may contribute to poor hygiene practices and environmental concerns.

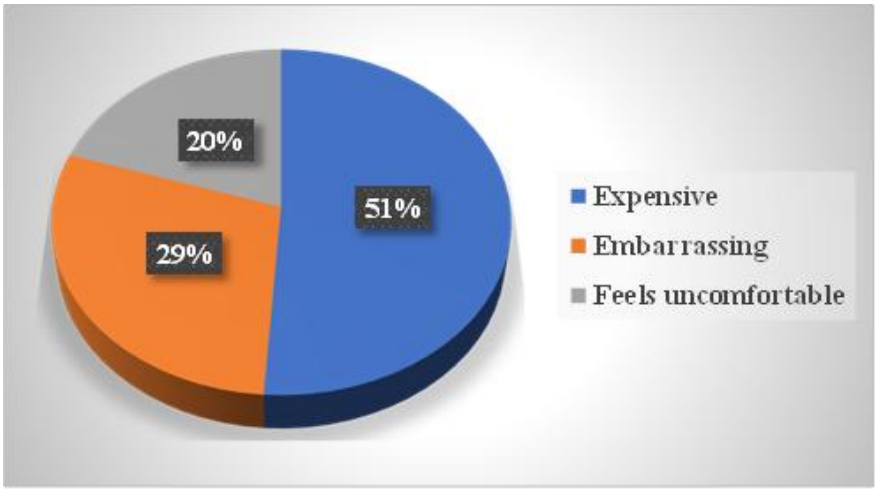

FIGURE 2: Distribution of Participants Based on Their Reasons for Not Using Sanitary Pads

Figure 2 outlines the reasons given by 45 participants for not using sanitary pads and instead opting for cloth or other alternatives. Cost is the most common barrier, with over half of the participants (51.0%) stating that pads are too expensive.

TABLE 4: Cross Tabulation of Participants' Educational Status and Menstrual Material Use

Participant's Education	**Menstrual material used**					
		Sanitary Pad	**Cloth**	**Else**		**Total**
	Illiterate	18 (37.5%)	29 (60.4%)	1(2.1%)		48(100.0%)
	Primary	20 (71.4%)	7 (25.0%)	1(3.6%)		28 (100.0%)
	Secondary & above	17 (70.8%)	5 (20.8)	2 (8.3%)		24(100.0%)
Chi square test						
	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	15.264[a]	4	.004	.003		
Fisher's Exact Test	15.213			.002		
a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is .96.						

Table 4 shows that among those with higher education (Primary and Secondary & above), the use of sanitary pads is higher (around 71.0%) compared to illiterate participants (37.5%). Illiterate participants are more likely to use cloth (60.4%) compared to other education groups. The above table shows a significant association (p-value < 0.05) between participants educational status and use of sanitary pads.

TABLE 5: Cross tabulation of Maternal Education and Menstrual Taboo

Maternal Education	**Freely discuss with parents and friends about menstrual issues (Menstrual Taboo)**					
		Yes	**No**		**Total**	
	Illiterate	24 (30.4%)	55 (69.6%)		79(100.0%)	
	Primary	2 (18.2%)	9 (81.8%)		11 (100.0%)	
	Secondary & above	8(80.0%)	2(20.0)		10(100.0%)	
Chi-Square Tests						
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	11.118[a]	2	.004	.003		
Fisher's Exact Test	10.115			.004		
a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.40.						

Table 5 shows higher education levels in mothers are associated with a greater likelihood of their children freely discussing menstrual issues, p-value < 0.05 indicating a statistically significant association between mother's education level and the ability to freely discuss menstrual issues.

TABLE 6: Cross tabulation of Menstrual Taboos and Father's Education Levels

Father's Education	**Freely discuss with parents and friends about menstrual issues (Menstrual Taboo)**			
		Yes	**No**	**Total**
	Illiterate	11 (22.4%)	38 (77.6%)	49(100.0%)
	Primary	10 (37.0%)	17 (63.0%)	27 (100.0%)
	Secondary & above	13(54.2%)	11(45.8%)	24(100.0%)

Chi-Square Tests						
	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
Pearson Chi-Square	7.374[a]	2	.025	.026		
Fisher's Exact Test	7.258			.025		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.16.						

According to Table 6, higher education levels in fathers are associated with a greater likelihood of their children freely discussing menstrual issues, p-value < 0.05 indicating a statistically significant association between father's education level and the ability to freely discuss menstrual issues.
There was no significant association found between menstrual materials used and religion, socio- economic status, parent's education.

DISCUSSION

Menstrual hygiene practices among reproductive-age women in India are influenced by a variety of factors, including cultural beliefs, stigma, socioeconomic status, and education. Many women still face significant challenges in managing their menstruation. This often leads to the use of less sanitary alternatives like cloth, which can increase the risk of infections[11].

Socio-demographic variables

This study shows that 73.0% of the participants were 15-34 years old, 83.0% were Hindu by religion, 48.0% participants were illiterate, and 69.0% of the participants who were married were housewives. 79.0% of mother's were illiterate, 49.0% of fathers were categorized as illiterate, 81.0% of mothers of the participant were housewives while fathers were most commonly were private employees.

According to the findings reported by Paul KK et al., the average age of the study participants was 28.03 years with a standard deviation of 7.01 years. Approximately 90% of the women were married, and a substantial proportion (67.6%) had completed education beyond the tenth grade. Furthermore, 94.6% of the respondents reported access to a private sanitary toilet, while 65.2% had piped water supply within their households[12]. In a separate study conducted by Das DK et al., the majority of respondents were in the 21–30 years age bracket. Most participants were identified as Hindu (98.0%) and 79.0% had attained at least a high school level of education. A large proportion, around two-thirds (66.7%), were engaged as homemakers[13].

Knowledge regarding menstrual hygiene

In our study, 78.0% of the participants were not aware of menarche beforehand, majority of them learned about menstruation from their mother. Many participants did not know what it was, while only 36.0% of the participants knew menstruation is a physiological process, a smaller percentage (4.0%) perceive it to be a pathological process, and 2.0% view it as a curse of God. Overall, there is a lack of awareness and information about menstruation among the study participants.

According to the findings reported by Paul KK et al., the most commonly cited understanding of menstruation among participants was that it is a natural physiological process, accounting for 43.5% of responses. However, a significant proportion (37.0%) were unaware of its cause. A smaller segment of respondents perceived menstruation as a divine punishment (6.5%) or believed it to be the expulsion of impure blood (12.0%)[12]. In contrast, the study by Parikh V et al. documented that 78.7% of participants demonstrated adequate awareness regarding menstruation. In their study, 31.3% of respondents had received information from school, 39.8% from their parents, 3.9% from peers, and approximately 3.1% from miscellaneous sources[14]. This disparity in findings may be attributed to differences in the study population, as Parikh's study involved university-level students, who are more likely to possess accurate knowledge and understanding of menstrual health.

Menstrual Hygiene practices

55.0% participants in this study reported using sanitary pads during their menstrual periods, while 41.0% use cloth, a small percentage (4.0%) use other materials. 39.0% women reuse the cloth. While 61.0% women dispose of the cloth after a single use. 87.5% of women who re-use the cloth, wash and dry the cloth in sunlight before re-use, but 12.5% of women who re-use cloth i.e. 2 participants in all, were found that they do not dry their menstrual cloth in open sunlight before re-use. Overall, the data highlights a strong adherence to hygienic practices.

Paul KK et al found that the use of readymade absorbents was found in most of the subjects (91.0%) followed by homemade reusable (6.5%) and homemade disposable (2.2%) this is like our findings[12]. In contrast to this, Das DK et al found that cloth (44.0%) was the major absorbent material followed by sanitary napkin (36.2%)[13]. This could be because of the lower socio-economic status and lack of awareness and low level of education.

