




Research Paper

A qualitative study on menstrual health and hygiene management among adolescent schoolgirls in peri-urban Lusaka, Zambia

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ABSTRACT

Menstrual Health and Hygiene (MHH) require adequate sanitary facilities, clean water, product access, privacy and safety, and disposal. MHH can significantly influence girls' health and educational achievements. However, schools in some developing countries lack proper Water, Sanitation and Hygiene (WASH) amenities to manage healthy menstruation. Therefore, it is crucial to enhance WASH services to tackle menstrual-related difficulties effectively. Zambian government schools struggle with insufficient WASH infrastructures. Hence, it is imperative to reveal the status of WASH services for policy progress and to promote girls' optimal menstrual health. We conducted observations and a qualitative study to evaluate the school's WASH facilities, investigate the sociocultural factors impacting MHH, and examine coping mechanisms to manage menstruation. Thirty adolescent schoolgirls, aged 14–19, residing in Lusaka peri-urban areas, participated in five focus group discussions. Insufficient school security, inadequate sanitary facilities, absence of clean water, and limited access to menstrual materials presented notable challenges. Culturally, there was an expectation for girls to swiftly embrace womanhood despite being unprepared for the natural biological process it entailed. Girls formulated strategies for managing challenges associated with MHH. The fundamental needs of menstruating girls include a sufficient supply of menstrual materials, improved WASH services, increased safety, and enhanced privacy.

Key words: adolescent schoolgirls, health, hygiene, menstrual coping, menstrual needs, peri-urban

HIGHLIGHTS

- Sociocultural beliefs influence menstrual health and hygiene (MHH).
- Good MHH includes safe WASH.
- Functional WASH facilities, clean and safe water, safety, and disposal facilities are crucial.
- Girls need provisions that are female-friendly, socially acceptable, and appropriate. These provisions should also meet their culturally context-specific needs.
- Girls' needs continue to persist, including sufficient menstrual materials, improved WASH services, enhanced safety, and privacy.

GRAPHICAL ABSTRACT

A qualitative study on Menstrual Health and Hygiene Management among adolescent schoolgirls in peri-urban Lusaka, Zambia

Background



Safe MHH contributes to achieving SDGs 3, 4, 5, 6, 8, & 12

Introduction

1. Menstrual Product Accessibility

41% of girls (developing countries) miss about 5 school days

2. Supportive Environment

Crucial for ensuring regular school participation

3. Socio-cultural factors

Beliefs, taboos & traditions contribute to poor MHH

Objectives

1. Assess **school WASH** facilities
2. Investigate **socio-cultural context**
3. Explore **coping mechanisms**

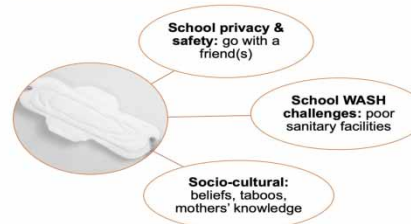
Methods

- ✓ Focus Group Discussions (n=5)
- ✓ School WASH Observations



WASH observation

Results & Discussion



Improved WASH facilities, enhanced security, access to MHH information and adequate materials are key needs of girls

INTRODUCTION

Menstruation is a normal, healthy, and natural bodily process that involves the release of blood and associated matter from the uterus through the vagina. It is part of the menstrual cycle, is a biological and natural fact of life, and occurs monthly for billions of girls. However, millions of girls are denied the right to manage their monthly cycle with dignity and healthily. Menstruating girls require menstrual materials to catch their menstrual flow. Supportive supplies like body and laundry soap are such needed menstrual materials (Sommer *et al.* 2022). Also, sanitary facilities must offer a safe and dignified environment, such as access to toilets and water infrastructure. Other factors like sociocultural beliefs and knowledge also play an imperative role in adolescent schoolgirls' overall health and educational outcomes (Schmitt *et al.* 2021).

Adolescence is the phase of life that occurs between childhood and adulthood, spanning the ages of 10–19 years. A stage of human development is a critical time for laying the foundations of good health and a necessary time of rapid physical, cognitive, and psychological growth, which can affect decision-making, perception, and interaction with the world, as well as how individuals protect or risk their health (Global Accelerated Action for the Health of Adolescents 2017; UNICEF 2019). Thus, adolescents need age-appropriate comprehensive education, acceptable, equitable, appropriate, and effective health services and information, and safe and supportive environments for their growth and development to respond to their specific needs and human rights (Hennegan *et al.* 2021; Sommer *et al.* 2022).

