学 位 論 文

Exploring Challenges of Policy Implementation and Menstrual Health and Hygiene Among Adolescent Schoolgirls in Peri-Urban Lusaka, Zambia
（ザンビア・ルサカの都市周縁部に住む思春期女子学生における月経保健衛生と政策上の課題）

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Abstract

Proper Menstrual Health and Hygiene (MHH) is a global public health priority that directly affects schoolgirls' health, dignity, and educational progress. Access to safe menstrual products, clean water, private sanitation facilities, and proper disposal options is crucial for managing menstruation comfortably and privately. However, product affordability, infrastructure, and education continue to disadvantage girls, especially in low-resource settings like Sub-Saharan Africa. In Zambia, despite ongoing national efforts to improve menstrual health, significant challenges remain in policy implementation, school-level infrastructure and personal menstrual practices. Government schools in peri-urban areas often lack adequate Water, Sanitation, and Hygiene (WASH) facilities to support healthy menstrual hygiene. Many schoolgirls face limited product options, inadequate water access, poor disposal systems, overcrowded or unsafe toilets, and cultural taboos. These challenges, exacerbated by economic hardship and entrenched cultural stigma, restrict girls' full participation in school and daily life, impacting their well-being.

Therefore, the studies aimed to: (i) explore barriers to the implementation of effective menstrual health policies by analyzing policymakers' role and the effectiveness of existing policies in addressing systemic challenges in Zambia; (ii) investigate MHH among adolescent schoolgirls in peri-urban Lusaka by assessing school WASH facilities and the sociocultural context; (iii) assess participants' educational and economic characteristics, sociocultural factors influencing product preference and accessibility, hygiene practices, waste disposal methods used at school and at home.

We explored stakeholders' and policymakers' roles in promoting MHH among schoolgirls in Kafue District, Lusaka Province. In-Depth Interviews (IDIs) were conducted with 40 participants, including seven teachers, three health workers, 11 Government ministry representatives, three social entrepreneurs and MHH advocates, eight community members, four Non-Governmental Organisation (NGO) representatives, two journalists, one traditional chief, and the district women's group chairperson. These interviews explored MHH policy priorities, implementation challenges, and stakeholder perspectives (chapter 2). School-based observations and Five Focus Group Discussions (FGDs) assessed WASH infrastructure supporting MHH, sociocultural influences on menstrual behaviours, and girls' coping mechanisms. Five Focus Groups were held with 30 adolescent schoolgirls aged 14–19, purposively sampled from the same sample, from peri-urban Lusaka communities attending the same school. Field observations

documented the conditions, water availability, accessibility, cleanliness, privacy, and sanitary facility disposal (chapter 3). A mixed-methods cross-sectional design, using a structured survey, among 266 menstruators aged 12–19 at the same peri-urban government school, examined menstrual product access, usage patterns, and disposal practices. Five FGDs with 30 girls were conducted to gain deeper insights into factors affecting menstrual product access and disposal challenges (chapter 4). Qualitative data were analysed using MAXQDA software version 10. Quantitative data were analysed using JMP Pro software.

The study identified significant gaps in stakeholder knowledge and engagement with existing MHH policies. Many policymakers, ministry representatives, and community actors were unaware of national MHH guidelines or had limited involvement in initiatives. Although the government provided sanitary materials to schoolgirls once at the time of data collection, concerns about sustainability, economic constraints, and political continuity hinder effective implementation (chapter 2). Insufficient school WASH infrastructure created a substantial barrier to healthy menstrual management. Girls reported poor access to menstrual materials, unsafe toilets, limited privacy, inadequate water supply, and cultural taboos, which further complicated their experiences. Girls were expected to transition almost immediately into womanhood without adequate preparation and support at menarche. Nonetheless, girls adopted personal coping strategies to maintain dignity and participation in school. However, some practices were suboptimal and potentially harmful (chapter 3). Findings revealed that about 85% of participants preferred disposable menstrual products for comfort and convenience, with 94% sourcing products from supermarkets and retail shops. Reusable options were more commonly used among girls from lower-income households, indicating cost-driven disparities. Statistical analysis showed a strong association between educational level and product preference. Qualitative results also highlighted deep-rooted cultural beliefs shaping disposal behaviour. Due to limited school disposal facilities and discretion, many girls transported menstrual waste home for private disposal (chapter 4).

Policy between the national MHH guidelines and their implementation at the school level. While frameworks exist to support MHH, inconsistent application and lack of resources hinder their effectiveness. The findings also underscore the complex interplay of factors influencing MHH among schoolgirls regarding political interventions and resource availability (chapter 2). The findings also highlight essential needs, including reliable access to affordable menstrual products, safe and private WASH facilities, and supportive learning environments free from stigma.

Culturally embedded norms surrounding discretion and secrecy often drive practices that compromise both dignity and environmental health. These cultural narratives prioritised secrecy and fear of stigma, ignoring environmental sustainability and menstrual health (chapter 3). Persistent disparities in product access and disposal reveal the intersecting influences of cost, knowledge, and cultural expectations. Most girls highlighted the financial burden imposed on accessing good-quality materials. However, limited knowledge and cultural restrictions influence their hygiene practices and disposal behaviours (chapter 4). Improving MHH in Zambia requires coordinated action across policy, school infrastructure, and community cultural contexts.

Abbreviations and Acronyms

IDI	In-Depth Interviews
JMP	Joint Monitoring Programme
KAP	Knowledge, Attitudes and Practices
LMIC	Low- Middle-Income Countries
MHH	Menstrual Health and Hygiene
MOE	Ministry of Education
MOH	Ministry of Health
NUSS	National Urban Sanitation Strategy
SDG	Sustainable Development Goals
SSA	Sub-Saharan Africa
NGO	Non-Governmental Organisation
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WHO	World Health Organisation

Table of Contents

CHAPTER ONE

1.1 General Introduction

Background of Menstrual Health and Hygiene

Menstrual Health and Hygiene (MHH) is a critical aspect of adolescent well-being, significantly influencing educational outcomes and psychosocial development. Different approaches to MHH have been associated with a wide range of health and psycho-social outcomes in lower-income settings. The management of menstruation presents significant challenges for women, especially in lower-income settings (Lahme, 2016). Zambia is a country in Sub-Saharan Africa (SSA) that struggles with Water, Sanitation, and Hygiene (WASH) and a growing urban population, especially in peri-urban areas. Our research was conducted in the most populous urban city in Lusaka, the capital city of Zambia. Zambia's National Urban Sanitation Strategy (NUSS) defines Peri-Urban areas as informal or formal settlements within the area of jurisdiction of a local authority with high population density and high-density low-cost housing with inadequate or a lack of basic services, such as water supply, sewerage, roads, storm water drainage and solid waste disposal.

In Zambia, particularly within Lusaka Province, challenges such as inadequate WASH facilities, limited access to affordable menstrual products, and prevailing cultural stigmas impede effective MHH management, especially among schoolgirls. These challenges can become barriers and often lead to increased absenteeism, diminished academic performance, and adverse health outcomes. Thus, this background section introduces menstrual health and adolescent wellbeing, te peri-urban Lusaka context, policy implementation challenges and the link between WASH, policy, and schoolgirls' lived realities.

Conceptualising Menstrual Health and Hygiene (MHH)

Menstrual Health and Hygiene (MHH) is increasingly recognised as a critical component of adolescent health, gender equity, and educational participation. MHH extends beyond the management of menstrual bleeding to encompass access to accurate information, appropriate

menstrual materials, safe and private sanitation facilities, and a supportive socio-cultural environment that enables girls to manage menstruation with dignity and confidence. Effective menstrual health management is closely linked to broader determinants of health, including water, sanitation and hygiene (WASH), education systems, and social norms.

In lower-income settings, inadequate menstrual management has been associated with a range of adverse health and psychosocial outcomes, including reproductive tract infections, anxiety, reduced mobility, and school absenteeism (Lahme, 2016). For adolescent girls, menarche often marks a critical developmental transition. Without adequate preparation, information, and supportive environments, menstruation can become a source of distress, stigma, and educational disruption. Thus, MHH is not solely a hygiene issue; it is a multidimensional public health concern shaped by structural, social, economic, and policy environments.

Menstrual Health in Low- and Middle-Income Settings

Across Sub-Saharan Africa (SSA), menstrual health remains constrained by systemic inequalities in WASH infrastructure, limited access to affordable menstrual products, and entrenched cultural taboos. In many communities, menstruation is surrounded by silence, secrecy, and misconceptions, which influence how girls experience and manage their periods.

Studies in low-income contexts consistently demonstrate that inadequate WASH facilities in schools, including lack of privacy, absence of water and soap, poor disposal systems, and unsafe toilets, undermine girls' ability to manage menstruation effectively. These environmental constraints often intersect with socio-cultural norms that discourage open discussion of menstruation, further limiting girls' access to accurate information and support. As a result, menstrual health challenges frequently manifest in reduced school attendance, diminished academic performance, psychological stress, and long-term educational disadvantage.

The Zambian and Peri-urban Lusaka Context

Zambia, a lower-middle-income country in Sub-Saharan Africa, continues to face significant challenges in Water, Sanitation and Hygiene (WASH) service provision, particularly in rapidly urbanising areas. Lusaka Province, which includes the capital city of Lusaka, has experienced rapid population growth, leading to the expansion of peri-urban settlements.

According to Zambia's National Urban Sanitation Strategy (NUSS), peri-urban areas are defined as informal or formal settlements within the jurisdiction of local authorities, characterised by high population density, low-cost housing, and limited access to essential services, including safe water supply, sewerage systems, storm water drainage, roads, and solid waste management. These infrastructure deficits create complex environmental health risks and disproportionately affect vulnerable populations, including adolescent girls. In peri-urban Lusaka, inadequate sanitation infrastructure, limited access to safe and private school toilets, and inconsistent water supply pose significant barriers to effective menstrual management. These structural deficiencies are compounded by economic constraints that limit access to affordable menstrual products and by socio-cultural norms that stigmatise menstruation.

Policy Frameworks and Implementation Gaps exist. Zambia has developed national policies and strategies aimed at improving WASH service delivery and promoting menstrual health within schools. However, the existence of policy frameworks does not automatically translate into effective implementation at the community or school level. Policy implementation challenges often include: Inadequate resource allocation, limited monitoring and enforcement mechanisms, weak coordination between ministries and stakeholders, insufficient training of educators and school administrators, and limited engagement with community actors and adolescent girls themselves. These gaps create a disconnect between policy intent and lived reality. In peri-urban schools, girls may attend institutions where national guidelines exist on paper, yet sanitation facilities remain inadequate and menstrual health needs remain unmet. Understanding how policies are interpreted, operationalised, and experienced at the school level is therefore central to assessing their effectiveness.

Linking Policy, Infrastructure, and Lived Experience

The challenges of menstrual health among schoolgirls in peri-urban cannot be attributed to a single factor. Rather, they reflect the intersection of: Structural WASH limitations, economic constraints, gendered cultural norms, weak policy implementation and limited stakeholders.

Inadequate WASH facilities not only affect hygiene practices but also influence psychosocial wellbeing, school attendance, and academic performance. Where toilets lack privacy, water, or disposal systems, girls may avoid using them, leave school early, or miss school entirely during menstruation. These disruptions contribute to cumulative educational disadvantage. Therefore, menstrual health must be understood as both a public health and a policy implementation issue. Addressing MHH requires not only improving infrastructure and access to products but also strengthening governance mechanisms, stakeholder engagement, and culturally responsive interventions.

1.2 Purpose Statement and Rationale

Given the growing urban population in Lusaka's peri-urban areas and persistent WASH challenges, there is a critical need to explore how policy implementation processes shape menstrual health outcomes among adolescent schoolgirls. While existing studies have examined menstrual practices or infrastructural deficits, fewer have systematically analysed the interplay between policy frameworks, school-level implementation, and girls' lived experiences.

This research explores MHH in Zambia through a multi-level lens, linking the perspectives of policymakers shaping national responses with the lived experiences of schoolgirls. To advance menstrual equity and guide improved menstrual experiences, it is necessary to understand challenges across the policy system, school environments, communal and individual menstrual practices. A comprehensive understanding of MHH requires a multifaceted approach that examines the interplay among policy frameworks, environmental infrastructure, and individual practices.

1.3 Overall Aim

This thesis therefore explores the challenges of policy implementation and MHH among adolescent schoolgirls in peri-urban Lusaka, Zambia. By integrating policy analysis,

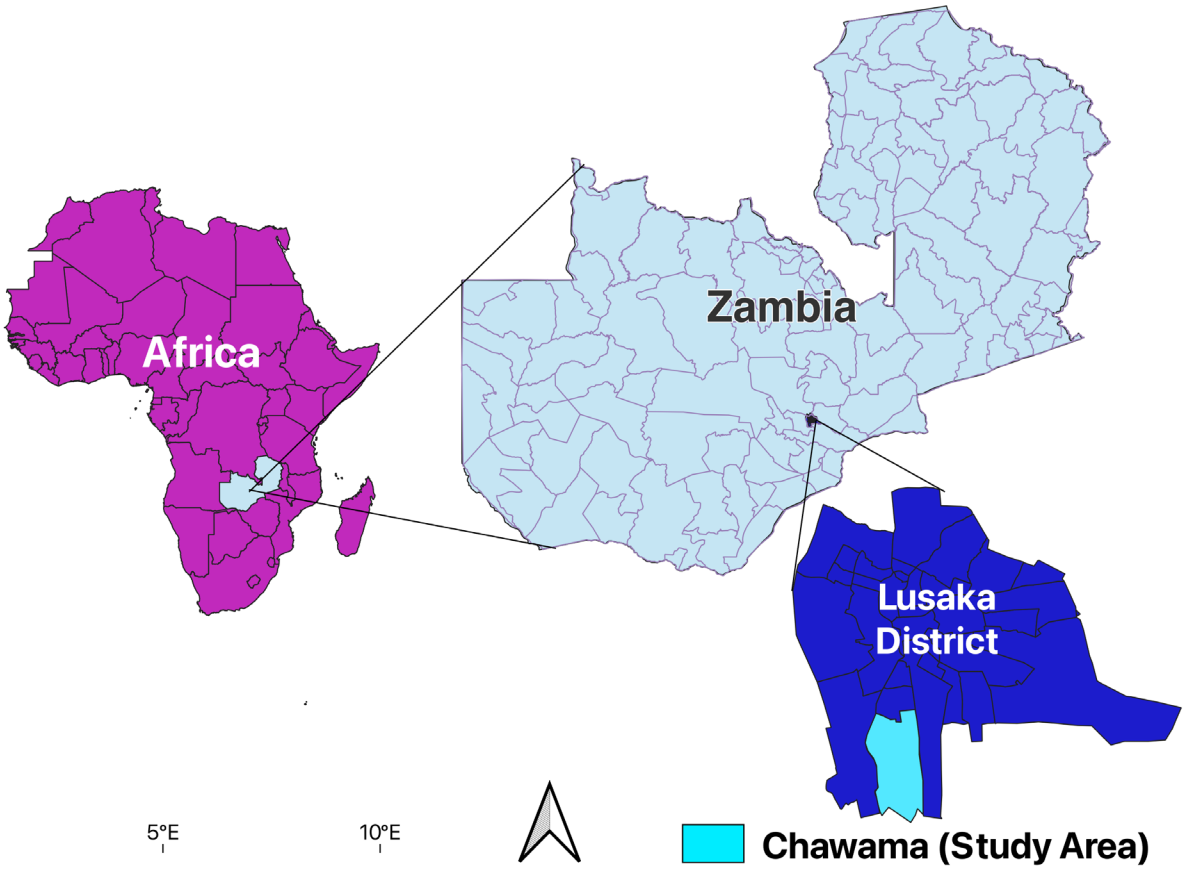
infrastructural assessment, and lived experience, the study seeks to contribute to evidence that informs more effective, equitable, and context-sensitive menstrual health interventions.

1.4 Specific Objectives

This dissertation explores the current situation around MHH in Lusaka Province through three interconnected studies: (i) analysis of challenges in policy implementation: examining the role of policymakers and the effectiveness of existing MHH policies to address systemic challenges, (ii) qualitative study on menstrual health and hygiene management among adolescent schoolgirls in peri-urban Lusaka, Zambia to assess school WASH facilities and the sociocultural context, and (iii) gender equity in menstrual health: challenges in product access and disposal among adolescent girls in Lusaka, Zambia. By integrating findings from these studies, this research aims to identify needs, opportunities, and interventions to enhance MHH for adolescent girls in Lusaka Province.

1.5 Research Settings

Using mixed-methods research, it analyses policymakers' perspectives on menstrual health policies and program implementation, revealing how national priorities and institutional challenges align, or diverge, from the needs of girls. It also examines the realities of menstrual product access, use, and disposal among adolescent girls, and investigates the influence of socio-cultural beliefs and coping mechanisms that shape their menstrual practices. Collectively, the findings provide a holistic understanding of the MHH landscape in Lusaka, Zambia and offer evidence-based recommendations for strengthening policy, education, and infrastructure to advance menstrual equity and girls' empowerment in the school environment. Overall, the results demonstrate that policy implementation barriers, inadequate infrastructure, and sociocultural pressures simultaneously shape girls' menstrual health, emphasising the need for coordinated responses at policy, school, community and personal levels



Research site in a peri-urban setting; Lusaka District, Zambia

CHAPTER TWO

Obstacles and challenges of policy implementation on menstrual health and hygiene for schoolgirls: Insights from stakeholders in Kafue District of Lusaka, Zambia.

*(**Sambo, J.,** Nyambe, S. and Yamauchi, T. (2025). Obstacles and challenges of policy implementation on menstrual health and hygiene for schoolgirls: Insights from stakeholders in Kafue District of Lusaka, Zambia, Education and Conflict Review, 6, 89–96. DOI 10.14324/000.ch.10216111).*

2.1 Abstract

Proper Menstrual Health and Hygiene (MHH) is an international health priority that impacts schoolgirls' educational attainment. Girls' educational access remains challenging due to political limitations, economic hardships, and cultural stigmatisation surrounding menstruation. This further hinders girls from fully realising their potential. This research investigates the role of policymakers in the Kafue District of Lusaka Province, Zambia, in promoting Menstrual Hygiene Management (MHM) among schoolgirls. The study found a knowledge gap among key policymakers, stakeholders, community members, private institutions, and ministry representatives regarding existing MHH policies in Kafue. The results revealed that few participants understood and contributed to the District's MHH initiatives, policies, and projects. Despite the Zambian government distributing sanitary materials to schoolgirls, lack of sustainable resource allocation, economic hardships, and political continuity remain critical MHH concerns. The study highlights the need for a better understanding and support of MHH policies to help girls realise their potential fully.

2.2 Introduction

Zambia has a population of 21 million, with children (aged 0-14) 42% of the total population and adolescents (aged 14-19) 24% (UNFPA 2024). The country's young population

has resulted in political endeavours to enhance educational opportunities nationwide. In 2022, Zambia extended a free education policy from primary to secondary schools to ensure that all children have access to sound education, irrespective of their financial background (Odesomi, 2023).

Currently, Zambia boasts near universal primary school completion levels, with national statistics suggesting a completion rate of 91.8 per cent in Grade 7 alone (UNESCO, 2020). Yet this figure conceals significant geographical and demographic disparities, and transition rates from primary to secondary school remain low. Financial barriers to secondary education include school costs and loss of potential family income. The dispersed nature of secondary schools means children must travel long distances, often incurring transport costs. Education quality remains challenging, with only 55.3 percent of children passing Grade 9. Gender disparities in education also continue to be highlighted, especially among adolescents (UNESCO, 2020).

Girls in rural and urban communities continue to face barriers that hinder their full participation in the education system (UNICEF, 2019). Traditional gender roles and expectations can lead to early marriages and limited support for girls' education. Cultural perceptions around menstruation, inadequate menstrual materials and inadequate sanitary facilities can discourage girls from attending schools regularly. Political and economic factors, such as poverty and the associated costs of education, can disproportionately affect girls. Families facing financial challenges may prioritise boys' education, perpetuating gender disparities in school attendance (World Bank, 2020).

Educating girls enhances their well-being and contributes to broader social and economic development (Calder and Huda, 2013). While challenges persist, various initiatives are underway to address the barriers to girls' education in Zambia (Sommer and Sahin, 2013). Governmental policies, Non-Governmental Organisations (NGOs), and international collaborations with various organisations with a focus on MHH can create an inclusive and supportive academic environment for girls.

In the policy landscape, Zambia has made strides in recognising MHH as a factor in girls' education. Zambia has integrated MHH into its broader national health and education policies, with dedicated national policies and guidelines to support menstruating girls (Menstrual Hygiene

Matters, 2016). Such policy guidelines can influence allocating resources and prioritising MHH within the political agenda. The policies include provisions for access to menstrual hygiene products, and training special teachers in all schools to provide MHH education in national curricula for both girls and boys.

Zambia's effective policy implementation faces various challenges, including resource constraints, cultural restrictions, politics, and varying levels of awareness. To overcome such challenges, the government, in partnership with private institutions, individuals, international partners, and NGOs such as UNICEF, Plan International, World Vision, and Save the Children, has initiated projects to improve MHH in schools. These programmes often include menstrual hygiene kit provision, educational sessions, and infrastructure improvements (UNICEF, 2019; World Bank, 2020). However, the projects' sustainability and widespread impact is halted once the project funding has ended.

Menstrual hygiene and educational access

MHH is recognised as an urgent international issue. Millions of girls are denied the right to manage their menstruation in a dignified and healthy way (UNICEF, 2019). MHH involves Menstrual Hygiene Management (MHM): (a) using a clean menstrual management material that can (i) absorb or collect menstrual blood and (ii) can be changed in privacy as often as necessary, using soap and water for washing the body as required; and (b) having access to safe and convenient facilities to dispose of used menstrual management materials (WHO/UNICEF Joint Monitoring Program, 2012). Schoolgirls need adequate MHM materials, sanitary facilities, menstrual health and sex education to manage menstruation well.

MHH is a multisectoral issue encompassing schools' Water, Sanitation and Hygiene (WASH) services. Interestingly, MHH encompasses the broader systematic factors that link menstruation with health, well-being, gender equality, education, equity, empowerment, and rights (WHO/UNICEF Joint Monitoring Program 2012; Sommer et al., 2021). This shows the significance of our study among vulnerable age groups. Several studies have revealed the impact of menstruation on schoolgirls' attendance in Zambia. Sommer and Ackatia-Armah (2012) highlight the pervasive stigma surrounding menstruation in many societies, including Zambia. Cultural norms and taboos lead to shame and embarrassment among girls, resulting in absenteeism

or reduced attention during menstruation, hindering girls' successful participation (Hennegan et al., 2021; Sommer et al., 2017).

Menstrual myths and traditional practices are still common in many societies globally. The lack of adequate MHH education, sociocultural misconceptions, and superstitions are particularly acute in many Low to Middle-Income Countries (LMICs) like Zambia. Socio-cultural attitudes towards girls' place in society and period poverty often stand in the way of girls being able to manage menstruation safely. The menstrual narrative and inadequate WASH infrastructure obstruct girls' educational access. MHH is highly prioritised for girls' educational access opportunities (Sommer et al., 2016; Sommer et al., 2015). While there is much literature on the impact of MHH on girls' schooling (Sommer et al., 2013; Boosey et al., 2014; PhillipsHoward et al., 2016), fewer studies have looked at the factors that obstruct change and interventions in school policy.

Research objectives

The research question explored the obstacles and challenges to policy implementation: What factors impact policy implementation on girls' menstrual health in schools in Zambia? Therefore, the study aims to identify and understand the factors that hinder or influence the effective implementation of policies related to menstrual health for girls in Zambian schools.

Conceptual framework: Fraser's social justice theory

The social justice theory explores justice and injustice across cultural, economic, and political dimensions (Fraser, 2000). It provides a framework to analyse girls' inequities in accessing education, particularly during menstruation, by examining sociocultural factors, financial positions and policy landscapes. The theory helps identify girls' interconnected challenges and suggests strategies for creating a more equitable educational environment. Fraser's social justice theory revolves around three key dimensions of justice: recognition (cultural or symbolic justice), redistribution (economic justice), and representation (political justice). Each dimension addresses a specific type of injustice. Fraser argues that these three dimensions of justice are interconnected and must be addressed together (Fraser, 1995). The absence of these three dimensions in MHH efforts perpetuates period poverty and denies girls equitable access to

education. Therefore, in the case of MHH, her framework emphasises the need for policies that prioritise menstrual health to reduce educational inequalities for girls.

2.3 Methodology

Study design

The study employed a qualitative approach, utilising In-Depth Interviews (IDIs) with 40 key policymakers and stakeholders. Participants included seven teachers, three health workers, 11 ministry representatives, three social entrepreneurs and advocates, eight community members, four NGO representatives, two journalists, one traditional chief, and the district women's chairperson. The interviews focused on barriers to implementing effective school policies, girls' education, and the influence of culture and the political economy on menstrual practices. We explored the policy impacts on girls and the cultural perceptions of menstruation, aiming to identify obstacles to creating more inclusive policies that ensure girls do not miss school due to menstruation.

Sampling design

Purposive sampling was employed to recruit participants, targeting key stakeholders involved in policy formation on menstruation and education in Kafue district. Kafue was selected due to its central location within Lusaka Province, ensuring accessibility to diverse stakeholders and providing a broad representation of perspectives on menstrual health practices and challenges. This allowed for close collaboration with local stakeholders, enriching the insights gathered. The inclusion criteria focused on participants' influence, decision-making, authority, expertise, and relevance to the research topic. Data collection occurred over six weeks, with 30-60 minutes interviews conducted in person or on Zoom. Informed consent was obtained from all participants. Data were managed using computer storage devices and mobile recorders, all secured with a password only known by the Principal Investigator (PI). The PI conducted and coordinated interviews, assisted by three enumerators. The study adhered to strict ethical guidelines, ensuring confidentiality, anonymity, and neutrality throughout. Enumerators received training to address the sensitivity of menstruation and gender-related matters, and they strictly followed research

ethics standards. With their understanding of Zambian languages and cultural contexts, they ensured gender sensitivity was maintained during the entire process.

Data analysis

We adopted an inductive approach for thematic analysis, allowing themes to emerge, which were then mapped to the social justice framework. Emerging themes focused on the role of policymakers and the obstacles faced in policy implementation. The analysis centred around Fraser's three dimensions: cultural recognition, distributive justice, and political representation. Cultural recognition explored the barriers to changing school policies regarding menstrual health. Distributive justice examined the inadequate resources and irregular investment in menstrual health-sensitive facilities, as well as the limited dissemination and awareness of existing policies. Political representation focused on political will, the influence of policymakers, and the economic realities faced by families. The framework provided valuable insights into understanding and addressing societal inequalities surrounding menstruation in the educational sector.

2.4 Results and Discussion

The findings of this study focused specifically on the pathway to policy change by investigating the obstacles and challenges of policy implementation on MHH for adolescent schoolgirls and its impact on their educational access.

Theme 1: Cultural recognition

Zambian cultural beliefs, norms and menstrual practices, in which menstruation is seen as being unclean and girls may be isolated and restricted from engaging in certain activities like meal preparation, can contribute to a negative perception of menstruation (Chinyama, 2019; Sambo et al., 2024). Zambia has pushed the MHH agenda by introducing MHH policies on education and product provision. When the participants were asked about how culture impacts policy implementation, a health officer commented, *'in our African culture, as you know, we are not allowed to talk about certain things as they are taboo, and that affects girls. Our culture has impacted menstrual hygiene issues negatively. However, the coming of NGOs and forming school WASH and health nutrition clubs that address menstrual hygiene and WASH-related issues is a recommendable school policy' (District Health Officer, Female).*

A nurse who was interviewed mentioned that: *'... There are many Dos and Don'ts during menstruation: women are isolated, labelled unclean, and restricted from normal activities, like cooking. Some are told they can cook but not add salt' (Nurse, female).* One teacher explained: *'When we were growing up, we are told not to add salt to the food during our periods because it would make others unclean. Everyone would know we were on our period' (Headteacher, female).*

These cultural beliefs strongly influence girls' menstrual practices, gender roles and societal expectations. Culture is essential to uphold traditional values and identity. However, some ceremonial rituals associated with menarche (first period), myths and misconceptions, and traditions passed down through generations as cultural norms, can have a negative impact. Cultural barriers that hinder girls' access to WASH facilities at schools are prevalent. For example, a district officer explained that: *'Menstruation has been treated as such a taboo that it is not mentioned publicly, causing girls to be alienated compared to boys.' Another male we interviewed said that 'certain cultures have demonised menstruation instead of embracing it as a natural occurrence. Our culture has good and bad aspects' (District WASH Coordinator, male).*

Some cultures or beliefs encourage girls to rest and refrain from hard chores or active roles. Socioeconomic factors like poverty and cultural beliefs can limit girls' participation who must stay home or keep their materials on longer until they return home to change them in safety and privacy. Cultural beliefs can impede MHH interventions in schools. Zambia has a diverse cultural background, with over 73 tribal groups. Interventions must be culturally sensitive and appropriate to suit the specific beliefs of the group or community.

Overall, cultural recognition influenced the implementation of policy on girls' menstrual health by examining how cultures can impede the implementation of MHH-related school policies.

Theme 2: Distributive justice

Economic disparities play a crucial role in limiting girls' access to menstrual hygiene products. The inability to afford these essential items contributes to absenteeism, perpetuating a cycle of economic injustice. Fraser's framework scrutinises economic structures and advocates for

policies that address financial barriers. The participants mentioned that several key factors obstruct school policy changes, primarily centred around the lack of funds for MHH improvements and school investments. This includes insufficient funds for the provision of menstrual products, inadequate sanitary facilities, lack of sex education. The resources and power lie with Government ministries, donor-recipient relationships and school management. Peri-urban schools face challenges in accessing materials and in providing female-friendly environments to manage menstruation. The power dynamics and the priorities can contribute to the access or lack thereof. An education advocate said that *'The biggest challenge is the lack of funds. Most sanitary pads are provided by NGOs or donors, so schools cannot rely on a steady supply. If policymakers believe pads are essential, they will prioritise them in the national budget' (Quality Education Advocate, male).*

A nurse commented that *'The obstacle is the lack of resources and funding from the government and partners, like Plan International, which trains people to make pads. It's a good programme and should be sustained' (Nurse, female).*

In addition, community engagement to challenge barriers and promote sustainable funding mechanisms must be implemented. Donor promoted campaigns on period poverty exist in some schools. However, local initiatives using local materials and knowledge are needed to encourage sustainability and continuity.

A teacher explained that *'the government provided pads to every schoolgirl. I am unsure whether it will continue beyond this school term, but it is a good and positive policy. It is a very welcome move. We know it will help girls attend school during their periods, as many miss school for days because they lack proper sanitary products' (Headteacher, female).*

Another teacher trained to work with menstruating schoolgirls mentioned that *'Policies are working. Clubs have been created through the career counselling and guidance office where girls are involved in making pads. Materials are provided, and skills are imparted. The pads are kept at school and given to girls in need' (Career Counselling and Guidance Teacher, female).*

Overall, distributive justice served to impact the implementation of policy on girls' menstrual health by highlighting how the lack of resources and inconsistent investments in MHH-sensitive and appropriate sanitary facilities can obstruct justice.

Theme 3: Political representation

Political injustice highlights the intersection of political dimensions with girls' education, emphasising how unequal resource distribution and lack of political will may hinder effective MHM initiatives. The policymakers in Kafue were often unaware of specific MHH policy programmes or existing guidelines, leading to gaps in implementation and good MHM. There is a massive obstruction in the policy-to-practice pathway if the key players do not comprehend what 'must' be in place. When asked about how effective government policies were, one noted that *'the government implemented a policy for menstrual product provision to girls to access pads. However, it has not been sustained. Government and other policy makers must sustain policies as this is key' (Nurse, female).*

An NGO representative also explained *'the government is not doing enough, as compared to NGOs and individuals. Government must influence companies that make sanitary materials to reduce the prices, or subsidise and remove the taxes' (NGO Researcher and Implementation Officer, female).*

In addition, *'most policies are not given the attention they deserve because they lack sensitisation, orientation and funding. Some policies are excellent and can have a positive impact, but due to lack of funds, they are not well implemented' (Quality Education Advocate, male).*

The disconnect between the assumptions of central government and the district's policymakers, and the actual needs of menstruating schoolgirls, is exacerbated by insufficient consultation with girls and considering their varied experiences (age, cultural background), leading to inadequate policy solutions. Despite national guidelines, teacher training and the establishment of school clubs, unequal participation in decisions affects the success of policies. The participants emphasised the need for more policy prioritising MHH needs as a pathway to policy change. Political advocacy efforts are essential within the political agenda.

As a WASH coordinator said; *'Political will is needed to distribute free menstrual products. Selling pads makes it hard to afford them, especially in families with limited budgets where pads are not a priority' (District WASH Coordinator, male).*

As one nurse explained during the interviews, *'The policy will improve girls' education by ensuring they are in school consistently. It helps build a better, life as attending school means they can graduate and avoid other activities to raise money for pads. Having pads will allow them concentrate and become better individuals' (Nurse, female).*

In June 2023, the Zambian government's decision to provide free sanitary pads to school-going menstruators was a step in the right direction aimed at improving girls' educational access and well-being. However, issues of sustainability, policy clarity, continuity, and knowledge gap remain, potentially undermining the long-term success of such initiatives. Additionally, families' economic struggles further compound these challenges, as many prioritise basic needs like food over menstrual products, forcing girls to use unhygienic alternatives, thus affecting their confidence and causing worry about staining clothes (Zaman et al., 2024).

For example, one teacher said that *'if pads were cheaper, vulnerable children could afford them. However, many use unhygienic pieces of clothes because their families prioritise food over buying pads' (Headteacher, female).* Another participant mentioned 'some parents cannot afford pads, which affects girls' attendance. Without pads and proper menstrual education, girls miss class and may face shaming or teasing from boys when they experience or manage menstruation at school' (Quality Education Advocate, male).

Overall, political representation served to impact the implementation of policy on girls' menstrual health by focusing on political will, stakeholder influence, and the economic realities of families that shape policy outcomes.

Summary of how the three themes interconnect

Cultural recognition examines how cultures can obstruct the implementation of MHH-related school politics. Distributive justice highlights the lack of resources and inconsistent investments in MHHsensitive and appropriate sanitary facilities. Whereas, political representation focuses on political will, stakeholder influence, and the economic realities of families and the

impact on policy outcomes. The absence of these three dimensions in MHH efforts perpetuates period poverty and denies girls equitable access to education. For instance, cultural stigmas and taboos around menstruation create an environment where students feel ashamed or embarrassed about their periods. Lack of access to affordable products forces girls to miss school or manage menstruation with inadequate supplies, impacting their ability to participate fully in class and the community. Lack of representation in policymaking leads to inadequate attention to menstrual health needs in schools and the community.

Policymakers can take all girls and their varied experiences into account in their planning by addressing inclusive representation (reflecting diverse backgrounds of girls, including socioeconomic, cultural, and geographic differences), cultural sensitivity (considering cultural norms and taboos surrounding menstruation), economic accessibility (providing free or affordable products especially for low-income settings), infrastructure and facilities (accessible, private, and safe facilities, such as clean toilet with water, soap and disposal options). Comprehensive education for all girls and boys about menstrual health can reduce stigma and promote understanding, leading to a more inclusive environment for menstruating girls.

Limitations

This study focused on understanding MHH issues from the perspectives of policymakers in urban and peri-urban schools. While it provided valuable insights into policy challenges, it did not include input from menstruating girls or rural areas, where MHH issues are often more severe. The study emphasises the importance of addressing the policy-to-practice gaps and improving WASH infrastructure to enhance girls' educational access.

Recommendations for policy implementation

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.

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CHAPTER THREE

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

(**Sambo J,** Nyambe S, Sai A, Yamauchi T (2024) A qualitative study on menstrual health and hygiene management among adolescent schoolgirls in peri-urban Lusaka, Zambia. Journal of Water, Sanitation and Hygiene for Development 1 January 2024; 14 (1): 15-26. DOI https://doi.org/10.2166/washdev.2024.069).

3.1 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.

Graphical abstract

Figure | Graphical abstract of the study.

Study 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.

3.2 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 the necessary materials for WASH needs. While the government provides the curriculum, the schools often face challenges related to infrastructure maintenance and resource availability, which affect 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.

Study objectives

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

3.3 Methodology

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's WASH facilities, girls' toilets, and handwashing stations. We also asked about the sociocultural beliefs and myths surrounding menstruation that they knew and practised. 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 minutes. 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 colorcoding 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 dropouts 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.

3.4 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.

1. 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 minute 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 practising 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).

Figure 3 | A water tank and handwashing point.

2. Qualitative results

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

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

Theme	Sub-theme	Codes
Girls' school WASH facilities	• Inadequate toilet facilities • Inadequate hand washing facilities	• Dirty; No privacy; No safety (no locks); No frequent toilet use • No running water; No soap; Stations outside toilets
Sociocultural beliefs and myths	• Social expectations (male-female interactions) • