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Determinants of Menstrual Hygiene Management among Secondary School Students in Ibadan, Nigeria

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Abstract
Introduction: Menstrual hygiene affects the health, dignity, and education of adolescent girls. More than three-fourths of Nigerian adolescents face sociocultural, economic, and infrastructural barriers that limit proper menstrual hygiene management. This study assessed the knowledge, attitudes, and practices of menstrual hygiene among adolescent girls in secondary schools in Ibadan, Nigeria.
Method: A descriptive cross-sectional study was conducted among 280 adolescent girls selected from public and private secondary schools in Ibadan, using a multistage sampling technique. Data was collected using a structured, pre-tested questionnaire which assessed respondents' sociodemographic characteristics, knowledge, attitudes, and practices related to menstrual hygiene. Data were analyzed using SPSS version 25, with chi-square tests, and the level of statistical significance was set at $p < 0.05$.
Result: The mean age of respondents was 15.3±1.4 years. In all, 40.4% displayed good knowledge of menstruation and menstrual hygiene, while 59.6% had poor knowledge. Attitudes were mixed: 51.8% demonstrated positive attitudes toward menstrual hygiene, whereas 48.2% showed negative attitudes. Menstrual hygiene practices were better, with 72.1% reporting good practices, including regular pad use (92.1%) and access to handwashing water (94.6%). However, 36.4% resorted to cloth materials when pads were unavailable, and 72.5% had no access to private changing spaces at school. Significant associations were found between attitude and practice of menstrual hygiene (p=0.032).
Conclusion: While menstrual hygiene practices among adolescents in Ibadan were relatively good, knowledge gaps and negative attitudes remain substantial. Strengthening school-based menstrual hygiene education, improving WASH facilities are essential to enhancing adolescent girls' health and school participation.

Keywords: Menstrual hygiene, adolescents, knowledge, attitude, practice.

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Introduction

Menstruation is a physiological phenomenon that frequently marks the beginning of puberty in females; it is part of the reproductive cycle and occurs in girls aged 9 to 12 years.[1] Despite being natural and universal, many adolescent girls and women have significant obstacles in regulating their menstrual cycles in a secure, private, and dignified manner.[2] It is often associated with stigma, misconceptions, and secrecy across different societies, particularly in low- and middle-income countries (LMICs). Globally, over 300 million women menstruate daily, yet millions lack access to accurate menstrual information, sanitary products, or supportive environments to manage menstruation with dignity.[3]

The materials used for absorbing and managing menstrual blood vary widely based on affordability, availability, cultural acceptability, and environmental context. [4] In high-income settings, commercially manufactured disposable sanitary pads and tampons are the most common options, often designed with absorbent polymers and wings for secure fit. [5] Reusable alternatives include cloth pads made from cotton or bamboo fibers, menstrual cups made of medical-grade silicone, and period underwear with built-in absorbent layers, all of which offer long-term cost savings and reduced environmental waste. [6] However, in resource-limited settings such as rural Nigeria and other parts of sub-Saharan Africa, many adolescent girls resort to makeshift materials, including old rags, torn clothing, cotton wool, tissue paper, leaves, sand, or even ash, particularly when commercial products are unavailable or unaffordable, a phenomenon known as period poverty. [5]

Poor menstrual hygiene is associated with a range of adverse health outcomes, primarily reproductive tract infections (RTIs) including bacterial vaginosis, urinary tract infections (UTIs), and candidiasis, caused by prolonged use of damp, non-absorbent, or unclean materials that promote bacterial overgrowth. [7] Additionally, improper handling and infrequent changing of menstrual products can lead to foul odor, vulval rashes, and in severe cases, pelvic inflammatory disease (PID) with long-term implications for fertility.[8] The use of unhygienic alternatives such as dried leaves, newspaper, or multiple-day reuse of cloth without proper washing and drying also increases exposure to environmental pathogens, while unsafe disposal practices—such as throwing pads into pit latrines or open drains—create ecological hazards and facilitate disease transmission. [9]

