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Menstrual blood and ritual beliefs: a qualitative study on menstrual health and hygiene practices among senior high school girls in Volta Region, Ghana

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Abstract

Background Menstrual health and hygiene (MHH) are a global public health priority, particularly for adolescent girls. Improper menstrual hygiene practices are linked to negative health outcomes. This study explored menstrual hygiene practices among adolescent girls in senior high schools in the Volta Region of Ghana, focusing on practices and beliefs surrounding menstrual blood disposal.

Aim To investigate menstrual hygiene practices, including disposal methods and the influence of ritualistic beliefs on adolescent girls in selected high schools.

Methods This qualitative study employed an exploratory design, using purposive and convenience sampling to select participants from five senior high schools in the Volta Region. Data were collected from 60 adolescent girls through focus group discussions. MAXQDA 2022 software was used for thematic analysis.

Results Participants reported varied menstrual product disposal practices shaped by safety concerns and cultural beliefs. Common methods included burning, burying, or discarding in latrines. Fear of ritual use of menstrual blood led many to avoid public disposal, with parental advice reinforcing these fears. Observations, however, revealed inconsistent practices, including disposal in open pits and washroom floors. Additionally, water and hygiene facilities were mostly inadequate, with many girls relying on poorly maintained pit latrines and non-functional flushing toilets.

Conclusion The study found a mismatch between what girls say they do with menstrual waste and what actually happens in schools. While they report discreet methods like burning or burying due to fear of ritual misuse, observations showed that waste were often left in open or unsanitary areas. This gap points to poor school sanitation and deep-rooted cultural beliefs. Improving menstrual hygiene in schools requires more than infrastructure – secure, private disposal options and culturally sensitive education are essential.

Keywords Menstruation, Hygiene management, Ritual beliefs, Volta Region, Ghana

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Background

Menstruation is a natural biological process that signifies the onset of reproductive capability in females, typically occurring between the ages of 12 and 16 [12, 21]. For young women, particularly adolescent girls, menstruation can be a significant milestone marking a transition into womanhood [12]. However, this biological event is often accompanied by various challenges, particularly in low- and middle-income countries (LMICs) such as Ghana. The onset of menstruation can lead to feelings of anxiety, confusion, and embarrassment, especially in cultures where menstruation is shrouded in stigma and misinformation [19, 25].

One of the primary challenges associated with menstruation in LMICs is the accessibility of menstrual hygiene materials. Many young women face significant barriers in obtaining sanitary products, which can lead to the use of alternatives such as cloths [1, 17, 29]. In Ghana, as in many other LMICs, the cost of sanitary products can be prohibitive, and the lack of availability in some areas further complicates access [33].

The ritual perception surrounding the disposal of used menstrual materials is an area that has been inadequately explored in existing research. While menstruation is a natural biological process, it is often enveloped in cultural beliefs and practices that dictate how menstrual waste is perceived and managed. In many societies, menstrual blood is imbued with symbolic meanings that can influence disposal practices, due to stigmatization and secrecy [27]. This can result in harmful disposal practices, such as burning in the open or unregulated incinerators, flushing used materials down the pipes, which can block sewage systems and compromise sanitation facilities [2, 10, 27].

Research indicates that cultural beliefs significantly shape the attitudes and behaviors of menstruating individuals regarding menstrual health and hygiene (MHH) and waste disposal [30]. For instance, in some cultures, menstrual blood is viewed as impure or dangerous, leading to practices that prioritize concealment over proper disposal [26]. Some girls may fear that their used menstrual products could be misused by others, leading them to dispose of these items in ways that are harmful to the environment [26, 27].

The disposal of menstrual waste presents significant challenges, particularly in high schools where waste management systems may be inadequate. Adolescents may dispose of used sanitary products in general waste, burn, flush them, or deposit them in pit latrines [10, 27]. These practices may contribute to environmental pollution through open disposal practices which can create microplastics that pollute soil and water, and the release of harmful toxins from open or unregulated burning [2],Toxic [32, 34] and blocked drainage systems. Meanwhile, improper disposal practices can increase health risks for the community [10, 17]. In non-sewered sanitation facilities, menstrual products can make it harder to digest organic material in the pit latrine creating unhygienic conditions for waste workers, and increasing the risk of infectious diseases [32]. Also, non-biodegradable menstrual products like tampons and sanitary pads end up in landfills, where they break down into microplastics that can pollute the environment [9]. Incinerators create flue gas emissions that can be a health hazard. These emissions include oxides of sulfur and nitrogen, as well as dioxins and furans, which can be carcinogenic and disrupt the endocrine system [34].

Most existing studies tend to focus on the technical aspects of menstrual health and hygiene, such as product accessibility and health implications, while neglecting the cultural and ritualistic elements that influence disposal practices [10, 34]. This oversight is concerning, as it limits the development of culturally sensitive interventions that could effectively address the unique challenges faced by menstruating individuals in different contexts [10, 18]. This qualitative study allows for a deeper understanding of the cultural, and social factors that influence disposal practices, providing insights that quantitative studies may overlook [17, 25]. This helps to inform the development of culturally appropriate educational materials and interventions in this context [10, 17, 25, 30]. Against this backdrop, this study explored the menstrual waste disposal practices among adolescent schoolgirls in senior high schools in the Volta region of Ghana.

Methods

The reporting of this study is underpinned by the consolidated criteria for reporting qualitative research (COREQ) [7, 31].

Setting

This study was conducted in five senior high schools of five districts of the Volta region of Ghana. These districts were Hohoe, Afadzato South, Kpando, Ho West, and Ho District. The Volta Region is one of the 16 administrative regions in Ghana. It is located between latitudes 50°45'N and 80°45'N and lies along the southern half of eastern Ghana. It is bounded on the north by the Oti Region of Ghana, south by the Gulf of Guinea, on the west by the Volta Lake, and on the east by the Republic of Togo. The region has approximately 9,504 km^2 of surface area representing 8.6% of Ghana's total land area, with a total population of 1,659,040 (Ghana Statistical Services [13]. Overall, the gender composition of the region is males 47.7% and females 52.3% [14] which mirrors a similar trend in the enrolment of students in mix sex high schools in Ghana.

Study design

This study used a qualitative narrative design with an exploratory and observation approach. Data were collected through focused group discussions, and photos were taken to provide anecdotal evidence for the observation. The combination of methods allowed for an in-depth understanding from the participants' reports while accounting for social desirability effects [8, 20].

Study population

The population for this study comprised adolescent girls aged 15–19 who were students of major Senior High Schools in the five selected districts of the Volta Region. Regardless of their residency status, students were included if they met the age criteria and provided informed consent or assent to participate.

Sampling procedure and sample size

We used a combination of purposive and convenience sampling to select participants and all five senior high schools. Convenience sampling was applied because the study was conducted as part of a larger project already ongoing in these schools. Within these schools, purposive sampling was used to select adolescent girls who had experienced menstruation and were willing and able to articulate their menstrual hygiene experiences. With the support of school authorities, students were approached during off-lesson hours. The study was introduced, and those who met the eligibility criteria were enrolled until each focus group was filled. In total, 5 Focus Group Discussions (FGD) were conducted across all five Senior High Schools. For each of the FGDs, 12 participants were sampled to participate in the discussion. In total 60 adolescent girls were involved in this study, which is theoretically acceptable to reach saturation [11, 15, 16]. Also, 60 pictures of sanitation facilities and dumping sites taken at different angles aided observation efforts and synthesis of the findings.

Ethical considerations

Ethical approval for this study was obtained from the University of Health and Allied Sciences Review Committee and authorization from the administration of all the Senior High Schools before data was collected. Informed consent had been obtained from participants before including them in the study. However, for the students who were not yet 18 years old, a written legal parental/legal guardian consent was obtained in addition to child assent. The purpose of the study was also explained to them before engaging them in the discussions. Further, we informed them of their right to stop at any point of the discussion process when they feel so without any consequence. The privacy and confidentiality of the participants were strictly adhered to by ensuring that no information from participants was disclosed to any third party. The participants were recognized by code names and numbers instead of their real names. All the audio recorded during the discussion and the transcriptions made of them after the data collection were secured on an encrypted computer which is only accessible to the research team.

Data Collection Instruments and Methods

Face-to-face interactions were used for collecting the data in safe and quiet spaces on the school premises. All the FGDs were conducted in English, which is the language of instruction in Ghanaian high schools. Data was collected with the help of research assistants who received a two-day training on qualitative research interviewing skills using a manual developed for this purpose. The FGDs lasted an average of 60 min. The interviews were conducted using FGD guides that were piloted among similar populations to check for clarity and comprehension of the questions before the start of the data collection. Also, the guides were given to experts in the field of qualitative study for them to peruse in detail the worth of the questions. We also recognized the importance of rigor and trustworthiness in qualitative research, we worked to ensure confirmability through member-checking and validation. Audio recorders and hand-written notes were also used to record the discussions. The use of hand-written notes was to ensure that the interview process was not halted should the recorders break down during the interview process. After the interviews, field notes were taken and referred to during the analysis, which included the participants' nonverbal indications, worries, and interviewers' reflections.

Photos of sanitation facilities and dumping sites were taken using project mobile devices to serve as anecdotal evidence from observations.

Data processing and analysis

All the recorded interviews from the participants were transcribed verbatim into a Microsoft Word document from which codes and themes were developed using flexible thematic analysis [5]. Transcriptions were carried out by trained transcribers with competencies in qualitative research. The transcripts were quality-checked by an independent person with both language and grammar competencies to ensure that the content of the transcripts was accurate. The transcripts were read and edited to resolve any omissions and mistakes in the original transcripts. Familiarization with the data was done to take note of key ideas and recurrent themes. After an exhaustive period of extensive reading of the transcripts

by each analytical team member to familiarize themselves with the texts, the MAXQDA qualitative analysis software 2022 version was used in developing the codes and themes which were both priori and emergent. The coding process involved identifying and labelling ideas in each transcript. The coding process was informed by two primary considerations, deductive and inductive coding [4]. Deductive coding involves identifying and labelling pre-existing ideas on the topic under study, while inductive coding refers to discoveries emanating from the transcripts. Before the coding process, the team had two separate meetings to agree on the constitution of a code and the labelling of emerging issues in the recorded audio. This was to ensure similar ideas occurring in any transcript analyzed by team members would be labelled or coded the same way. After the first round of coding, through constant comparison where observations from all transcripts were compared, a table was generated in Excel (Microsoft, Redmond, WA, USA) to align all the ideas in all transcripts against each other. From this table, dominant ideas and less dominant ideas were observed as well as the saturation point.

Manual analysis through the assignment of codes to specific content of photos was undertaken. These codes were broadly organized to reflect the key observation points.

Themes were generated for both transcribed data and photos. The themes were defined and named and a detailed analysis was conducted and written based on how they fit into the broader story of the data. To ensure the validity of the analysis, we used extracts from the data that capture the essence of each theme being demonstrated to develop the full write-up of the report.

Results

Sociodemographic characteristics of participants

The table (Table 1) below presents the sociodemographic data of the participants. The study involved 60 adolescent girls, with majority aged 17 (40%). Participants were distributed across Form 1 (33.3%), Form 2 (40%), and Form 3 (26.7%). Most girls were of Ewe ethnicity (53.3%), with others being Akan (23.3%), Ga/Dangbe (16.7%), and Guan (10%).

Table 1 Sociodemographic information of participants

Variable	Frequency, *N* = 60	Percentage (%)
Age		
15	5	8.3
16	14	23.3
17	24	40.0
18	15	25.0
19	2	3.3
Level of education (form)		
Form 1	20	33.3
Form 2	24	40.0
Form 3	16	26.7
Ethnicity		
Ewe	32	53.3
Akan	14	23.3
Ga/Dangbe	10	16.7
Guan	6	10.0
District		
Hohoe	12	20.0
Kpando	12	20.0
Ho West	12	20.0
Ho	12	20.0
Afadjato South	12	20.0

Thematic results

The table (Table 2) below summarizes the topical issues identified in the data. Detailed narratives are provided below for better understanding of the data.

Disposal practices

The disposal of menstrual products as reported by participants in this study reveals a range of practices shaped by both practical concerns and sociocultural beliefs. Participants consistently demonstrated caution in their disposal methods, with many opting for practices they deemed safest, such as burning or burying the used menstrual materials. Generally, participants would dump used materials in pits or toilets, burn or bury them. For those who dump them, some said these;

> *"When I am home after I remove it, I dump it in the dustbin to be disposed of later but when I am in school, I will wrap it and put it in the toilet" (ALPG, 17 years old).*
> *"Okay in the school I remove my pad, wrap it and dump it in the toilet" (ALPG, 16 years old)*
> *"I dump my used sanitary pad in the old KG pit but in the house, I burn it or put it in the dustbin" (KPAPJ, 16 years old).*

Nevertheless, some of the adolescents explained that for fear of their used menstrual material being accessed by other people or animals, they prefer digging a hole to bury the used materials while others indicated they prefer burning their used materials. The following quotes summarized their responses:

> *"Whenever I change my pad, the one I used, I burn it because I don't want to dispose it and then because I don't know where the refuse will be*

Table 2 Thematic table

Themes	Sub-themes	
	Interviews	**Observations**
Disposal practices	• Dumping ✓ dustbin, ✓ latrine ✓ pit • Burying • Burning	• Dumping ✓ waste dumping sites ✓ pit ✓ latrine ✓ washrooms ✓ sinks
Menstrual blood and perception of rituals	• Fear of material being used for ritual • Animal loitering concerns	
Sanitation and Hygiene Infrastructure		• Availability • Adequacy • Type ✓ cemented pit latrine ✓ wooden pit latrine ✓ flushing toilet (WC)

dumped so I always burn my pad (ALPE, 17 years old).

"In disposing of my sanitary pad in the house, I burn it but in school, because of how we dispose of the used pads that's why I decided to use tampons because they are a bit smaller and disposing it is quite easy when you drop it in the 'KG' [a local term for improved pit] it as well…" (KPAPH, 18 years old).

"I dispose my used sanitary pad in the house by burning it with petrol but in school, I dump it in the old 'KG' pit" (KPAPE, 16 years old).

"In school if I want to change the pad, I put it in a polythene and dig a hole and bury it" (ALPS, 18 years old).

"In the house I burn it but, in school I dig a whole and burry it" (ALPA, 17 years old).

Meanwhile, a few participants expressed concerns about the disposal of menstrual products at school, opting to take the used materials home due to uncertainty about how the school manages waste.

"Okay when am in school and then if I want to change my pad, I will go to the washroom then I will just remove the pad from my pant and the then I will wrap the pad and put it in a black polythene bag, then I will fold it, I can decide to put it on the rubbish. But I put it in my bag and send it home because I don't know how they will dispose the rubbish" (ALPJ, 19 years old).

The findings from the observations present a slightly different picture from what participants reported. Unlike the reports of discreet disposal practices influenced by ritual beliefs, the observations revealed that used materials were often deposited at waste dumping sites, in open pits, shallow latrines, on the floors in washrooms, and in

Fig. 1 Used materials in an open pit in one of the sites

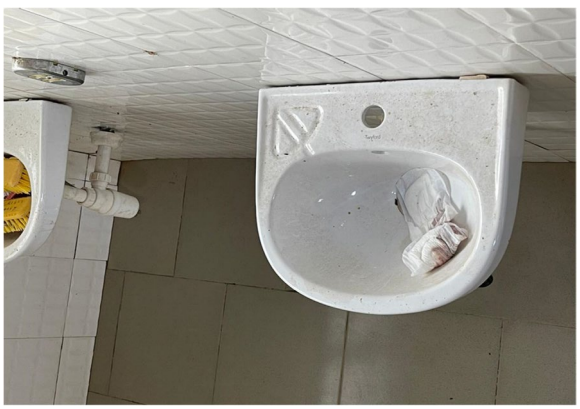

Fig. 2 An incident of a used pad in an abandoned sink

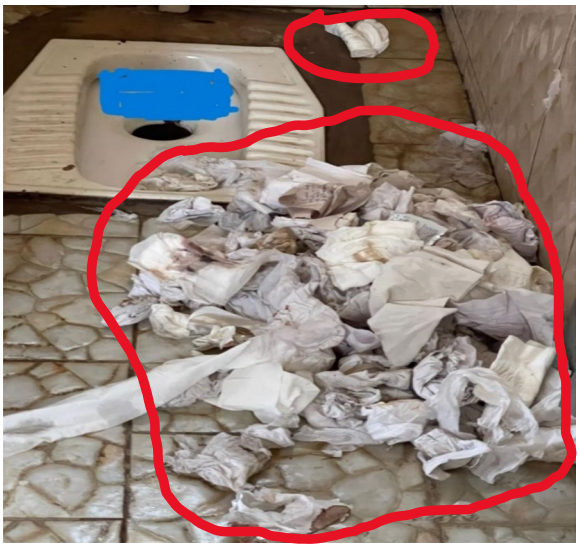

Fig. 3 Used materials deposited in the washroom

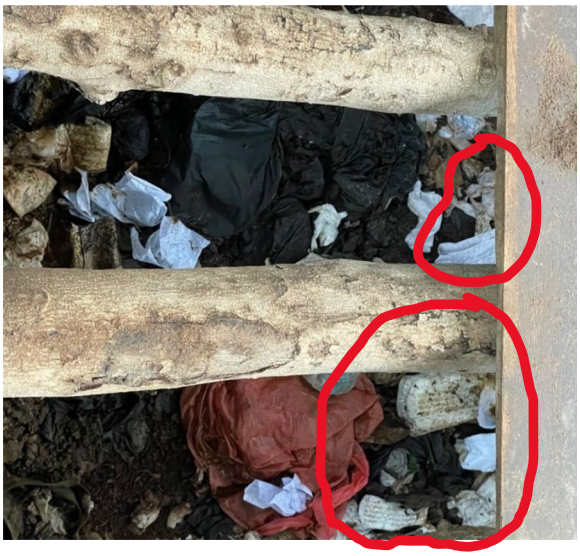

Fig. 4 Used materials in a shallow pit latrine

one incident, an abandoned sink. The attached photos provide evidence of these observed waste disposal practices, which diverge from the participant reports of more discrete and ritually-influenced methods (Figs. 1, 2, 3, 4).

Menstrual blood and ritual perception

Participants expressed strong concerns about the potential use of menstrual blood in rituals. Several participants were uncomfortable with disposing of used menstrual products in public or communal areas, fearing that others might collect them for harmful purposes.

One participant described not feeling safe even when disposing of products in designated pits at school, worrying that strangers might pick them up and use them without their knowledge.

> *"Ok for me, in the house, I keep it till when my period is over, I burn it and also in the school, they have a pit for us so we tie it and dump it there but to me, it's not safe because if you're in class and someone comes to campus and goes to the girl's dormitory and pick it and use it for something, we'll not know… I'm not ok with that one" (KPEPA, 18 years old).*

Others emphasized the importance of securely disposing of their menstrual products to prevent them from being used for rituals. For instance, one participant explained they felt more secure burying their used pads because "no one will find it".

> *I feel comfortable with that one because that one, no one is going there to pick it. If I dig a hole and cover it up. No one will find it (KPEPK, 18 years old).*

Some participants directly expressed fears of ritual use, while others mentioned the fear that someone might "use it for something like ritual that can affect me".

> *"Haha because I am afraid that someone can take it and use it for rituals" (ALPS, 18 years old).*
> *"We are in school, so you don't know 'who is who, anyone can use your materials to do anything at all against you" (ALPB, 16 years old).*
> *"Because I am scared someone will use it for something like ritual that can affect me" (ALPG, 17 years old).*
> *"Okay in the school I remove my pad wrap and dump it in the toilet. Because my mom told me that when its somewhere else, some people use the menstruation for money rituals, so I am afraid about it" (ALPH, 17 years old).*
> *"Nowadays, they have been using people's pads for sakawa [a form of ritualistic fraud involving blood]" (KPEPH, 16 years old).*
> *"Because some people are using blood to do ritual so I'm not safe" (SHIPH, 17 years old).*

Parental advice also influenced their concerns, as some participants were warned that menstrual blood could be used in money rituals, with some recalling their mother's instruction to burn or securely bury the products to avoid them being stolen for rituals.

> *"Nowadays, they are using our blood so my mum advised me that if someone should steal your blood [they will use it for rituals], you have to tie it in a rubber, dig a hole [and burry it] … if I can't dig a*

hole, then I'll burn it" (KPEPG, 19 years old).

Participants were worried not only about ritual use but also about the possibility of dogs or other animals scattering the used pads, further contributing to their sense of insecurity.

> *[I keep it] eh, a month sometimes, even more... to me because I think some dogs will go there and go and pick them and be disposing it around or someone will take it and go and do something about it so I've not been feeling safe at all. Yes, that's me" (KPEPC, 19 years old).*

These perceptions were reinforced by cultural and familial teachings, with one participant noting,

> *"My mother told me that it's not everyone that sees people's blood so I should not be putting it down anyhow" (SHIPA, 17 years old).*

Sanitation and Hygiene Infrastructure

The observation was also carried out on water, sanitation and hygiene (WASH) facilities in the study locations to assess their availability and state. Based on the evidence gathered, three key findings emerged.

First, it was observed that there were some WASH facilities available in the study locations, although they were inadequate to properly serve the population. Second, the predominant types of WASH facilities were cemented or wooden pit latrines, with only a few flushing toilet facilities present. Third, the limited flushing toilet facilities that were available lacked flow of water and were not in a good state. The photos below document these observation points and the overall state of WASH infrastructure in the study locations (Figs. 5, 6, 7, 8).

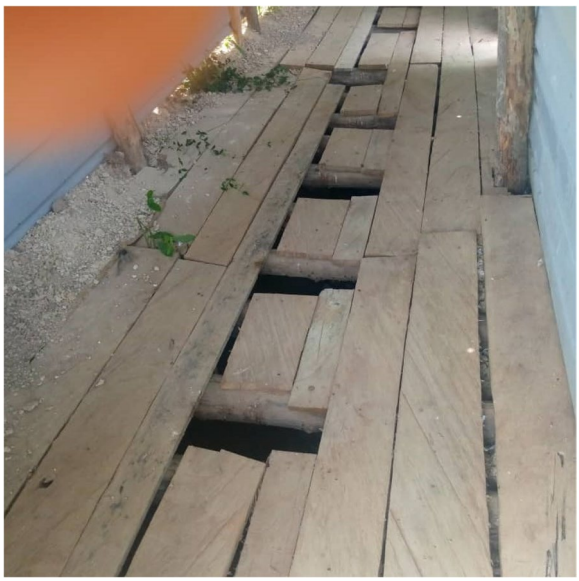

Fig. 6 Inside view of wooden pit latrine

Discussion

The findings of this study reveal a mix of behaviors, beliefs, and socio-cultural influences that shape how young individuals dispose menstrual materials. The study reveals varied menstrual product disposal practices

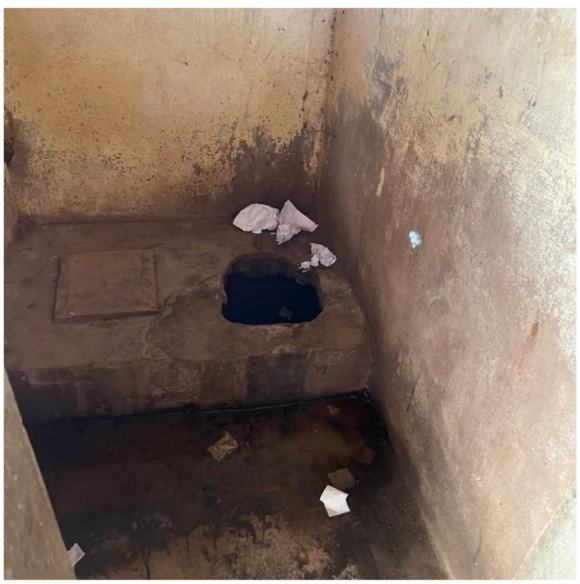

Fig. 5 Inside view of cemented pit latrine

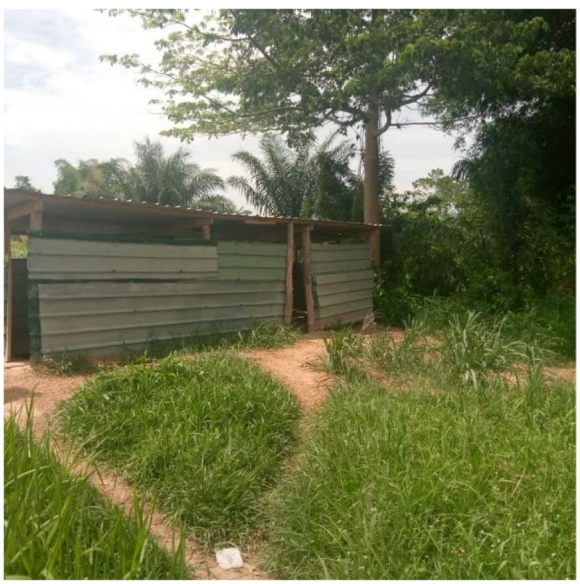

Fig. 7 Full view of wooden pit latrine

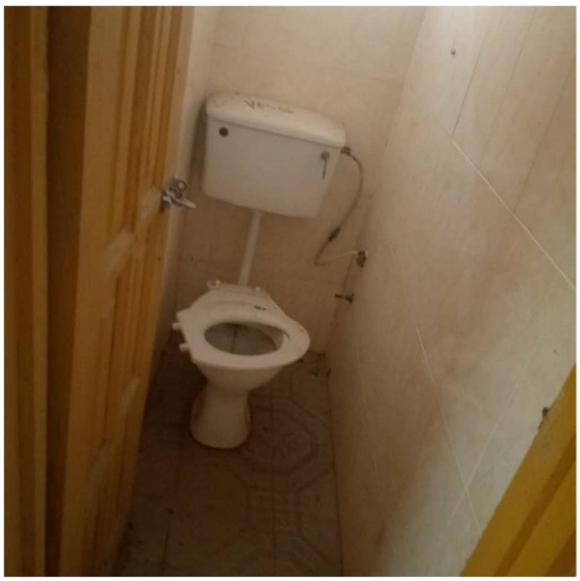

Fig. 8 Non-functional WC facility due to lack of flow of water and poor infrastructure

among adolescents, influenced by both cultural beliefs and practical considerations. Participants reported using methods like burning, burying, or dumping products in pits, latrines, or toilets. However, observations showed discrepancies, with discarded products often found in open pits, latrines, washroom floors, and even sinks, highlighting a gap between reported practices and observed behaviors.

Also, participants expressed concerns about the potential misuse of menstrual blood for rituals, leading many to avoid public disposal. Some preferred burying or burning used products at home to ensure security, fearing that disposal in communal areas might expose them to harm. Cultural and familial teachings, particularly from parents, reinforced these practices as protection against perceived ritualistic threats, and participants also voiced worries about animals scattering discarded products, which added to their sense of insecurity. Meanwhile, observations of WASH facilities revealed an inadequacy in meeting the population's needs. Available facilities, mainly cemented and wooden pit latrines, were few, and the few flushing toilets lacked running water and were poorly maintained.

Cultural perceptions surrounding menstrual blood often oscillate between notions of power and vulnerability, leading to the establishment of taboos that profoundly affect disposal practices [26, 27]. For instance, participants in various studies have reported feelings of insecurity when utilizing school disposal facilities, which are frequently rudimentary and inadequate, such as basic dugouts. This anxiety is likely compounded by both cultural beliefs and the insufficient nature of these facilities, prompting adolescents to adopt disposal methods that prioritize privacy and security [22, 23]

The practice of storing used menstrual products until they can be safely disposed of at home further foretells the fear of disposing used materials due to ritual perceptions [26]. Participants' fears of ritual use, such as for "sakawa", reflect beliefs about the supernatural power of menstrual blood [6, 26]. Such beliefs are deeply entrenched and are often perpetuated through maternal guidance, illustrating how cultural practices are transmitted across generations. Participants have reported employing methods such as burning or burying menstrual materials, which aligns with practices observed in other cultural contexts where menstrual blood is treated with caution due to its symbolic significance [28]. Despite the intentions behind these practices, observational data reveal a stark contrast between reported behaviors and actual disposal practices. While participants express a preference for discreet disposal methods like burning or burying, many menstrual products were found in open areas, such as waste dumping sites, open pits or washroom floors. This discrepancy may be attributed to aspirational reporting, where individuals describe what they believe to be ideal behaviors that align with cultural norms, despite practical constraints leading them to adopt more convenient methods [24]. Furthermore, the limited and insecure sanitation infrastructure in schools exacerbates this issue, compelling students to compromise their preferred disposal methods, thereby elucidating the gap between reported and observed behaviors [3].

Conclusion

This study reveals a notable discrepancy between the menstrual disposal practices reported by adolescent girls and those observed in their environment. While participants often claimed they used discreet methods like burning or burial due to fears of ritualistic misuse, observations showed menstrual materials frequently discarded in open pits, school washrooms, and general waste sites. This divergence suggests that inadequate school sanitation infrastructure, combined with strong cultural beliefs, limits students' ability to practice ideal disposal methods. These findings emphasize that infrastructure-only approaches are insufficient for menstrual hygiene management in schools, hence, secure and culturally respectful disposal options are essential.

Menstrual waste facilities in schools should integrate physical security to protect user privacy and align with cultural values, providing options like secure disposal bins in private areas. Additionally, educational programs should be implemented to address both hygienic disposal methods and cultural sensitivities, helping students

navigate menstruation-related concerns within their social contexts. Through these combined efforts, schools can promote safer, more culturally aligned disposal practices that reduce public health risks and meet the psychological and practical needs of students.

Strength and weakness

The use of a qualitative approach in conducting this study was critical in unravelling in-depth understanding of menstrual health and hygiene among school-going adolescents. However, the use of FGDs as a method for the data collection could have introduced biases as well as social desirability.

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Institutional review board statement
The study was conducted in accordance with the Declaration of Helsinki, and approved by the University of Health and Allied Sciences Research Ethics Committee [UHAS-REC A.10[163] 22–23].

Informed consent statement
Informed consent was obtained from all participants prior to including them in the study. However, for the students who were not yet 18 years old, a written parental consent and child assent were obtained. All ethical guidelines regarding the use of human participants were strictly adhered to in the study. Written informed consent has been obtained from the patient(s) to publish this paper.

Authors' contributions
Conceptualization: S.G and F.E.B; methodology: S.G., R.K.D., I.W., and W.K.A; formal analysis: R.K.D., I.W., W.K.A. and N.K.; writing-original draft preparation: S.G., I.W, R.K.D, and W.K.A.; writing- review and editing: J.H., S.G., W.K.A., N.K., I.W, E.G., P.K., C.M., P.E.N., I.B., S.O.M. and S.A.Y.A; supervision: S.G., V.C.K.D., J.H., F.E.B and F.N.B.; project administration: E.G., P.K., I.W, C.M., P.E.N., I.B., S.A.Y.A, and S.O.M. All authors have read and agreed to the published version of the manuscript.

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Data availability
All relevant data are within the manuscript and its Supporting Information files. Any further requests regarding the data used for this study could be made through the corresponding author.

Declarations

Competing interests
The authors declare no competing interests.

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