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Menstrual hygiene and health among adolescent girls in basic schools in Fodome- Ghana

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Abstract

Introduction: Menstrual hygiene management (MHM) is essential for the well-being of adolescent girls. The World Health Organization emphasized the importance of proper MHM to prevent infections and enhance girls' quality of life. This study assessed the enabling environment necessary for effective menstrual hygiene practices among adolescent girls in basic schools in Fodome Township.

Methods: An analytical cross-sectional study design was employed, utilizing a stratified random sampling approach to collect data from 318 adolescent girls. Data were gathered through structured questionnaires. Descriptive and inferential statistics were analyzed via STATA version 17.0, with logistic regression applied to examine the relationships between various variables.

Results: Out of 318 basic school girls, 197 (62.0%) demonstrated good menstrual hygiene practices, and 205 (64.5%) had good knowledge of menstruation. Girls with access to separate toilets were 3.63 times more likely to practice good menstrual hygiene (AOR = 3.63, 95% CI: 1.18–11.09, $P = 0.024$). Additionally, the availability of dustbins in toilets increased the likelihood of good menstrual hygiene practices by more than three times (AOR = 3.06, 95% CI: 1.62–5.78, $P = 0.001$). In contrast, girls who were very dissatisfied with their menstrual products were significantly less likely to practice good menstrual hygiene (AOR = 0.07, 95% CI: 0.01–0.54, $P = 0.011$).

Conclusion: The findings highlight suboptimal menstrual hygiene practices among adolescent girls in Fodome Township, with notable disparities in access to essential sanitary facilities.

Keywords: Menstruation, Adolescent behavior, Menstrual hygiene, Adolescent health, Sanitary products

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Introduction

In low- to middle-income countries, menstrual hygiene management (MHM) is a significant public health concern, with limited access to sanitary products, insufficient knowledge about menstrual hygiene, and inadequate sanitation facilities posing threats to adolescent health.[1-3] Many girls resort to unhygienic alternatives due to the unaffordability or inaccessibility of sanitary products, compounded by a lack of private, clean toilets in schools.[4] Insufficient knowledge about menstrual health exacerbates this problem, leading to misconceptions and poor hygiene practices.[5]

Menstruation is a natural reproductive process marked by the shedding of blood through the vagina, typically beginning between the ages of 10 and 14, although it can vary from 8-17 years.[6,7] Poor menstrual hygiene can result in severe health consequences, including reproductive tract infections and potential infertility.[8,9] It also disrupts education, as girls may miss school during their periods, resulting in academic setbacks and perpetuating gender disparities.[10,11] Proper menstrual hygiene is essential for the dignity and well-being of women and girls, ensuring both physical and emotional health during this period.[12,13]

Globally, over 500 million women and girls lack adequate MHM facilities.[3] In countries such as India, Nepal, Bangladesh, and various sub-Saharan African nations, including Uganda, Egypt, Kenya, and Ethiopia, the prevalence of poor MHM ranges widely, highlighting the widespread challenge.[5,14,15]

In Ghana, studies have shown that 19.8% to 68% of adolescent girls face challenges in practicing good MHM.[16] These challenges include inadequate facilities, sociocultural barriers, and economic disparities, which increase the risk of infection and educational disruption.[17]

In the Volta Region, menstrual hygiene challenges persist due to limited access to water and soap, and sociocultural beliefs portraying menstruation as unclean.[18] Specifically, in Fodome Township, similar issues have been reported

by local media, schools, and health facilities, yet no formal studies have been conducted to assess MHM practices among adolescent girls in this area.[19]

While research has documented MHM challenges across Ghana, significant knowledge gaps exist, particularly in rural and semi-rural settings. The Volta Region, specifically, faces unique challenges due to limited water access and persistent sociocultural beliefs about menstruation; however, in Fodome Township, despite reported challenges through local health and education authorities, no formal research has systematically assessed MHM practices among adolescent girls.[19]

This research gap is particularly significant because existing studies have predominantly focused on urban areas and regional capitals,[18] leaving rural communities understudied. The absence of baseline data in Fodome Township hampers developing and evaluating targeted interventions. Furthermore, regional data may not accurately reflect the specific challenges faced by this community, given its unique sociocultural context.