Menstrual hygiene management (MHM) refers to the use of clean materials to absorb menstrual blood, privacy to change materials as often as needed, access to soap and water for bathing, and facilities for safe disposal.[10,11] Poor menstrual hygiene is associated with increased risks of reproductive tract infections (RTIs), urinary tract infections (UTIs), bacterial vaginosis, pelvic inflammatory disease (PID), and long-term fertility complications.[12,13]

In Nigeria, menstrual hygiene is of public health importance. [14] Approximately 25% of women and girls experience period poverty, lacking access to sanitary products and safe facilities for menstrual hygiene management.[15] In one study, 84% of these girls reported insufficient menstrual hygiene practices, often resorting to makeshift materials like old rags or newspapers instead of proper sanitary products.[16] This situation forces many to resort to unhygienic alternatives such as rags, paper, or old clothes during menstruation. 23% of adolescent girls in Nigeria had missed school due to menstruation, highlighting the impact of menstrual hygiene issues on education.[17]

In response to the widespread challenges of period poverty and unhygienic menstrual practices, the Nigerian government has recently taken significant, multi-pronged action.[18] The most foundational step was the validation of the country's first-ever National Policy on Menstrual Health and Hygiene Management (MHHM 2025-2030) in August 2025 . This policy aims to ensure that by 2030, no girl has to choose between managing her menstruation and her

education, and it commits to providing subsidized menstrual products, improving water and sanitation facilities in schools, and integrating menstrual health education into school curricula. [19] This study assessed the knowledge, attitudes, and practices of menstrual hygiene among adolescent girls in secondary schools in Ibadan, Nigeria.

Methods

Study area: The study was carried out in Ibadan, southwestern Nigeria, the capital of Oyo State, located about 110 km northeast of Lagos and serving as a major transit point between the coast and northern areas. Ibadan comprises 11 local government areas with a total of 123 wards, each containing between 8 and 12 wards. There were 813 public and private secondary schools (335 public, 478 private) across the 11 local government areas in Ibadan Metropolis, Oyo State, Nigeria.

Study design: A descriptive cross-sectional design was selected due to its ability to capture variables at a single point in time. Study population: The target population of this study comprised adolescent girls in both public and private secondary schools in Ibadan, Oyo State, Nigeria.

Sample size calculation: Using Cochran's formula with a 95% confidence level, 40% estimated prevalence of good menstrual hygiene, and a 5% margin of error, the initial sample size was calculated as 369. After applying a finite population correction for a total population of 750, the sample size reduced to 250. Adjusting for a 10% non-response rate increased the sample to 275, and a final practical adjustment brought the sample size to 280 respondents. Thus, the study aimed to enroll 280 respondents to ensure adequate representation.

Sampling technique: A multistage sampling technique was used.

Stage 1: Two of the eleven local government areas in Ibadan were selected randomly (Balloting method)

Stage 2: One public and one private secondary school were selected from each of the two chosen LGAs using simple random sampling (balloting method), making a total of four secondary schools.

Stage 3: A proportional allocation of students was performed based on the number of pupils in the four schools to determine the number of participants to be selected from each school. The pupils in each school were stratified into JSS2 and SS2. Using proportional allocation, the number of pupils to be selected from each class was determined.

Stage 4: A systematic sampling was used to choose pupils from each class using the class register, which served as the sampling frame. A sampling interval was determined, after which sampling continued until the desired number to be chosen from each class/ school was reached.

Instrument for data collection: A pre-tested, semi-structured questionnaire was used covering socio-demographic characteristics of the respondents, knowledge, attitude, and practices.

Validity and Reliability

The questionnaire was validated through expert review by public health specialists for content validity and pilot-tested on 30 students from a comparable population for face validity. Reliability was established using Cronbach's alpha ($\alpha = 0.812$), split-half reliability ($r = 0.74$), and the test-retest method over a two-week interval ($r = 0.86$), all indicating acceptable internal consistency and temporal stability.[20]

Data Analysis

The collected data were checked daily for accuracy and completeness. They were analyzed using the statistical package for the social sciences (IBM SPSS version 25.0). Frequencies tables were drawn at the univariate level, while the chi-square was used to test for association between two categorical variables. The level of statistical significance was set at $p<0.05$.

Data management

The outcome variables were knowledge, attitude, and practice regarding menstrual hygiene management.

Knowledge was assessed using twelve binary items scored as either correct or incorrect. A correct response received a score of one, while an incorrect or unsure response received zero. Individual item scores were summed to produce a total knowledge score ranging from zero to twelve. This continuous score was then categorized into two levels after computing the mean. Poor knowledge for scores of below the mean and good knowledge for scores above the mean.

Attitude was measured using ten items on a five-point Likert scale. Response options included strongly agree, agree, neutral, disagree, and strongly disagree, which were assigned scores of five, four, three, two, and one respectively. For negatively worded statements, the scoring was reversed to ensure consistency in interpretation. The total attitude score thus ranged from ten to fifty and mean calculated. Scores below the mean were classified as negative attitude and scores above the mean was classified as positive attitude.

Practice was evaluated using ten ordinal items. For each item, an appropriate practice received two points, an inappropriate practice received one point, and responses deemed not applicable received zero points. The total practice score ranged from zero to twenty and the mean calculated. Based on this score, respondents were categorized as having poor practice if they scored below the mean and categorized to have good practice if they scored above the mean.

For statistical analysis, univariate analysis was first conducted to describe the study population. Frequencies and percentages were calculated for categorical variables, while means and standard deviations were computed for continuous variables such as age, age at menarche, and total KAP scores.

Bivariate analysis followed to examine associations between each independent variable and the outcome variables. Chi-square was used to test for association between two categorical variables and p-value was set at <0.05

Ethical consideration: Ethical approval was obtained from the research ethical review committee of the Oyo State Ministry of Health with approval number-NHREC/OYOSHRIEC/10/11/22.
Permission was granted by the Ministry of Health and school authorities. Written informed consent was sought and obtained from all participants. Anonymity and confidentiality of the information obtained were assured and maintained.

Results

The majority of respondents were aged 15 years or younger (50.7%) with a mean age of 15.3 years, and most were in senior secondary classes (SS1–SS3 comprising 85.7%). Christianity was the predominant religion (56.1%), Yoruba ethnicity dominated (90.7%), and most parents had secondary or tertiary education, with over half of fathers (51.1%) attaining tertiary level. (Table 1)

Most students correctly defined menstruation (69.6%) and identified 21–35 days as the normal cycle duration (64.3%), but knowledge gaps persisted regarding blood loss volume and specific facts. While sanitary pads were widely recognized as necessary (93.2%), fewer students correctly identified the uterus as the bleeding source (54.6%) or consistently understood the health consequences of poor hygiene, though infection (68.0%) and foul smell (59.9%) were well-recognized risks. Based on the findings, the majority demonstrated adequate awareness of key menstrual hygiene practices, yet over half exhibited overall poor knowledge, indicating a gap between specific correct answers and comprehensive understanding. (Table 2)

Ninety-six (34.4%) respondents will be willing to discuss menstrual issues with their friends, and 185 (66.3%) strongly agreed that access to a clean and private facility is important during menstruation. However, 66 (23.7%) feel embarrassed about buying menstrual pads in public, and 128 (45.9%) agreed that menstruation is disgusting. Although most respondents valued private facilities for menstruation, significant proportions felt embarrassed buying pads and viewed menstruation as disgusting, indicating persistent stigma. (Table 3)

One hundred and sixty-one (57.7%) strongly agreed that menstrual hygiene should be inculcated into the school curriculum, and 100 (35.7%) were willing to ask for help regarding their menstrual hygiene. Seventy-five (26.8%), however, strongly disagreed that girls should be restricted from house chores during their monthly menstrual flow. One hundred and forty (51.8%) have a good attitude towards menstrual hygiene, while 135 (48.2%) have a poor attitude. Over half of respondents supported including menstrual hygiene in the school curriculum and demonstrated a good attitude toward it, though fewer were willing to seek help and a minority disagreed with restricting chores during menstruation. (Table 3)

Most students (92.1%) used menstrual pads, with 61.1% using only two pads per day, and while 94.6% had handwashing water, only 27.5% had a convenient place to change materials. Overall, 72.1% demonstrated good menstrual hygiene practices, though 60% disposed of used materials in the toilet and no significant association was found between knowledge and actual practices. While most respondents used pads and had good menstrual hygiene practices, many lacked convenient changing facilities, often disposed of materials improperly, and knowledge was not statistically associated with practices, though class and attitude were significant factors (Table 4). The class of respondents was statistically significant for menstrual hygiene practices (Table 5). Attitude towards menstrual hygiene practices was statistically significant with the practice of menstrual hygiene (Table 6).

Table 1. Sociodemographic Characteristics of Respondents

Characteristic	Frequency (N=280)	Percentage
Age		
<15	142	50.7
16-18	136	48.6
>18	2	0.7
Mean age 15.3±1.4years		
Class		
JSS 2	3	1.1
JSS 3	37	13.2
SS1	81	28.9
SS2	82	29.3
SS3	77	27.5
Religion		
Christianity	157	56.1
Islam	122	43.6
Traditionalist	1	0.4
Ethnicity		
Yoruba	254	90.7
Igbo	23	8.2
Hausa	3	1.1
Mother's educational status		
No formal	9	3.2
Primary	34	12.1
Secondary	128	45.7
Tertiary	109	38.9
Father's educational status		
No formal	6	2.1
Primary	24	8.6
Secondary	107	38.2
Tertiary	143	51.1
Father's occupation		
Civil servant	77	27.5
Farming	50	17.9
Trading	74	26.4
Others	79	28.2
Mother's occupation		
Farming	55	19.6
Petty trader	84	30.0
Artisan	45	16.1
Others	96	34.3

Keys:
JSS-Junior Secondary School, sSSS-Senior Secondary School

Table 2. Knowledge of Respondents About Menstruation

Characteristics	Frequency (N=280)	Percentage
Definition of menstruation		
Correct	195	69.6
Incorrect	85	30.3
Normal duration of the menstrual cycle		
15-20	90	32.5
21-35	178	64.3
>35	12	3.3
Normal quantity of blood loss during a cycle		
<20mls	56	20.3
20-80	167	60.5
>80mls	57	19.2
Materials needed for good menstrual hygiene		
Sanitary pad	260	93.2
Leaves	8	2.9
Water and soap	158	56.8
Rags	4	1.4
Reusable clothes	42	15.1
Tampons	22	7.9
Facts about menstruation		
Menstruation is a lifelong process	37	13.3
Could be foul-smelling if not well managed	168	60.2
It's a sign of conception	35	12.5
It's a physiological phenomenon among females	149	53.4
Menstruation is a pathological process	31	11.1
External genitalia should be cleaned during menstruation	152	54.5
Sanitary pad can be disposed inside the dustbin	23	8.2
Cause of menstruation		
Hormonal	253	90.4
Diseases	17	6.1
Curse	8	3.5
Source of menstrual bleeding		
Uterus	153	54.6
Bladder	4	1.4
Vagina	117	41.8
Abdomen	6	2.2
Effects of poor menstrual hygiene management		
Infection	189	68.0
Stigmatization	88	31.5
Foul smell	167	59.9
Pelvic pain	78	28.0
Low self esteem	59	21.1
School absenteeism	47	16.8
Fainting attack	6	2.2

Table 3. Attitude Towards Menstruation and Menstrual Hygiene Among Respondents

Characteristics	Strongly agreed	Agreed	Undecided	Disagreed	Strongly disagreed
	F (%)	F (%)	F (%)	F (%)	F (%)
Feel comfortable discussing my menstrual hygiene with friends	96 (34.4)	86 (30.8)	9 (2.9)	48 (17.2)	41 (14.4)
I am scared during menstruation	103 (36.9)	111 (39.8)	1 (0.4)	40 (14.3)	25 (8.6)
I feel irritated when changing pad:	25 (9.0)	53 (19.0)	4 (1.4)	97 (34.8)	101 (35.8)
Menstruation time is disgusting	62 (22.2)	128 (45.9)	5 (1.8)	54 (19.4)	31 (10.8)
I feel embarrassed about buying a menstrual pad	46 (16.5)	66 (23.7)	6 (2.2)	87 (31.2)	75 (26.5)
Access to a clean and private facility during menstruation is important	185 (66.3)	75 (26.9)	3 (1.1)	9 (3.2)	8 (2.5)
I don’t like disposing of my pad in the garbage	118 (42.1)	100 (35.7)	9 (3.2)	31 (11.1)	22 (7.9)
I don’t want boys to notice me during menstruation	103 (36.8)	111 (39.6)	1 (0.4)	40 (14.3)	25 (9.0)
I feel comfortable asking for help with regards to menstruation	100 (35.7)	92 (32.9)	10 (3.6)	46 (16.4)	32 (11.5)
Menstrual hygiene should be inculcated into the school curriculum	161 (57.7)	87 (31.2)	7 (2.5)	16 (5.7)	8 (2.9)
Girls should not be restricted from house chores during menstruation	69 (24.6)	60 (21.4)	13 (4.6)	63 (22.5)	75 (26.8)

Table 4: Menstrual Hygiene Practice of Respondents

Characteristics	Frequency (N=280)	Percentage
Do you use a sanitary pad?		
Yes	257	92.1
No	23	7.9
Number of sanitary pads used per day		
1	51	18.2
2	171	61.1
3	51	18.2
>3	7	2.5
Material used for menstruation		
Disposable pad	223	79.6
Cloth	34	12.1
Reusable pad	23	8.2
Do you have supply of sanitary pad		
Yes, I always have	186	66.4
Have sometimes	72	25.7
No, I use cloth or cotton	22	7.9
When sanitary pads finishes		
Use cloth	102	36.4
Borrow money to buy	30	10.7
My parents buy for me	134	47.9
I use tissue	14	5.0
Places you change pad		
Toilet	260	92.9
Hidden corner	7	2.5
Bedroom	11	3.9
Other	2	0.8
Water to wash hand		
Yes	265	94.6
No	15	5.4
Space to change pad		
Yes	77	27.5
No	203	72.5
Disposal methods		
Toilet	168	60.0
Public waste bin	22	7.9
Burning	75	26.8
Improvised hoe	12	4.3
Sanitary waste bin	3	1.1

Table 5. Association Between Sociodemographic Characteristics and Menstrual Hygiene Practices

