

Cultural and Environmental Determinants of Menstrual Hygiene Management in Rural Schools of Chongwe District, Zambia: A Qualitative Study

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ABSTRACT

Background: Menstrual hygiene management (MHM) remains a significant public health, education, and dignity issue for adolescent girls in rural schools. Inadequate water, sanitation, and hygiene infrastructure, persistent cultural restrictions, limited access to menstrual materials, and stigma can undermine girls' comfort, attendance, and participation in school. This study explored cultural and environmental factors influencing MHM practices in rural schools in the Chongwe District, Zambia, with a focus on Kampekete and Chilyabale.

Methods: A qualitative exploratory case-study design was used. Data were collected through focus group discussions with schoolgirls and boys, in-depth interviews with school-based stakeholders, key informant interviews, and observation of school facilities. Participants were selected purposively because of their direct experience with school-based menstrual hygiene issues. Data were analyzed thematically by identifying recurrent patterns related to cultural beliefs, school infrastructure, environmental conditions, support systems, and community attitudes.

Results: The study found that girls' menstrual experiences were shaped by four interrelated themes: cultural beliefs and restrictions, inadequate infrastructure, environmental constraints, and mixed community perceptions. Girls reported restrictions related to food preparation, salt, church attendance, contact with others, and interactions with boys. School toilets were commonly described as dirty, insufficiently private, poorly labeled, and lacking reliable water, soap, bathrooms, and disposal systems. An unreliable water supply and the absence of incinerators or safe disposal options forced girls to improvise. Female relatives and female teachers were the main sources of information and support, while male involvement remained limited. Boys' knowledge was variable, and teasing by male students contributed to stigma.

Conclusion: MHM in rural schools of Chongwe District is constrained by the combined effects of cultural taboos, insufficient WASH infrastructure, unreliable water supply, limited menstrual materials, and weak community-level support. Effective interventions should integrate school WASH improvements, sustained supply of menstrual materials, age-appropriate menstrual health education for

girls and boys, teacher mentorship, parental engagement, and community dialogue to reduce stigma and support girls' dignity and participation in education.

Keywords: Menstrual hygiene management; adolescent girls; rural schools; WASH; cultural beliefs; Chongwe District; Zambia

BACKGROUND

Menstruation is a normal biological process and an important marker of reproductive maturation among adolescent girls. However, many girls experience menstruation in settings where privacy, water, soap, appropriate menstrual materials, disposal options, and accurate information are limited (House, Mahon, & Cavill, 2012; UNICEF, 2019). Menstrual hygiene management refers to the ability of women and girls to use clean menstrual materials, change them in privacy as often as necessary, wash their bodies with soap and water, and access safe mechanisms for the disposal of used materials (House, Mahon, & Cavill, 2012; UNICEF, 2019).

Globally, inadequate menstrual hygiene management has been associated with embarrassment, fear of leakage, reduced participation in school activities, absenteeism, and compromised dignity and psychosocial well-being among adolescent girls (Sumpter & Torondel, 2013; Hennegan & Montgomery, 2016; Hennegan et al., 2019). In low-resource settings, these difficulties are intensified by inadequate water, sanitation, and hygiene (WASH) facilities, limited access to menstrual products, poverty, and social norms that encourage secrecy around menstruation (Sommer, Kjellén, & Pensulo, 2013; Sommer et al., 2016; UNICEF, 2019). Schools are particularly important environments for MHM because girls spend a substantial part of the day at school and may experience menarche before receiving sufficient, accurate information or practical support (Sommer et al., 2016; Hennegan et al., 2019).

Evidence from Zambia shows that menstrual hygiene management among schoolgirls is influenced by inadequate WASH facilities, limited privacy, poor access to menstrual materials, insufficient information, and sociocultural beliefs surrounding menstruation (Nanda, Lupele, & Tharaldson, 2016; Mutunda Lahme & Stern, 2017; Chinyama et al., 2019; UNICEF, 2017). Menstruation is often treated as a private matter and may be associated with shame, secrecy, misinformation, and restrictions on girls' everyday activities (Nanda et al., 2016; Mutunda Lahme & Stern, 2017). Studies in Zambian school settings further indicate that inadequate sanitation facilities and menstrual-related challenges can negatively affect girls' comfort, confidence, participation, and school attendance (UNICEF, 2017; Chinyama et al., 2019).

Although WASH and menstrual health initiatives have increased, the literature emphasizes that effective MHM interventions must address more than the provision of sanitary products or toilets alone. Menstrual experiences are shaped by the interaction of material conditions, knowledge, social support, cultural expectations, stigma, and the broader school environment (Hennegan et al., 2019; UNICEF, 2019). A holistic approach is therefore needed to understand how cultural beliefs, infrastructure, and environmental realities interact in rural schools. This study explored cultural and environmental factors influencing menstrual hygiene management practices in rural schools of Chongwe District, focusing on Kampekete and Chilyabale schools.

METHODOLOGY

Study design and setting

A qualitative exploratory case-study design was employed to examine menstrual hygiene management in rural school settings. The study was conducted in Chongwe District, Zambia, at Kampekete and Chilyabale schools. The design was appropriate because the study sought to develop a detailed understanding of lived experiences,

perceptions, cultural practices, facility conditions, and support systems related to menstruation in schools.

Study population and sampling

The study population included schoolgirls who had reached menarche, male pupils, teachers, and school-based stakeholders. Participants were selected purposively because they were directly involved in, affected by, or knowledgeable about menstrual hygiene management within the school environment. The study included focus group discussions, in-depth interviews, and key informant interviews. Stakeholders interviewed included female teachers and a counselor from the study schools.

Data collection

Data were collected using focus group discussion guides, in-depth interview guides, key informant interview guides, and facility observation. The tools explored sources of menstrual knowledge, personal hygiene practices, school toilet conditions, availability of water and disposal facilities, cultural beliefs, stigma, peer interactions, support systems, and suggested improvements. Facility observation was used to assess the practical school environment for MHM, including privacy, water availability, and disposal options.

Data analysis

Data were analyzed thematically. Responses from focus groups and interviews were reviewed repeatedly to identify recurring ideas and patterns. Codes were grouped into themes aligned with the study objectives: cultural beliefs and practices, infrastructure availability, environmental factors, and community perceptions and attitudes. Representative quotations were retained to preserve participants' voices.

Ethical considerations

Permission to conduct the study was obtained from the Ministry of General Education. Participants were informed about the purpose of the study, and voluntary participation was emphasized. Confidentiality and anonymity were maintained, and participants who declined participation were excluded without penalty. The information collected was used for academic and research purposes only.

RESULTS

The findings are presented under four thematic areas: cultural beliefs and practices, infrastructure availability, environmental factors, and community perceptions and attitudes. These themes demonstrate that menstrual hygiene management in the study schools is influenced by both the physical school environment and the social meaning attached to menstruation.

Table 1. Thematic summary of findings on menstrual hygiene management from the study schools.

Theme	Sub-theme	Illustrative codes and observations
Cultural beliefs and practices	Girls face restrictions on food preparation and social interactions.	Avoid touching salt or adding salt to food; avoid bathing in herbs; avoid playing with boys; avoid going to church; avoid sitting near fathers; fear of pregnancy and school dropout.
Infrastructure availability	Toilets lack privacy, water, and appropriate disposal systems.	Dirty toilets; lack of doors or locks; no clear boys/girls labels; no water-borne toilets; no bathrooms or changing rooms.
Environmental factors	Unreliable water supply and poor waste management affect MHM.	Limited access to running water; empty water drums; lack of incinerators; inadequate washing and disposal facilities.
Community perceptions and attitudes	Female family members provide support, but male involvement is limited.	Support mainly comes from mothers, grandmothers, sisters, and female teachers; fathers are less involved; girls may be considered dirty or isolated during menstruation.

Understanding of menstruation

Girls commonly learned about menstruation from female relatives, especially mothers, grandmothers, sisters, and cousins. School guidance teachers also played an important role in providing information and support. However, several girls reported learning about menstruation only after experiencing their first period, suggesting that menstrual education was often reactive rather than proactive.

Some participants described confusion and fear at menarche, with one Grade 8 pupil reporting that she initially thought she had hurt herself when she saw blood. Others understood menstruation as a sign that a girl had reached puberty and maturity. This biological understanding was often mixed with social warnings about avoiding boys and preventing pregnancy, indicating that menstruation was linked not only to health education but also to moral and social control.

Girls' feelings about menstruation varied. Some viewed menstruation positively as a sign of health, while others associated it with dizziness, abdominal pain, backache, shyness, and fear of staining clothes. These mixed experiences point to the need for accurate menstrual health education, psychosocial support, and practical management resources in schools.

Personal menstrual hygiene practices

Participants reported using various menstrual products, including commercial sanitary pads, menstrual cups, and cloth. Where commercial products were unavailable, some girls relied on traditional materials such as chitenge cloth. Guidance teachers were identified as important sources of emergency menstrual supplies, but their availability was inconsistent.

The girls expressed discomfort using school toilets during menstruation. Concerns included poor cleanliness, lack of privacy, lack of doors and locks, inadequate separation between boys' and girls' facilities, and absence of water and soap. These conditions increased the fear of menstrual

accidents and embarrassment, particularly when girls had to change materials during school hours.

Disposal of used menstrual materials was a major challenge. In the absence of proper bins, incinerators, or clear disposal procedures, girls reported burning, burying, throwing materials into toilets, or keeping used materials in bags until they could dispose of them elsewhere. Such practices reflect a gap in school waste management systems and may increase discomfort, environmental contamination, and stigma.

School environment and facilities

The study found that existing toilet facilities were inadequate for dignified MHM. Participants described toilets as dirty, lacking privacy, and lacking basic amenities such as water and soap. There were no designated changing rooms, and some toilets lacked labels distinguishing girls' and boys' facilities. The absence of private, safe, and clean spaces made it difficult for girls to manage menstruation comfortably at school. Water access was repeatedly identified as a critical barrier. Some facilities depended on water drums that were not always filled, and reliable running water was unavailable. Without water, girls could not wash their hands, clean themselves, or adequately manage soiled materials. Teachers and students emphasized that an improved water supply was among the most important changes required.

Students' willingness to seek help from teachers depended on the teacher's gender, attitude, and role. Female teachers and guidance staff were preferred because girls felt they understood menstruation better and were less likely to embarrass them. This finding highlights the importance of strengthening mentorship for female teachers while also sensitizing male teachers to the need to provide supportive, stigma-free environments.

Cultural beliefs and stigma

Cultural restrictions were prominent in both student and stakeholder accounts. Girls

reported being told not to touch salt, not to cook certain foods, not to play with boys, not to attend church, and not to sit near their fathers during menstruation. Some restrictions were justified as ways to prevent pregnancy or preserve family and social expectations, while others reflected beliefs that menstruating girls were unclean or should be separated from others.

Peer stigma also affected girls' experiences. Some participants reported teasing, particularly from male students, when menstrual accidents occurred or when girls were suspected of menstruating. Fear of ridicule discouraged open discussion and increased anxiety. However, some boys demonstrated awareness that menstruation is natural and that girls require support, suggesting that inclusive education can help shift attitudes.

Stakeholders observed that traditional beliefs continue to influence how girls are treated at home and in the community. At the same time, younger teachers and school staff recognized the need to challenge harmful practices through education, counseling, and open dialogue. This generational difference

suggests an opportunity to use schools as platforms for respectful community change.

Support systems and suggested improvements

Existing support was mainly school-based and informal. Guidance departments, student clubs, and female teachers provided education, counseling, and, sometimes, emergency sanitary pads. However, these initiatives were limited by resource availability and lacked consistent external or community-level support. Stakeholders reported that there were few organized community programs specifically dedicated to menstrual hygiene management.

Participants recommended improved toilet infrastructure, a reliable water supply, lockable, clean toilets, private changing rooms, regular provision of sanitary pads, soap, bins, and incinerators, and stronger menstrual health education. They also recommended involving boys, parents, teachers, and community leaders in menstrual hygiene discussions to reduce stigma and normalize menstruation.

Table 2. Stakeholder demographic profile.

Respondent	Age	Gender	Role	Location
1	46	Female	Teacher	Chilyabale
2	38	Female	Counsellor	Kampekete
3	42	Female	Teacher	Chilyabale
4	35	Female	Teacher	Kampekete

DISCUSSION

Cultural beliefs and practices surrounding menstruation

The findings demonstrate that menstruation in the study communities remains deeply shaped by cultural beliefs and social rules. Restrictions related to salt, cooking, church attendance, physical contact, and interactions with boys show that menstruation is treated not only as a biological event but also as a socially regulated experience. Similar patterns have been reported in other low- and middle-income settings where menstruation is associated with impurity, secrecy, restrictions, and shame (Kumar &

Srivastava, 2011; House, 2012; Sommer et al., 2016).

The practice of learning about menstruation mainly from female relatives can be supportive, but it may also perpetuate unchallenged taboos when accurate information is limited. Evidence from Zambia and other low- and middle-income settings shows that girls frequently receive menstrual information from mothers, female relatives, peers, and teachers, yet this information may be incomplete or provided only after menarche (Nanda et al., 2016; Mutunda Lahme & Stern, 2017; Hennegan et al., 2019). The finding that many girls only learned about menstruation after menarche is

therefore concerning because inadequate pre-menarche information can contribute to fear, confusion, and vulnerability to misinformation (Hennegan et al., 2019; UNICEF, 2019). Schools should provide structured menstrual health education before menarche and involve families so that home-based support reinforces accurate, dignity-centered messages.

Infrastructure available for menstrual hygiene management

The study identified major gaps in school infrastructure, including inadequate toilets, lack of privacy, unreliable water supply, absence of changing rooms, and poor disposal systems. These gaps directly undermine girls' ability to change, wash, and dispose of menstrual materials safely and privately. The findings are consistent with literature showing that inadequate school WASH facilities are a key barrier to effective MHM and can contribute to absenteeism, reduced participation, and psychosocial distress (UNICEF, 2017; Sommer et al., 2013; Chinyama et al., 2019).

The absence of designated changing spaces is particularly important. Even where toilets exist, they may not be MHM-friendly if they are dirty, lack locks or privacy, are poorly separated by sex, or lack water, soap, and safe disposal facilities (Sommer, Kjellén, & Pensulo, 2013; UNICEF, 2019). Research in Zambian rural schools has documented inadequate privacy, water, disposal mechanisms, and supportive sanitation infrastructure for menstruating girls (UNICEF, 2017; Chinyama et al., 2019). Dignified MHM therefore requires more than toilet construction; it requires privacy, safety, cleanliness, reliable water, disposal systems, menstrual materials, and supportive school systems.

Environmental factors influencing menstrual hygiene practices

Environmental conditions, especially unreliable water supply and inadequate waste management, strongly affected girls' menstrual practices. Reliable water, soap,

privacy, and safe disposal systems are central to meeting menstrual hygiene needs (House, Mahon, & Cavill, 2012; UNICEF, 2019). In the absence of appropriate disposal facilities, girls and women in low-resource settings may resort to burning, burying, flushing, or carrying used menstrual materials, practices that reflect wider waste-management and sanitation constraints (Kaur, Kaur, & Kaur, 2018). The practices reported in the present study are therefore consistent with broader evidence that menstrual material management is closely linked to the quality of WASH and waste-disposal systems.

These findings support the view that MHM should be integrated into school WASH planning rather than treated as a separate hygiene issue (Sommer, Kjellén, & Pensulo, 2013; UNICEF, 2019). Facilities should be designed with girls' needs in mind, including consistent water supply, handwashing stations, soap, covered bins, private changing spaces, and appropriate disposal mechanisms (House, Mahon, & Cavill, 2012; UNICEF, 2019). Environmental improvements should also be accompanied by practical hygiene education and facility-maintenance systems.