Therefore, this study aims to assess the menstrual hygiene practices among adolescent girls in basic schools in Fodome Township and investigate the factors influencing these practices. The findings will contribute to multiple outcomes; providing crucial insights into the current MHM practices among adolescent girls in Fodome Township, documenting their challenges, coping strategies, and needs. This local data will reveal barriers such as access to sanitary products, availability of proper facilities, and the influence of cultural beliefs on menstrual practices.

Also, using this evidence, the study will facilitate the development of targeted, culturally appropriate interventions. These recommendations will span school-based solutions (like improved sanitation facilities and educational programs), community-level initiatives (including awareness programs and support systems), and healthcare service improvements. An evidence-based approach will ensure that interventions are practical and effective for the local context.

The study's findings have several practical implications for improving MHM practices:

The study identified that poor MHM practices can lead to infections, absenteeism, and psychosocial stress. Therefore, public health policies should emphasize improving MHM resources and support services in schools to promote girls' health and educational outcomes.

Also, the study highlighted a gap in menstrual health knowledge among some girls, underscoring the need for continuous education on menstrual hygiene, dispelling myths and addressing cultural taboos. Integrating menstrual health education into the school curriculum could enhance knowledge and reduce stigma.

Furthermore, limited access to affordable menstrual products was a challenge for many girls. Subsidizing menstrual products or establishing free distribution programs could help girls manage menstruation more comfortably and hygienically.

Lastly, since access to private toilets and dustbins significantly influenced good MHM practices, schools should prioritize the provision of clean, private, and adequately equipped sanitation facilities. This includes installing dustbins for proper disposal and ensuring access to water and soap.

Methods

Study area

Fodome is a traditional area in the Hohoe Municipality of the Volta region, bordering Togo to the east, southeast of the Afadzato district, southwest of Kpando Municipality, and north of the Jasikan district (Ghana Statistical Service, 2021). The area consists of 14 communities primarily inhabited by Ewes, who practice Christianity, Islam, and traditional religion. The study focused on five selected subcommunities—Fodome Helu, Woe, Hloma, Amele, and Ahor—due to the presence of basic schools, these subcommunities are suitable for assessing menstrual hygiene practices among adolescent girls. These communities have an estimated population of 6431, with most residents engaged in farming and fishing (Ghana Statistical Service, 2021).

Participants and procedure

Type of study

A school-based analytical cross-sectional study was conducted to assess menstrual hygiene practices. This design was suitable for capturing a snapshot of practices and related factors.

Sampling

Inclusion and exclusion criteria

The study included adolescent girls aged 10-19 years who were menstruating, able to understand English or the local dialect, and who consented to participate with parental or guardian approval. Adolescent girls (ages 10-19) are typically the primary focus of studies related to menstrual hygiene because this is the stage when they experience menarche and begin managing menstruation regularly. Involving them will allow the researcher to gather in-depth knowledge about the subject matter.

Girls who had not started menstruating and those with serious health conditions or communication impairments were excluded from the study since they would not be in a condition to provide adequate knowledge.

Sample size determination

The sample size for this study was 318 adolescent girls, calculated using the Cochran formula (1977).

Sampling method

A stratified random sampling approach was utilized to select respondents for the study on menstrual hygiene practices among adolescent girls in basic schools in Fodome Township. The Principal Investigator began by dividing the five basic schools in Fodome Township into distinct strata. Each school represented a separate stratum, ensuring that all educational institutions within the township were included in the sampling framework. Sample sizes were allocated to each school proportionally based on the total number of students enrolled and the calculated sample size for each stratum. Within each selected school, individual students were chosen via simple random sampling techniques. This involved creating a list of eligible adolescent girls and using random number generators to select participants, ensuring that each student had an equal chance of being included in the study. Once the participants were selected, data collection was carried out directly in the schools. This method ensured that the sample accurately represented the student population across all three schools.

Data collection tool and procedure

Data collection was conducted by three trained research assistants and the principal investigator using a structured questionnaire to assess menstrual hygiene practices and related factors among adolescent girls. The questionnaire, with a Cronbach's alpha reliability coefficient of 0.742, was pretested among girls in Hohoe Township to ensure clarity and appropriateness, and to familiarize the data collectors with ethical practices.

The questionnaire comprised four sections:

1. Sociodemographic information: This section of the questionnaire collected data about the participants' background, such as age, grade level. Sociodemographic information is essential for contextualizing the findings and understanding how various factors might influence menstrual hygiene practices. The sociodemographic section is considered to have face validity as it captures basic demographic information relevant to the study. The questions are straightforward and relevant to the research goals. Since these items are straightforward demographic questions, they are expected to be highly reliable.
2. Menstrual hygiene practices: This section aimed to gather information on how adolescent girls manage their menstrual hygiene, including the materials used for menstrual protection, frequency of changing pads, and disposal methods. The goal was to identify common practices and evaluate their effectiveness. The items were designed to directly assess menstrual hygiene behaviors and are thus considered to have content validity. The questions are based on established practices and norms around menstrual hygiene. A reliability coefficient of 0.742 for the overall questionnaire suggests that the menstrual hygiene practices section is reasonably reliable in capturing consistent responses across participants.
3. Knowledge of menstrual hygiene: This scale assessed the level of knowledge the adolescent girls had about menstrual hygiene, including understanding the importance of hygiene during menstruation and the potential health risks associated with poor menstrual hygiene. The scale has face validity, as the items are directly related to the participants' knowledge of menstrual hygiene, a key component of the study. To ensure the validity of the knowledge, the questions were aligned with established menstrual health guidelines. While the Cronbach's alpha for the overall questionnaire is 0.742, the reliability of the knowledge scale could be stronger if items measuring various aspects of menstrual hygiene knowledge were more diverse.
4. Challenges faced: This scale aimed to identify the challenges adolescent girls face regarding MHM. These challenges could include limited access to sanitary products, cultural taboos, lack of knowledge, and stigma. The challenge scale has content validity as it addresses specific barriers identified in previous research on menstrual hygiene. The items are reflective of real-world difficulties faced by adolescent girls. Given that the items are designed to capture varied challenges, the scale's reliability will likely moderate, depending on the diversity of responses and the consistency with which respondents identify their challenges.

Informed consent was obtained from participants and guardians, and data collectors were trained to maintain confidentiality and respect throughout data collection

Measures

To generate a composite hygiene practice score, all 'No' and 'Don't know' responses were combined as 'NO'. Eight items were used to generate the score, with the lowest possible score of "0" and the highest score of "10." The average score was found to be 6. Therefore, respondents who scored below the average were considered to have poor menstrual hygiene practices, whereas those who scored average and above were considered to have good menstrual hygiene practices. Similarly, to generate a composite knowledge score, all 'No' and 'Don't Know' responses were combined as 'NO'. Eight items were used to generate the score, with the lowest possible score of 0 and the highest score of 8. The average score was found to be 4. Respondents who scored below the average were considered to have poor knowledge of menstrual hygiene, whereas those who scored the average and above were considered to have good understanding of menstrual hygiene.

Data analysis/statistics

The data collected were compiled and entered into EpiData software version 4.0. After data entry, the data were exported into STATA 17.0 for analysis. Data cleaning and validation were performed to ensure data quality before analysis. Descriptive statistics such as frequencies and proportions were performed for categorical variables, whereas means and standard deviations were computed for continuous variables and are presented in tables and charts. Logistic regression was used to assess the relationship between menstrual hygiene practices and various independent variables, with statistical significance determined at a *P* value of 0.05 and a 95% confidence interval.

Results

Sociodemographic characteristics of basic school girls in Fodome Township

In the study involving 318 primary school girls with a mean age of 13 years (± 1.64), half (50%) were aged 13–14 years, and 38.4% were in Basic 8. Most participants were Ewes (64.8%) and identified as Christians (83.6%). A majority (61.6%) lived with their parents. Regarding parental education, 30.2% of fathers had no formal education, while 43.1% of mothers had a basic education. Nearly all (93.7%) had received information on menstruation management before menarche, with mothers being the main source for 59.4% of them (Table 1)

Table 1. Sociodemographic characteristics of basic school girls in Fodome Township (N = 318)

Variable	Frequency	Percent
Mean age (SD)	± 13.0 (1.64)	
Age		
10-12	103	32.4
13-14	159	50.0
15-16	56	17.6
Class category		
Basic 6	96	30.2
Basic 7	100	31.4
Basic 8	122	38.4
Ethnicity		
Akan	31	9.8
Ewe	206	64.8
Ga/Adange	14	4.4
Guan	18	5.6
Others	49	15.4
Religion		
Christianity	266	83.6
Islam	52	16.4
Currently lives with		
Mother only	68	21.4
Father only	10	3.1
Parents	196	61.6
Guardian	44	13.8
Father's educational level		
No formal education	96	30.2
Basic education	91	28.6
Secondary education	87	27.4
Tertiary	44	13.8
Mother's educational level		
No formal education	60	18.9
Basic education	137	43.1
Secondary education	68	21.4
Tertiary	53	16.6
Receipt of information on menstruation management before menarche		
No	20	6.3
Yes	298	93.7
The initial source of information on menstruation management		
Relative	10	3.1
Friends	17	5.4
Mother	189	59.4
School	102	32.1

Knowledge of menstruation and the menstrual cycle among basic school girls in Fodome township

The majority of respondents, 293 (92.1%), recognized menstruation as a natural process, with 268 (84.3%) correctly identifying its cause. Most reported a menstrual flow of 5–6 days (n = 203, 63.8%) and a cycle length of 26–30 days (n = 141, 44.3%). While 217 (68.2%) did not associate menstruation with foul odor, 298 (93.7%) viewed menstrual blood as unhygienic. Additionally, 286 (89.9%) knew that menstruation indicated a girl's ability to conceive, and 253 (79.6%) preferred disposable sanitary pads (Table 2).

Menstrual hygiene practices among adolescent girls in basic schools in the Fodome township

The majority, 259 (81.4%), used disposable sanitary pads during their last menstrual period, and 182 (57.2%) changed their sanitary products twice daily. Nearly all 314 (98.7%) bathed twice a day. While 200 (62.9%) did not change sanitary products at school due to a lack of functional toilets, 118 (37.1%) used a school washroom. For menstrual tracking, 133 (41.8%) used a calendar, and 121 (38.1%) used a diary or other book (Table 3).

Availability of sanitary facilities in basic schools in the Fodome township

In a survey of basic schools, 84.0% had toilet facilities, predominantly latrine pits (90.6%) compared to water closets (9.4%). Only 9.4% of toilets had water access, and just 13.1% provided soap. Most schools (86.9%) offered separate toilets for girls, though 13.1% did not. Doors were present in 79.0% of toilets, and 88.4% were roofed.

Table 2. Knowledge of menstruation and the menstrual cycle among basic school girls in Fodome township

Variable	Frequency	Percent
What is menstruation?		
Natural process	293	7.9
Don't know	25	92.1
Causes of menstruation		
Natural process	268	84.3
Caused by disease	21	6.6
Don't know	29	9.1
The average duration of menstrual flow		
4 days	69	21.7
5-6 days	203	63.8
7 days	46	14.5
Average menstrual cycle		
25 days	136	42.8
26-30 days	141	44.3
>30 days	41	12.9
Foul odor during menstruation		
Yes	101	31.8
No	217	68.2
Menstrual blood is unhygienic		
Yes	298	93.7
No	20	6.3
The onset of menstruation is a sign that a girl can get pregnant from unprotected sex.		
No	32	10.1
Yes	286	89.9
Safe menstrual products		
Disposable sanitary pads	253	79.6
Reusable cloth	33	10.4
Cotton wool	14	4.4
Don't know	18	5.7

Dustbins for waste disposal were available in 39.3% of the toilets, while 60.7% lacked them (Table 4).

Preferred menstrual hygiene products among adolescent girls in basic schools in the Fodome township

Most adolescent girls in basic schools used disposable sanitary pads (88.0%), with a small percentage using alternatives like cotton wool, reusable cloths, or tissue paper. While 95.9% found their product comfortable, only 23.6% reported easy access, and 35.8% considered it affordable. Ease of use and absence of side effects were noted by 41.2% and 43.4%, respectively. Parental and peer influences on product choice were minimal. Satisfaction with menstrual hygiene products varied, with 33.6% satisfied or very satisfied and 28.6% dissatisfied (Table 5).

Table 3. Menstrual hygiene practices among adolescent girls in basic schools in the Fodome township

Variable	Frequency	Percentage
Sanitary products used during the last menstrual period		
Cotton wool	14	4.4
Disposable sanitary pads	259	81.4
Reusable cloth/rags	45	14.2
Frequency of changing sanitary products per day during the last menstrual period		
1 time	12	3.8
2 times	182	57.2
3 times	105	33.0
4 times	19	6.0
Frequency of bathing per day during the last menstrual period		
Once	4	1.3
Twice	314	98.7
Handwashing habits before changing sanitary product		
Always	229	72.0
Often	26	8.2
Sometimes	46	14.5
Rarely	17	5.3
Change of sanitary products during school hours		
Yes	118	37.1
No	200	62.9
If yes, where sanitary products were changed during school hours(n=118)		
School washroom	118	100.0
Uncompleted buildings/unused classes	0	0
Surrounding bush/farms	0	0
If not, the reason for not changing sanitary products during school hours (n=200)		
No functional toilets or changing rooms at the school	116	58.0
No locks on available toilet doors	6	3.0
School toilets are smelly and unkempt	62	31.0
Others	16	8.0
The method used to track the next menstrual period.		
Marking on the calendar	133	41.8
Use of dairy or other books	121	38.1
None	64	20.1

Associations between sociodemographic characteristics, knowledge of menstrual hygiene and the menstrual cycle, and menstrual hygiene practices among adolescent girls in basic schools in the Fodome township

In a binary logistic regression analysis, factors such as age, class, ethnicity, religion, living arrangements, parental education, and knowledge about menstruation were assessed. The multivariable analysis revealed that adolescent girls living with their fathers were significantly more likely (AOR=5.22) to practice good menstrual hygiene than those living only with their mothers. Girls living with guardians were twice as likely (AOR=2.04) to have good practices, though this was not statistically

Table 4. Availability of sanitary facilities in basic schools in the Fodome township

Variable	Frequency	Percent
Availability of toilet facilities		
Yes	267	84.0
No	51	16.0
Type of toilet facility is there(n = 267)		
Latrine pits	242	90.6
Water Closet	25	9.4
Availability of water in the toilet		
Yes	25	9.4
No	242	90.6
Availability of soap in the toilets		
Yes	35	13.1
No	232	86.9
Separate toilets for girls		
Yes	232	86.9
No	35	13.1
Doors are in place		
Yes	211	79.0
No	56	21.0
Toilets are roofed		
Yes	236	88.4
No	31	11.6
Dustbins are available in the toilet.		
Yes	105	39.3
No	162	60.7

Table 5. Preferred menstrual hygiene products among adolescent girls in basic schools in the Fodome township

Variable	Frequency	Percent
Menstrual hygiene products are primarily used		
Cotton wool	20	6.3
Disposable sanitary pads	280	88.0
Reusable cloth/rags	12	3.8
Tissue paper	6	1.9
Reasons for preference		
Comfortable		
Yes	305	95.9
No	13	4.1
Availability		
Yes	75	23.6
No	243	76.4
Very affordable		
Yes	114	35.8
No	204	64.2
Easy to use		
Yes	131	41.2
No	187	58.8
Do not have any side effects.		
Yes	138	43.4
No	180	56.6
Parental guidance		
Yes	38	12.0
No	280	88.0
Peer influence		
Yes	8	2.5
No	310	97.5
Satisfaction with your current menstrual hygiene product		
Very satisfied	32	10.6
Satisfied	73	23.0
Neutral	122	38.4
Dissatisfied	69	21.7
Very dissatisfied	22	6.9

significant. Additionally, girls with good menstruation knowledge were 1.6 times more likely to practice good hygiene, though this association was also not statistically significant.

Association between the availability of sanitary facilities in basic schools, preferred menstrual hygiene products and menstrual hygiene practices among adolescent girls in basic schools in the Fodome township

In a logistic regression analysis, factors influencing MHM practices were assessed. The adjusted model showed that girls with access to separate toilets were significantly more likely (AOR = 3.63) to have good MHM practices. The presence of dustbins in toilets also increased good MHM likelihood by more than three times (AOR = 3.06). Conversely, girls who were very dissatisfied with their menstrual products were significantly less likely to maintain good MHM practices (AOR = 0.07).

Discussion

This study aimed to assess MHM practices among girls in Fodome township's basic schools and identify influencing factors. Findings showed that 62.0% of respondents reported good MHM practices (Table 6), aligning with similar studies yet showing higher rates than those from Harari (44.2%), Ambo (46.7%),[20] and southern Ethiopia (39.7%),[10] but lower than in Hararge (58.3%),[21] and Northeast Ethiopia (52.9%). In Ghana, a North Gonja District study reported 64.5% of girls using sanitary pads and 71.0% exhibiting adequate MHM practices,[22] while 84.9% practiced good MHM in the West Gonja Municipality despite access challenges.[23]

The variation in MHM across regions is attributed to socioeconomic conditions, educational programs, and the availability of WASH facilities, which are often inadequate in certain areas. Despite Fodome limitations, relatively high MHM practices may reflect better awareness and access to menstrual products and WASH (Table 7). Poor

Table 6. Association between sociodemographic characteristics, knowledge of menstrual hygiene and the menstrual cycle, and menstrual hygiene practices among adolescent girls in basic schools in the Fodome township

Variable	MH Practice level		Unadjusted	Adjusted
	Good No. (%)	Poor No. (%)	aOR (95% CI) *P* value	aOR (95% CI) *P* value
Age				
10-12	67 (34.0)	36 (29.8)	Ref	
13-14	97 (49.2)	62 (52.2)	1.19 (0.71-2.00) 0.509	
15-16	33 (16.8)	23 (19.0)	1.30 (0.66-2.53) 0.446	
Class Category				
Basic 6	57 (28.9)	38 (32.2)	Ref	
Basic 7	69 (35.0)	31 (25.6)	0.66 (0.36-1.18) 0.161	
Basic 8	71 (36.0)	51 (42.2)	1.05 (0.61-1.81) 0.861	
Ethnicity				
Akan	19 (9.6)	12 (9.9)	Ref	
Ewe	131 (66.5)	75 (62.0)	0.91 (0.42-1.97) 0.804	
Ga/Adange	7 (3.6)	7 (5.8)	1.58 (0.44-5.65) 0.479	
Guan	10 (5.1)	8 (6.6)	1.27 (0.39-4.11) 0.694	
Others	30 (15.2)	19 (15.7)	1.00 (0.40-2.52) 0.995	
Religion				
Christianity	166 (84.3)	100 (82.6)	Ref	
Islam	31 (15.7)	21 (17.4)	1.12 (0.61-2.06) 0.705	
Currently lives with				
Mother only	47 (23.9)	21 (17.4)	Ref	
Father only	3 (1.5)	7 (5.8)	5.22 (1.23-22.2) 0.025	
Parents	124 (62.9)	72 (59.5)	1.30 (0.72-2.35) 0.385	
Guardian	23 (11.7)	21 (17.4)	2.04 (0.93-4.48) 0.074	
Father's educational level				
No formal education	55 (27.9)	41 (33.9)	Ref	
Basic education	62 (31.5)	29 (24.0)	0.63 (0.35-1.14) 0.127	
Secondary education	53 (26.9)	34 (28.1)	0.86 (0.48-1.55) 0.618	
Tertiary	27 (13.7)	17 (14.0)	0.75 (0.41-1.75) 0.650	
Mother's educational level				
No formal education	41 (20.8)	19 (15.7)	Ref	
Basic education	85 (43.2)	52 (43.0)	1.32 (0.69-2.51) 0.398	
Secondary education	40 (20.3)	28 (23.1)	1.51 (0.73-3.13) 0.266	
Tertiary	31 (15.7)	22 (18.2)	1.53 (0.71-3.31) 0.279	
Receipt of information on menstruation management before menarche				
No	15 (7.6)	5 (4.1)	Ref	
Yes	182 (92.4)	116 (95.9)	1.91 (0.68-5.40) 0.221	
Initial source of information on menstruation management				
Relative	4 (2.0)	6 (5.0)	Ref	Ref
Friends	7 (3.6)	10 (8.3)	0.95 (0.19-4.68) 0.952	1.27 (0.22-7.17) 0.787
Mother	128 (65.0)	61 (50.4)	0.21 (0.08-1.17) 0.084	0.74 (0.34-1.61) 0.444
School	58 (29.4)	44 (36.4)	0.33 (0.13-1.90) 0.313	1.11 (0.37-3.35) 0.846
Knowledge Level				
Poor knowledge	80 (40.6)	33 (25.0)	Ref	Ref
Good knowledge	117 (59.4)	72 (75.0)	1.82 (1.12-2.98) 0.016	1.61 (0.86-2.99) 0.135

aOR, adjusted odds ratio

Table 7. Association between the availability of sanitary facilities in basic schools, preferred menstrual hygiene products and menstrual hygiene practices among adolescent girls in basic schools in the Fodome township

Variable	MH practice level		Unadjusted	Adjusted
	Good No. (%)	Poor No. (%)	cOR (95% CI) *P* value	aOR (95% CI) *P* value
Availability of toilet facilities				
No	27 (12.2)	24 (25.0)	Ref	-
Yes	195 (87.8)	72 (75.0)	0.48 (0.26-0.88) 0.018	-
Type of toilet facility is there (n=267)				
Latrine pits	174 (89.2)	68 (94.4)	Ref	
Water closet	21 (10.8)	4 (5.6)	1.04 (0.44-2.45) 0.930	
Availability of water in the toilet				
No	178 (91.3)	64 (88.9)	Ref	
Yes	17 (8.7)	8 (11.1)	1.51 (0.65-3.46) 0.336	
Availability of soap in the toilets				
No	170 (87.2)	62 (86.1)	Ref	
Yes	25 (12.8)	10 (13.9)	1.45 (0.71-2.99) 0.311	
Separate toilet for girls				
No			Ref	Ref
Yes			3.73 (1.40-9.98) 0.009	3.63 (1.18-11.09) 0.024
Doors are in place				
No	45 (23.1)	11 (15.3)	Ref	
Yes	150 (76.9)	61 (84.7)	1.47 (0.77-2.79) 0.244	
Toilets are roofed				
Yes	168 (86.2)	68 (94.4)	Ref	
No	27 (13.9)	4 (5.6)	2.00 (0.83-4.84) 0.123	
Dustbins are available in the toilet				
No	137 (70.3)	25 (34.7)	Ref	Ref
Yes	58 (29.7)	47 (65.3)	3.01 (1.79-5.07)<0.001	3.06 (1.62-5.78) 0.001
Reasons for preference				
Comfortable				
No	12 (5.4)	1 (1.0)	Ref	
Yes	210 (94.6)	95 (99.0)	1.40 (0.42-4.65) 0.582	
Availability				
No	167 (75.2)	76 (79.2)	Ref	
Yes	55 (24.8)	20 (20.8)	0.89 (0.52-1.53) 0.676	
Very affordable				
No	140 (63.1)	64 (66.7)	Ref	
Yes	82 (36.9)	32 (33.3)	0.98 (0.61-1.57) 0.928	
Easy to use				
Yes	87 (39.2)	44 (45.8)	Ref	
No	135 (60.8)	52 (54.2)	1.48 (0.94-2.34) 0.094	
Do not have any side effects				
Yes	94 (42.3)	44 (45.8)	Ref	
No	128 (57.7)	52 (54.2)	1.42 (0.90-2.24) 0.131	
Parental guidance				
Yes	23 (10.4)	15 (15.6)	Ref	
No	199 (89.6)	81 (84.4)	1.55 (0.78-3.06) 0.210	
Peer influence				
Yes	5 (2.3)	3 (3.1)	Ref	
No	217 (97.8)	93 (96.9)	0.98 (0.23-4.16) 0.974	
Satisfaction with your current menstrual hygiene product				
Very satisfied	16 (8.1)	16 (13.2)	Ref	Ref
Satisfied	48 (24.4)	25 (20.7)	0.52 (0.22-1.21) 0.130	0.31 (0.09-1.09) 0.068
Neutral	74 (37.6)	48 (39.7)	0.65 (0.30-1.42) 0.278	0.50 (0.14-1.79) 0.289
Dissatisfied	39 (19.8)	30 (24.8)	0.77 (0.33-1.78) 0.541	0.48 (0.13-1.72) 0.263
Very dissatisfied	20 (10.2)	2 (1.7)	0.10 (0.12-0.50) 0.005	0.07 (0.01-0.54) 0.011

aOR, adjusted odds ratio; cOR, Crude odds ratios

MHM is linked to negative outcomes like reproductive tract infections, school absenteeism, and psychosocial stress, underscoring the need for interventions to improve access to sanitary products, menstrual health education, and school facilities. Community engagement and cultural sensitivity are also crucial for sustainable improvements.

The study further found that 64.5% of girls had good menstruation knowledge, consistent with findings from North Gonja (78.8%), Mohammed et al[22] and West Gonja (63.7%),[23] while Ethiopia reported slightly higher knowledge levels (72.5%).[24] In Nepal, widespread awareness was marred by misconceptions.[25] Educational interventions and cultural beliefs heavily influence menstruation knowledge, with efforts across Ghana and Ethiopia aiming to enhance menstrual health education, whereas stigma in Nepal hinders effective information dissemination. Access to separate toilets was associated with a higher likelihood of good MHM practices (AOR = 3.63), consistent with studies in Ghana's Savannah Region showing that private sanitation facilitates proper MHM,[23] and in Kenya, where inadequate facilities contribute to unsafe practices and absenteeism.[26] However, disparities in sanitation access remain, with economic limitations impacting MHM infrastructure, particularly in rural Ethiopia and Nepal.[25]

These findings underscore the need for improved school sanitation facilities to support MHM and mitigate public health impacts, including infections and psychosocial challenges. Recommendations include prioritizing school infrastructure improvements, ensuring water and soap availability, and integrating MHM awareness programs into broader health initiatives. By fostering a supportive environment for managing menstruation, girls can experience better health outcomes, reduced absenteeism, and greater educational participation.

Study limitations

The cross-sectional nature of the study limits its ability to establish causality or observe changes over time. Nonresponse bias is a concern, as nonrespondents may differ from respondents. Self-reported data may be inaccurate due to response bias.

Conclusion

The study revealed that good menstrual hygiene practices among adolescent girls in Fodome Township are significantly influenced by access to proper facilities and quality menstrual products. Girls with access to separate toilets and dustbins are much more likely to practice good hygiene, whereas dissatisfaction with menstrual products hinders proper practices. Improving access to sanitary facilities and providing affordable, high-quality menstrual products are essential to support better MHM in this community.

Implication of the study for practice

The study's findings have several practical implications for improving MHM practices:

The study identified that poor MHM practices can lead to infections, absenteeism, and psychosocial stress. Therefore, public health policies should emphasize improving MHM resources and support services in schools to promote girls' health and educational outcomes.

Also, the study highlighted a gap in menstrual health knowledge among some girls, underscoring the need for continuous education on menstrual hygiene, dispelling myths and addressing cultural taboos. Integrating menstrual health education into the school curriculum could enhance knowledge and reduce stigma.

Furthermore, limited access to affordable menstrual products was a challenge for many girls. Subsidizing menstrual products or establishing free distribution programs could help girls manage menstruation more comfortably and hygienically.

Lastly, since access to private toilets and dustbins significantly influenced good MHM practices, schools should prioritize the provision of clean, private, and adequately equipped sanitation facilities. This includes installing dustbins for proper disposal and ensuring access to water and soap.

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Competing Interests

The authors declare no competing interests.

Ethical Approval

Approval for this study was obtained from the University of Health and Allied Sciences Research Ethics Committee, with approval number UHAS-REC A.4[092] 23-24. Written permission was also obtained from the Hohoe Municipal Ghana Education Directorate and the heads of the selected basic schools. Before data collection, written informed consent was obtained from both the participants and their parents or guardians. To ensure confidentiality and anonymity, all questionnaires were coded, and personal identifiers were removed. The completed questionnaires were stored securely under lock and key and were accessible only to the research team.

All research activities adhered to relevant ethical guidelines and regulations to safeguard participants' rights and data privacy.

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