Menstrual health and hygiene (MHH) is a holistic approach that addresses the physical, emotional, and cultural aspects of menstruation. It is a multisectoral issue that cannot be addressed without WASH. MHH provisions in schools require the establishment of female-friendly and accessible sanitary facilities. These should include handwashing facilities that cater to the needs of menstruators. Another critical component of MHH is menstrual waste disposal, which is culturally acceptable and sustainably appropriate. Failure to have such provisions in schools limits WASH and hinders proper MHH. The availability and affordability of menstrual sanitary materials remain a severe challenge in low-income countries, especially for schoolgirls. Girls have been found to miss several school days or even drop out in low-income countries due to inadequate WASH and MHH materials (Boosey *et al.* 2014). With culture and traditions at the core, the lack of education and awareness,

behavioral change among girls and society still promotes gender inequality, stereotypes, and stigma toward menstruators. The silence around MHH at home and school only escalates this problem.

Zambian public government schools experience challenges concerning school WASH facilities (Chinyama *et al.* 2019). The government runs public schools and provides funding. With free education, pupils do not have to pay money at government schools. However, this makes it difficult for them to procure necessary materials for WASH needs. While the government provides the curriculum, the schools often face challenges related to infrastructure maintenance and resource availability, which affects their facilities. They may have larger classes and the quality of education varies across various regions and schools. Zambian schools face similar challenges to other developing countries, as challenges in peri-urban settings tend to be similar. Investigating girls' MHH experiences and practices with school sanitary facilities can provide essential insights into girls' menstrual needs and practices. Girls' experiences of sanitary conditions, dynamics of sociocultural context, and coping mechanisms for menstruation remain challenging.

Girls' attitudes toward menstruation, needs, and experiences with WASH must be investigated, especially in peri-urban areas (Rheinländer *et al.* 2019), which are characterized by poor service provisions and rapid population growth with low economic status. For several reasons, the need for MHH is often greater in urban areas. The limited access to menstrual products and WASH makes it challenging for individuals to manage their menstrual hygiene effectively. Inadequate waste disposal is also crucial for hygiene and environmental reasons. Peri-urban areas may have insufficient waste management systems, leading to improper disposal, which can pose health risks and environmental concerns, too. Economic and educational disparities, cultural norms and stigma, migration and urbanization, environmental factors, and healthcare access challenges can directly affect MHH. These specific challenges in peri-urban areas can vary widely depending on local conditions such as infrastructure, culture, and socioeconomic factors.

Therefore, this study aimed to evaluate the school WASH conditions, investigate sociocultural factors, and examine the menstrual coping strategies devised by adolescent schoolgirls in the peri-urban areas of Lusaka, the capital city.

METHODS AND PARTICIPANTS

An exploratory study was conducted in July 2022 using focus group discussions (FGDs) with 30 adolescent girls aged 12–19. The focus groups asked about the school WASH facilities for girls, the sociocultural context of menstruation, and the coping strategies used by girls to manage their menstruation. Semi-structured interviews were used.

Sampling and sample size

The target population was menstruating adolescent schoolgirls in the peri-urban areas of Lusaka. We selected the capital city for its significance in representing peri-urban areas. Lusaka captures diverse experiences and factors influencing MHH for girls from diverse social, cultural, and economic backgrounds. A government school was chosen as a significant representative of the broader education landscape in Zambia. This choice offers valuable insights into the challenges that a substantial portion of the population faces, thereby ensuring the study's relevance and acceptability. The participants had similar socioeconomic characteristics such as living in populated peri-urban areas, low-income families, and poor WASH facilities. The participant inclusion criteria were for one to have reached menarche (experienced first menstruation at data collection) and be under 19 years of age. We employed convenience sampling for the ease of recruitment and data collection. The head teacher took the initiative to designate the grades and assigned a teacher to collaborate with us. Subsequently, the teacher distributed 100 consent forms to the students' parents and maintained a record of those who received and returned signed forms. Of the distributed forms, 30 were signed and returned, forming our sample of 30 girls, with an equal distribution of five in each of the six groups.