Community perceptions and attitudes toward menstrual hygiene

Community perceptions were mixed. Female family members and female teachers provided essential guidance and practical support, but male family members and boys were less involved. Similar gendered patterns of menstrual communication and support have been reported in Zambia, where menstruation is commonly treated as a female and private matter (Nanda et al., 2016; Mutunda Lahme & Stern, 2017). However, the wider menstrual health literature indicates that stigma and restrictive social norms are reinforced when menstruation remains hidden and inadequately discussed (Hennegan et al., 2019). Greater male engagement, when age-appropriate and respectful, may therefore help create more supportive school and household environments.

The study also found that boys' teasing contributed to embarrassment and fear. Stigma, shame, and fear of menstrual leakage or exposure are recurrent themes in research on girls' menstrual experiences in low- and middle-income countries (Hennegan et al., 2019). This points to the need for menstrual education that includes boys and frames menstruation as a normal biological process rather than a source of ridicule (Sommer et al., 2016; UNICEF, 2019). Community leaders, parents, teachers, and health workers should likewise be engaged to challenge harmful taboos, promote supportive attitudes, and mobilize resources for school facilities and menstrual supplies.

CONCLUSION

This study found that the interplay of cultural beliefs, inadequate infrastructure, environmental barriers, and community attitudes influences menstrual hygiene management in rural schools in the Chongwe District. Girls face restrictions that limit their social participation and reinforce stigma. They also manage menstruation in school environments where toilets often lack privacy, cleanliness, water, soap, changing spaces, and safe disposal systems. Although female relatives and teachers provide important support, the absence of structured community programs and limited male involvement weaken the overall support system.

Improving MHM in rural schools requires a holistic approach that addresses both the social and physical environment. Interventions should combine WASH infrastructure improvements with menstrual health education, regular supply of menstrual products, teacher mentorship, parent engagement, male involvement, and community dialogue. Such integrated action can improve girls' dignity, confidence, school participation, and well-being.

Recommendations

1. Schools should provide clean, lockable, sex-separated toilets with reliable water, soap, private changing spaces, covered

bins, and safe disposal systems such as incinerators.

2. The Ministry of Education, school management, and partners should support the consistent provision of emergency sanitary pads and basic hygiene supplies for girls in need.
3. Menstrual health education should begin before menarche and should be integrated into school health, guidance, and life-skills programs.
4. Boys should be included in age-appropriate menstrual health education to reduce teasing, stigma, and misinformation.
5. Parents, guardians, traditional leaders, religious leaders, and community health workers should be engaged in dialogue to address harmful cultural restrictions while respecting positive support systems.
6. Schools should strengthen guidance and counseling systems, including mentorship by trained female teachers and sensitization of male teachers to create supportive environments.
7. Future research should include broader community perspectives, especially fathers, male guardians, community leaders, and health workers, and should assess the effect of MHM interventions on attendance, confidence, and academic participation.

Limitations

The study was limited to selected schools in Chongwe District and employed a qualitative design that prioritizes in-depth of understanding over statistical generalization. Cultural sensitivities limited access to some male community perspectives, and time constraints reduced the depth of engagement with some stakeholders. Despite these limitations, the study provides important contextual evidence on barriers to and opportunities for intervention in school-based MHM in rural settings.

Declaration by Authors

Ethics approval and consent to participate: Permission was obtained from the Ministry of General Education. Participants were informed about the study, participation was voluntary, and confidentiality and anonymity were maintained.

Consent for publication: Not applicable; no personally identifying participant information is included in this manuscript.

Availability of data and materials: Data supporting the findings are contained in the dissertation records and may be made available by the corresponding author upon reasonable request, subject to ethical and confidentiality considerations.

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Authors' contributions: RM conceptualized the study, collected and analyzed the data, and prepared the dissertation. MM supervised the academic work and reviewed the study process. Both authors approved the manuscript for submission.

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