Environmental factors affecting Menstrual Hygiene Management

In this study 80.0% have access to clean water, the remaining 20.0% do not, highlighting the need for improvement in this area, and 33.0% do not have a sanitary toilet. 37.0% do not have privacy when using the toilet. The majority (59.0%) of respondents reported that there is no place where girls can exchange absorbent materials, which is concerning and may lead to girls using unhygienic methods or missing school due to lack of access to sanitary products. 37.0% of respondents reported that they do not have a container to dispose of used absorbent materials, which may contribute to poor hygiene practices and environmental concerns.

A systematic review by Betsu et al found that inadequate access to clean water is a common issue in low- and middle-income countries, significantly affecting the Menstrual hygiene management. Lack of privacy can lead to stress and discomfort during menstruation, affecting girls' school attendance and participation. Inadequate facilities in schools and public places force girls to use unhygienic methods and miss school. Lack of proper disposal methods can lead to environmental pollution and health risks[15].

Barriers to Menstrual Hygiene

This study found that **c**ost is the most common barrier for not using sanitary pads and instead opting for cloth or other alternatives, with over half of the participants (51.0%) stating that pads are too expensive which suggests that affordability is a key issue. Embarrassment is another significant factor, affecting nearly 29.0% of participants. This could be linked to cultural or social stigmas around menstruation. Discomfort affects 20.0% of participants, indicating that the physical feel or experience of wearing pads influences their choice.

71.0% of non-pad users are interested in switching to sanitary pads which indicates a strong preference or perceived benefits of using sanitary pads among this group. 77.0% of the total number of participants, experience shyness or discomfort when purchasing sanitary pads in the presence of a male shopkeeper or other people which indicates a significant social or cultural barrier surrounding menstruation and the purchase of menstrual hygiene products.

Saini et al. reported that individuals from lower socio-economic backgrounds, particularly daily wage earners, often faced financial constraints that limited their ability to purchase sanitary napkins. Among school-going girls, some were found to reserve the use of sanitary pads exclusively for school hours or outings, avoiding their use at home due to limited supply. Additionally, several respondents lacked awareness regarding the correct usage of sanitary products, and some were uninformed about the availability of subsidized or government-provided sanitary pads[16]. Several studies have consistently highlighted the high cost of sanitary products as a key barrier to their regular use. For instance, Betsu et al. emphasized that deep-rooted cultural taboos and societal stigmas surrounding menstruation continue to pose significant challenges to effective menstrual hygiene management[15].

CONCLUSION

The findings of this study provide an in-depth understanding of the demographic, educational, and socio-economic factors that influence menstrual health, hygiene practices, and perceptions among women and girls. The study also highlights the barriers faced in adopting proper menstrual hygiene practices, the role of superstitions, and the critical importance of education in facilitating open discussions about menstruation. These insights have significant implications for public health interventions, particularly in areas of menstrual health education and access to resources.

Recommendations

- Integrate comprehensive menstrual health education into school curricula and community outreach programs.
- Promote awareness among adolescents and their families to dispel myths and foster accurate knowledge about menstruation.
- Promote positive narratives around menstruation through media and grassroots advocacy.
- Encourage open dialogue to reduce stigma and normalize menstruation as a natural biological process.
- Provide free or subsidized sanitary products through schools, clinics, and community centers, especially targeting marginalized populations.
- Upgrade sanitation facilities in schools, workplaces, and public spaces with a focus on privacy, cleanliness, and accessibility.
- Ensure availability of clean water, soap, and proper waste disposal systems to support safe menstrual hygiene practices.
- Prioritize gender-sensitive infrastructure planning in both urban and rural settings.

- Secure governmental and NGO support to sustain long-term distribution and affordability.
- Involve community leaders, educators, and influencers to challenge and reshape entrenched taboos and restrictive cultural beliefs.
- Advocate for menstrual health as a public health priority in national and local policy frameworks.
- Monitor and evaluate menstrual hygiene initiatives to ensure they are responsive, inclusive, and effective.

Funding: Self
Conflict of Interest: None declared

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