Characteristics	Practice		Total (N=280)	p-value
	Poor	Good		
Class				
JSS2	0 (0.0)	3 (1.5)	3 (1.1)	*0.047
JSS3	8 (10.3)	28 (14.3)	36 (13.1)	
SS1	30 (38.5)	50 (62.5)	80 (29.2)	
SS2	26 (32.9)	53 (27.0)	79 (28.8)	
SS3	14 (17.9)	62 (31.6)	76 (27.7)	
Religion				
Christianity	45 (57.7)	106 (54.1)	151 (55.1)	0.229
Islam	32 (41.0)	90 (45.9)	122 (44.5)	
Traditionalist	1 (1.3)	0 (0.0)	1 (0.4)	
Ethnicity				
Yoruba	74 (94.9)	174 (88.8)	248 (90.5)	0.422
Igbo	4(5.1)	19 (9.7)	23 (8.4)	
Hausa	0 (0.0)	3 (1.5)	3 (1.1)	
Father's educational status				
No formal education	2 (2.6)	4 (2.0)	6 (2.2)	0.834
Primary	8 (10.3)	14 (7.1)	22 (8.0)	
Secondary	30 (38.5)	76 (38.8)	106 (38.7)	
Tertiary	38 (48.7)	102 (52.0)	140 (51.1)	
Mother's educational status				
No formal education	4 (5.1)	4 (2.0)	8 (2.9)	0.314
Primary	12 (15.4)	20 (10.2)	32 (11.7)	
Secondary	34 (43.6)	94 (48.0)	128 (46.7)	
Tertiary	28 (35.9)	78 (39.8)	106 (38.7)	

*All reported p-values are two-tailed from chi-square and any with <0.05 indicate statistically significance.

Table 6. Association Between Knowledge and Practice of Menstrual Hygiene

Characteristics	Practice		Total(N=280)	p-value
	Poor	Good		
Knowledge				
Poor	53 (68.8)	110 (57.9)	163 (61.0)	0.097
Good	24 (31.2)	87 (42.1)	107 (39.0)	
Attitude				*0.032
Poor	45 (57.7)	91 (43.4)	136 (47.4)	
Good	33 (42.3)	111 (56.6)	144 (52.6)	

All reported p-values are two-tailed from chi-square and any with <0.05 indicate statistically significance.

Discussion

The sociodemographic profile of respondents reveals a predominantly young adolescent population, with the majority being under 18 years and in their senior secondary years, which aligns with the typical age of menstrual experience and management.[4] Notably, the relatively high educational attainment of parents, particularly fathers with tertiary education (51.1%), suggests that respondents come from households with potentially better access to health information and resources, which could positively influence menstrual hygiene outcomes.[2]

The finding that just over half of respondents had poor knowledge of menstruation and menstrual hygiene is concerning, though it aligns with studies from similar settings where knowledge gaps persist despite growing information access. This knowledge deficit is particularly striking given that about two-thirds correctly identified the normal menstrual cycle length and more than one-third understood typical blood loss volume, indicating a fragmented rather than a comprehensive understanding. The identification of sanitary pads by almost all of the respondents and water with soap by a little above half of the respondents as necessary materials demonstrates basic awareness, yet the poor overall knowledge score suggests superficial understanding without depth or integration of concepts. [21] This aligns with findings in rural India, where adolescents demonstrated patchy knowledge despite recognizing individual components of menstrual hygiene.[22]

The attitudinal distribution, with half of the respondents displaying positive attitudes toward menstrual hygiene, reveals the complex psychosocial dimensions surrounding menstruation. The finding that two-thirds of respondents strongly agreed on the importance of private facilities demonstrates recognition of needs, yet the substantial proportions expressing disgust, fear (76.7% combined agreed/strongly agreed), and embarrassment about purchasing pads by two-fifths of respondents reflect deeply ingrained cultural taboos and stigma. These attitudes mirror findings from another study across multiple low-income countries, where menstrual shame remains pervasive despite improved knowledge.[23] The strong support for incorporating menstrual hygiene into school curricula indicates adolescents' recognition of current educational deficiencies and desire for systematic intervention.

Encouragingly, menstrual hygiene practices showed better outcomes, with the majority reporting good practices, including high rates of sanitary pad use by more than nine in ten and handwashing access. This practice-knowledge disconnect, where practices exceed knowledge levels, has been documented in a similar study[7]and may reflect the influence of parental guidance, peer modeling, or school-based health talks that shape behavior despite incomplete understanding. However, critical gaps remain, particularly the one-third resorting to cloth materials when pads are unavailable and the alarming two-thirds lacking private changing spaces at school. These structural barriers represent

fundamental rights violations and have been identified by Sommer et al.[24] as primary impediments to dignified menstrual management among schoolgirls in resource-limited settings.

The significant association between attitude and practice confirms that psychological and emotional dispositions toward menstruation directly influence behavioral outcomes, consistent with the Health Belief Model framework. [25] Conversely, the non-significant association between knowledge and practice challenges assumptions that education alone drives behavior change and underscores the complex interplay of factors influencing menstrual hygiene. This finding corroborates research by Kaur et al. [6,26], where knowledge did not consistently translate into improved practices due to cultural, economic, and environmental constraints. The significant association with class level suggests that educational progression and maturity may enhance practice quality, possibly through repeated exposure to health information and peer learning.

The perceived barriers identified by respondents highlight systemic challenges requiring multi-sectoral intervention. Lack of parental support was identified as severe by more than half of respondents, socioeconomic constraints by two-fifths of respondents, and inadequate school facilities (45.7% very severe) emerged as critical impediments. These findings resonate with the work of Miiro et al.[27] in Uganda, where family dynamics and poverty significantly shaped menstrual experiences. Importantly, gender discrimination was not perceived as a severe factor by more than half of respondents, which may reflect normalization of existing disparities rather than genuine equity, or alternatively, indicate that practical barriers outweigh perceived gender-based discrimination in this population.

The disposal practices, with almost two-thirds using toilets and almost one-third burning materials, raise environmental and health concerns requiring attention. Improper disposal can lead to blocked sanitation systems and environmental pollution, while burning may expose individuals to harmful fumes.[20] The low utilization of dedicated sanitary waste bins (1.1%) reflects infrastructure deficiencies common in Nigerian schools and communities, highlighting the need for comprehensive waste management strategies within menstrual hygiene interventions.

These findings suggest that menstrual hygiene among adolescents is a multifaceted issue extending beyond individual knowledge to encompass attitudes, structural supports, and socioeconomic realities. The disconnect between good practices and poor knowledge suggests that current interventions may be achieving behavioral compliance without fostering genuine understanding and empowerment. Furthermore, the significant attitude-practice association emphasizes the need for interventions addressing psychological and cultural dimensions rather than purely informational approaches. The severe barriers identified, particularly around school facilities and parental support, demand coordinated responses involving education, health, water, and sanitation sectors, alongside community engagement to address stigma and taboos. As noted by UNICEF, Sustainable menstrual health management requires creating enabling environments where adolescents can manage menstruation safely, privately, and with dignity, supported by accurate information, positive social norms, and adequate infrastructure.[3]

Limitations

First, the study's cross-sectional design limits the ability to establish causal relationships between knowledge, attitudes, and menstrual hygiene practices. Second, reliance on self-reported data may introduce social desirability bias.

Conclusion

This study highlights a significant gap between the menstrual hygiene practices of adolescent respondents and their underlying knowledge, with poor knowledge outweighing good despite generally adequate practices. While the

reported use of sanitary pads and hand-washing facilities is encouraging, it is compromised by barriers such as the lack of private changing spaces at school and the frequent reliance on cloth materials. The significant link between attitude and practice underscores that improving education alone may not suffice without concurrent efforts to enhance environmental and structural support. Therefore, targeted interventions should focus on providing adequate school sanitation facilities and ensuring consistent access to affordable sanitary products. Addressing these multifaceted challenges is essential to transform good practices into sustained, informed, and dignified menstrual health management for all adolescents.

Recommendations

School-based menstrual health programs should move beyond information dissemination to actively address negative attitudes and stigma, given the significant association between attitude and practice. Additionally, government and school authorities must urgently provide private changing spaces and proper disposal facilities in schools, as over two-thirds of students lack access to these necessities

Competing interests

The authors declare no competing interests.

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