Data collection tools

Focus groups ($n = 5$) were used to collect data. We asked the girls about the conditions of the school WASH facilities, girls' toilets, and handwashing stations. We also asked about the sociocultural beliefs and myths surrounding menstruation that they knew and practiced. Furthermore, we asked about the menstrual coping mechanisms used regarding physiological and menstrual product challenges of managing menstruation, whether at home or at school. Each discussion lasted for about 40–60 min. Participants of various ages were included in the focus groups. The language used was mainly English and a Zambian local language, Nyanja (widely spoken in Lusaka). Data were collected by the researcher and trained

female enumerators. Before the FGDs, we observed the girls' toilets and handwashing stations to assess the WASH conditions.

The girls' focus groups addressed three main sections. Firstly, they discussed the WASH facilities, including toilets and handwashing facilities. To identify sub-themes and codes under the theme of girls' school WASH facilities, the framing question addressed the conditions of the schools' sanitary facilities. When asked about the toilets' sanitary conditions, the number of functional toilets, whether they are separate from schoolboys' toilets, and whether girls feel comfortable using them.

Secondly, the sociocultural beliefs and myths around menstruation on the social expectations, food restrictions, and secrecy. The framing question tackled the sociocultural beliefs and myths around menstruation that girls were aware of. Thirdly, the coping mechanisms used to manage menstruation, including physiological challenges and sanitary facilities used by the schoolgirls, were discussed. The framing question addressed coping mechanisms for physiological discomforts and sanitary facilities, specifically, the coping mechanisms used to manage menstruation. Lastly, we also asked the participants if they had any recommendations for government and school management and their needs and wishes concerning menstruation. The framing question aimed to determine whether the girls had any suggestions and recommendations on MHH.

Data analysis

Focus group data were transcribed from audio-recorded data and coded. The data were put into three main themes: the girls' school WASH facilities, menstrual sociocultural beliefs and myths, and coping mechanisms used to manage menstruation. Data were analyzed using MAXQDA (version 2020) to analyze the coded data. In the analysis process, manual color-coding was done first, followed by analyzing the data using the software. In MAXQDA, data were analyzed in more depth by expanding the codes in various sub-themes and cross-referencing. Based on the themes, the data code underwent triangulation. Triangulation with other researchers involved a comprehensive review of existing literature and findings from other studies. Finally, the results relating to the three main themes were included in this study.

Ethical considerations

The Ethics Review Committee of the Faculty of Health Sciences, Hokkaido University (No. 2011-0001) reviewed and approved the study protocols and methods. All research participants were invited to fill out and sign an informed consent form after being briefed on the study. According to Zambia's legal age of consent, written informed assent was required from parents and guardians of schoolgirls under 18 years old. Not all parents or guardians signed the form, leading to drop-outs from the study at the beginning. Of the 100 forms distributed, 30 were signed and returned, while the remaining 70 either dropped out or chose not to sign. However, we were still able to reach the desired sample size. Participants were explicitly informed of their right not to join or withdraw from the study at any time.

RESULTS

The result shows the school observation and the FGDs. Pictures elaborate further on the thematic analysis codes and narratives from the focus groups with the participants. The qualitative data are presented in tables and quotes that support the findings. For clarity, the results section is divided into two main parts: observations of girls' school WASH facilities and findings from the focus groups on school WASH, sociocultural beliefs and myths, and coping mechanisms.

Observations of school WASH conditions

Pictures were taken to observe the school's sanitary conditions. School observations were conducted to assess the conditions and support the study's findings. From the research site, the following was observed at the school.

The school had a water access point and a water pump for handwashing. However, these facilities were located about a 3–5-min walk from the girls' toilets. There was no running water but only stored water in the girls' toilets. The girls used other available water sources around the school, as provided by the school.

A handwashing water point (water tap) was available near the classrooms. The water access point looked dirty, with stagnant water and a lack of hand soap for practicing proper hygiene (Figure 1).

The girls' toilets were visibly dirty, with dirt present inside the toilet bowl and on the floor. Additionally, there were no sanitary materials or trash bins for menstrual waste disposal. Also, the toilets were not flushable, with no lid, and the doors were not lockable (Figure 2).



Figure 1 | School mono-pump and unsanitary handwashing tap.

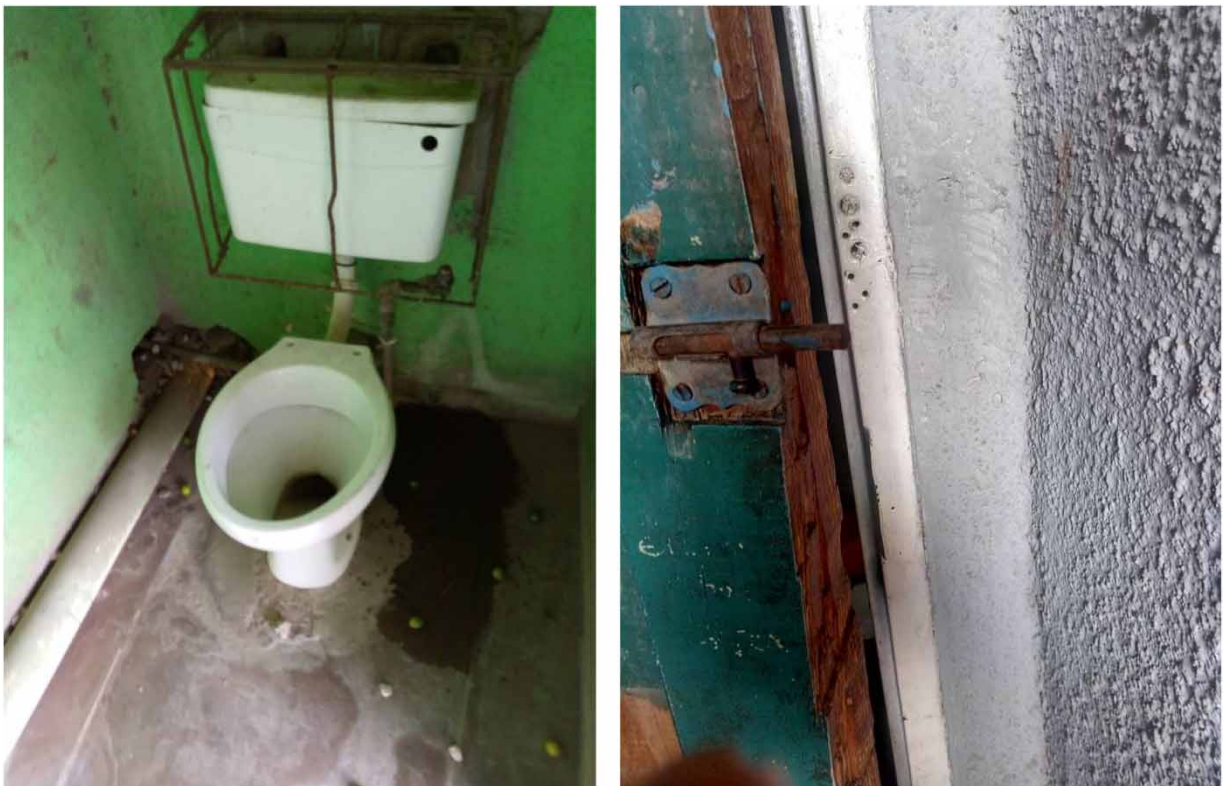


Figure 2 | Schoolgirls' toilets in unsanitary and unhygienic conditions.

At the school entrance, a tank for water storage was available as an alternative water reservoir in case of a water supply cut in the local area. Another handwashing point was available at the administration office (Figure 3).

Qualitative results

Table 1 shows the main theme, sub-themes, and codes from FGDs (n = 5).

Theme 1: Girls’ school WASH facilities

The girls mentioned that the number of toilets was enough. However, lack of cleanliness, sanitary materials like running water, soap, and toilet paper, or the lack of menstrual products in the school posed a challenge to managing menstruation properly, especially while at school.



Figure 3 | A water tank and handwashing point.

Table 1 | Themes, sub-themes, and codes from FGDs

Theme	Sub-theme	Codes
Girls’ school WASH facilities	<ul style="list-style-type: none"> Inadequate toilet facilities Inadequate handwashing facilities 	<ul style="list-style-type: none"> Dirty; no privacy; no safety (no locks); no frequent toilet use No running water; no soap; stations outside toilets
Sociocultural beliefs and myths	<ul style="list-style-type: none"> Social expectations (male–female interactions) Food restrictions (taboos) Secrecy 	<ul style="list-style-type: none"> Behavior; grown-up; stop boy casual interactions; strict parents; prevent pregnancy Do not cook, eat, or add salt to meals, chronic cough effect Late teachings (menarche); males not to learn about menstruation
Coping mechanisms	<ul style="list-style-type: none"> Physiological School facilities 	<ul style="list-style-type: none"> School absenteeism; do not use medication; sleep; rest Go with a friend(s); use stored water; no handwashing; walk a distance; home toilet; staining

The toilets are a lot. There are many toilets, only that they are dirty. (FGD1, 14 years)

Yes, the toilets are separate and labeled. However, boys enter the girls' toilets even if the toilets are well-labeled. (FGD4, 15 years)

There is stored water for pouring in the toilets, which is sometimes cold and not clean enough to wash hands; we have to come to water taps near the classes or go to the water mono-pump to wash our hands, and it is a short distance from the class. (FGD2, 14 years)

Concerning safety in the girls' toilets, the girls did not feel comfortable or safe visiting the toilets alone. They stressed that the lack of security was a main concern. Other unauthorized males, other than the schoolboys, easily entered the school premises due to poor security and accessed girls' toilets. This resulted in the girls going with a friend to the toilet, or not going at all. The school management had cautioned girls not to go to the toilets alone but to be accompanied by a friend(s) due to a sexual defilement case that had occurred on school premises.

Some unknown boys (outsiders/drug addicts) raped two girls in the toilets. One rape culprit was caught by the police, and the girl is not in good condition currently as 5 boys raped her. She has since stopped coming to school after the rape incident. (FGD2, 16 years)

Sometimes, boys hide watching girls while in toilets. I do not feel safe. (FGD5, 15 years)

Theme 2: sociocultural beliefs and myths

Most participants were aware of some cultural beliefs and myths, but almost all girls did not think they were affected. One participant mentioned that her male family members suffered from a chronic cough after she had salted the family meals, against the belief of not doing so when menstruating. The following are some cultural beliefs and myths known among girls, usually upon attaining menarche.

When I started my menses, I was not allowed to cook or go to the fire/brazier, or even put salt in food or take salty food. (FGD1, 14 years)

They told me to stay away from boys because I am now mature, and they are scared that I can get pregnant...something like that. (FGD3, 16 years)

Before I matured, they would tell me not to stay outside longer. But now, I am scolded for getting home late, even if I am playing nearby. I need to return home immediately after extra lessons. (FGD5, 15 years)

Upon having the first period, some are given medicines to take according to their beliefs and old practices of their forefathers, so it is part of their culture. (FGD2, 15 years)

I am not allowed to wear indecent short revealing clothes in front of male family members like my father [all girls laugh...] (FGD4, 14 years)

When asked if schoolboys should learn about menstruation, the girls had opposing views. Some girls had no problems with boys learning about menstruation, while others were agitated at that.

Boys should not learn about menstruation, as it is of no use to them; there is no need. I refuse that they must learn about it! (FGD1, 15 years)

Boys should know about menstruation. (FGD1, 16 years)

Theme 3: coping mechanisms used among schoolgirls

The girls used various coping mechanisms at school to manage their menstruation. Most girls explained they had found ways to manage at home and school. Whenever possible, a few girls stayed home until they felt better. Most did not use painkillers or take any medication because they were taught not to use pills but instead cope with menstruation.

I have never used the school toilets. I have to wait until I get home to use the toilet or change materials. (FGD4, 16 years)

My challenge with menstruation is having a stomachache, fatigue, feeling uncomfortable, constant worrying and frequent toilet visits to check myself [staining]. (FGD1, 14 years)

I manage menstrual cramps by not doing anything or taking any pain killer. I only do so through endurance. (FGD5, 15 years)

We are not advised to drink medicine usually since some medicines are dangerous for menstrual health. So, we all do not take any pills and just contain the pain. (FGD3, 16 years)

No, I do not miss school. I manage pain since I want to be educated. (FGD2, 16 years)

I have stomachaches and waist pains, so I stay home and miss school. (FGD3, 13 years)

Focus group recommendations from schoolgirls

During the focus groups, the participants were asked if they had recommendations for the Ministry of Education and School Management concerning how to manage better and improve their school menstrual experiences (see [Table 2](#)).

The participants cited the need for boys' behavior and attitudes toward menstruating girls to change. They also mentioned the need for mothers and other female members of the family, community, and female school teachers to teach girls about menstruation and hygiene practices, especially before menarche.

Provide lessons on self-care, menstrual hygiene, and peer pressure. I strongly recommend separate learning from boys due to bad comments. (FGD5, 17 years)

Teach us about menstruation in grade 8 or earlier. Even from grade 6, for others who start menstruation earlier. (FGD4, 14 years)

Only female teachers who have experience should be the ones to teach about menstruation. (FGD1, 15 years)

To learn about disposal practices that are good for the environment. (FGD2, 16 years)

DISCUSSION

School WASH facilities

Studies in developing countries have demonstrated the adverse effects of the lack of services and facilities required for menstrual hygiene on girls' access to education. Concerns about the consequences of poor menstrual hygiene and the inability to do anything about it have also been shown in other studies, resulting in anxiety, emotional stress, and embarrassment ([Lahme et al. 2018](#)). We found similar findings concerning fear and embarrassment among girls toward schoolboys while at school. Girls feared being embarrassed, ill-treated, laughed at, shamed, ridiculed, or attacked by boys and other male outsiders who often visit the school due to the porous security system. Similarly, inadequate toilet facilities and handwashing challenges in school could cause emotional distress among girls ([UNICEF 2019](#)).

The frequency of handwashing with soap after the absorbent change at school was challenging due to the lack of sanitary materials. A study conducted in Kenyan schools pointed out that WASH has a potential impact on poor MHH and equity for girls' education. The study also found that in schools where sanitary distribution programs did not apply, girls more frequently expressed fear and anxiety about staining, reported menstrual stains, and missed school because they lacked the money to

Table 2 | MHH recommendations, needs, and wishes among schoolgirls

Theme	Sub-theme	Codes
Need menstrual information	<ul style="list-style-type: none"> Needs and wishes Lack of information 	<ul style="list-style-type: none"> Boys' behavior and attitude Mothers (females) should teach girls; content, timing, and good menstrual practices

purchase materials as needed (Girod *et al.* 2017; Vashisht *et al.* 2018). We also found that girls missed school due to a lack of access to adequate materials needed to drain blood. Therefore, equitable pad provision and the cleanliness of school latrines (toilets) reduce the odds of absenteeism (Girod *et al.* 2017). Zambia faces similar challenges to similar income countries.

McMahon *et al.* (2011) reported in another study in Kenya that poor WASH facilities deter girls from using school facilities. Most girls opted not to use them at all and stayed home until they finished menstruating. Separate toilets for girls were provided, but the majority had no locks on the doors. Similar findings of concerns with poor hygiene and toilet security were also cited among our participants, causing some girls not to use the toilets or stay home until they felt better to return to school. Schools continue to lack essential WASH facilities, especially for menstruators. From the findings, adolescents in peri-urban settings do not have adequate MHH services to help manage menstruation in a healthy and dignified manner (UNICEF 2019).

School WASH sanitary facilities play a critical role in school attendance. One in 10 schoolgirls in low-middle income countries fail to attend school during menstruation or drop out at puberty due to the absence of sufficient sanitary facilities that aid good MHH (Chinyama *et al.* 2019). In our study, some girls mentioned staying home when experiencing menstrual discomforts like pains and cramping. Similarly, another study in rural Zambia found that girls lacked adequate materials like pads and underwear to help them stay in school. This implies that menstruation impacts school attendance among girls. Similarly, school facilities that needed to provide adequate privacy, handwashing facilities with water and soap, sanitary napkins, and waste disposal facilities in toilet rooms contributed to school absenteeism among menstruators (Chinyama *et al.* 2019).

During our study, a distressing incident came to our attention involving two schoolgirls who had fallen victim to rape, perpetrated by outsiders believed to be drug addicts. These unfortunate incidents occurred within the premises of girls' school toilets. The security situation at the school was compromised, with inadequate measures in place to ensure the safety and well-being of the students. Such deficiencies included the absence of locks on toilet doors, broken windows, and a lack of control over unauthorized access by boys or outsiders. However, these incidents had been reported, leading to law enforcement authorities' apprehension of one of the culprits. Recognizing the ongoing legal investigations, we refrained from interfering. However, we remained steadfast in prioritizing the victim's well-being and providing moral support to all the affected girls. It is deeply disconcerting that girls endured such insecurity and violence within the school environment, especially due to WASH issues. These circumstances exacerbated the emotional distress and fear associated with MHH, resulting in many girls refraining from using the school toilets. The girls narrating the incidents in the focus groups seemed concerned about safety, and we encouraged them to manage the situation and attend school regardless. Consequently, this affects their educational progress and equitable treatment alongside their male peers. This underscores the urgent need for comprehensive improvements in school security, WASH services, and support mechanisms to ensure girls' safety, well-being, and unhindered access to education.

Sociocultural context of menstruation

As normal as menstruation is, it continues to be associated with discriminatory social norms, stigma, and taboos that may hinder this process from being experienced healthily and with dignity. Cultural beliefs and taboos include food restrictions and activity limitations upon attaining menarche. For most, cultural beliefs did not have any direct negative impact. However, the girls were aware of some beliefs on menstrual practices that are believed to distract girls from bad behaviors or pregnancy and instead encourage good behavior. Chinyama *et al.* (2019) found that girls knew some implications of beliefs about the salt application in foods by menstruating girls. One well-known belief of menstruators adding salt to family meals causes chronic coughs in male family members. In our study, one girl mentioned having experienced it in her family. Unhealthy practices and interactions on social and family interactions around cooking and food can result in negative feelings of shame, stress, and shaming, bullying, or gender violence (Hennegan *et al.* 2019).

One key finding is that a lack of adequate pre-post menarche information reinforces cultural beliefs and norms, creating fear, discomfort, and negative attitudes. Before menarche, many girls receive either no or factually incorrect guidance. Hence, the onset of menarche can be very drastic and dreadful for many adolescent girls who are expected to change social behaviors, manners, and activities if not well equipped with good sociocultural practices and adequate MHH knowledge. Understanding menstruation should also attend to menstrual beliefs within a specific cultural context to understand the practices seen as unacceptable or taboo (Sommer & Sahin 2013). In Asia and Africa, for instance, people are still uncomfortable talking about menstruation as it is considered taboo (Yeung *et al.* 2005; Tembo *et al.* 2020). Menstrual myths and traditional practices are still common globally and in some Zambian societies. Lahme *et al.* (2018) found that the impact of stereotypes,

taboos, folklores, and the effects of poverty in the western province of Zambia have a significant influence on girls' menstrual experiences.

Another interesting and common belief among menstruators is the practice of witchcraft on soiled materials. Access to menstrual blood is highly related to menstrual challenges regarding childbearing and the general management of menstrual waste. Accurate and comprehensive information should be accessible pre–post menarche from knowledgeable and gender-sensitive professionals, trained teachers, and families throughout the reproductive life course on providing menstrual education and awareness in schools and other support services in local communities.

Menstrual coping mechanisms

In our study, coping strategies were linked to the desire for education and a promising future. A study among menstruating females (Kennett *et al.* 2016) found that females using more active coping strategies were more generally resourceful and used several strategies. Coping is closely linked to acceptance and getting on with everyday activities despite the discomforts and challenges of menstruation. We found that girls formulated strategies and endured the menstrual discomforts in order to stay in school, get educated, and have a promising future.

Other coping strategies involved managing physiological menstrual challenges, such as backache, stomach cramping, body fatigue and pain, and dizziness (Schmitt *et al.* 2021). Also, worries concerning leakages or staining clothes were mentioned as menstrual challenges, especially in places where toilets were not conducive for changing menstrual materials, as also found in our study. Despite these challenges, the girls had developed coping strategies to deal with physiological and facility-related challenges to attend school, except when experiencing menstrual cramping and discomfort (Schmitt *et al.* 2023). Girls' attitudes toward menstruation are associated with physical discomfort, emotionality, and social interaction changes, which can affect menstrual management and experiences.

The girls emphasized the need for more information, pre–post menarche, to cope with menstruation (Schmitt *et al.* 2021). We found that coping for our participants also meant access to adequate information. There is a need for adequate information on MHH practices, such as cleanliness, absorbent materials' availability and usage, body and product hygiene, self-esteem, and mental wellness. The girls wanted more menstrual-specific and open conversations with their teachers and peers at school, with their mothers, family members, and other female community members or health professionals like nurses or healthcare workers.

The Zambian government has been working on improving WASH and MHH in school. Various policies and initiatives have been formulated to alleviate the challenges that come with managing menstruation in school. With the introduction of clubs and meeting around WASH, MHH, and training guidance and counseling teachers and the SHN coordinators on these aspects, some schools have continued with these information-sharing sessions and are well informed about health and hygiene matters (Menstrual Hygiene Matters 2016; https://www.edu.gov.zm/wp-content/uploads/2023/02/2016-09-30-MHM-Toolkit_Zambia_Final-2.pdf).

RECOMMENDATIONS

Focus group recommendations from schoolgirls

During our FGDs, we sought input from the participants on how to enhance their overall experiences and create a more conducive environment within the school. Additionally, we enquired about their specific needs and desires related to menstruation. The consensus among girls was the necessity for MHH-tailored learning sessions or the establishment of school clubs dedicated to addressing self-care, hygiene, and managing peer pressure in the menstrual context. Furthermore, they emphasized the importance of early MHH education and awareness and advocated for the inclusion of sustainable MHH practices, which should be taught by well-trained and experienced female instructors, providing lessons separate from their male counterparts.

Suggested strategies for school management

The school should consider enforcing school clubs that address the specific needs of girls and reinforce good behavior around menstrual practices to promote and address the girls' need and wish for menstrual education. Regarding security, the school must also engage patrols among students or employ a security guard, install door locks, and not merely ask girls to be accompanied by a friend to access toilets. A more proactive approach, centered on ensuring that the rape incident does not re-occur, entails deliberate actionable strategic steps by the school.

Policy implications

To address these critical challenges, school management must take proactive steps. The school must prioritize the provision of user-friendly, secure, and well-maintained sanitary facilities, ensuring that they are conducive to the needs of girls. Bridging the knowledge gap necessitates investing in teacher training programs that equip educators with the skills and knowledge to support MHH challenges and requirements of girls effectively. Schools are encouraged to continue hosting WASH Education (WASHE) and School, Health, and Nutrition (SHN) clubs as platforms for exchanging information and experiences related to menstrual health. Establishing collaborative relationships with various sectors, including community organizations, health institutions, and government bodies, is critical in creating an enabling, female-friendly environment. By implementing these recommendations, schools can play a pivotal role in supporting students' holistic menstrual health and well-being.

CONCLUSION

The school's sanitary facilities presented considerable challenges, primarily attributed to the absence of safe water, functioning toilets, and handwashing stations. These facilities failed to provide the necessary privacy or safety required for schoolgirls. In response to a concerning incident of defilement within the school toilets, school management advised girls to always be accompanied by a friend when using the facilities. Consequently, some girls resorted to staying home until their menstrual cycle finished, both to evade unsatisfactory sanitary conditions and to alleviate menstrual cramps. In contrast, others employed coping strategies to manage pain and discomfort, highlighting the constrained options available to them. This situation results in restricted participation, potential health risks, and mobility limitations, driven by inadequate menstrual products or stigma associated with menstrual blood leakages. Furthermore, the sociocultural expectations placed on girls upon attaining menarche necessitate an almost immediate transition into womanhood, accompanied by adhering to specific dietary and cooking regulations around menstruation. A noticeable lack of pre-post menstrual knowledge among menstruating schoolgirls in urban Zambia and these findings underscore the significance of early and accurate menstrual knowledge in preventing negative cultural experiences and menstrual practices among girls. The primary needs of menstruating girls continue to evolve around access to menstrual materials, improved sanitary conditions, enhanced safety, and increased privacy.

POLICY IMPLICATIONS

The school management must provide the appropriate user-friendly, secure, sanitary facilities. Also, the knowledge gap requires the school to develop the capacity of teachers to better support the MHH challenges and needs of adolescent girls, with boys incorporated in these discussions. It is recommended that schools continue hosting WASHE and SHN clubs to serve as platforms for sharing information. To create an enabling female-friendly environment, partnerships, and collaborations with all sectors are critical to improving menstrual experiences.

ACKNOWLEDGEMENTS

This study was funded by RIHN and AJ-CORE. The authors would like to thank all study participants and the school management sincerely. The authors also thank the members of the Laboratory of Human Ecology, Faculty of Health Sciences at Hokkaido University, for their support and all other colleagues who supported the research.

DATA AVAILABILITY STATEMENT

All relevant data are included in the paper or its Supplementary Information.

CONFLICT OF INTEREST

The authors declare there is no conflict.

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First received 8 March 2023; accepted in revised form 23 December 2023. Available online 9 January 2024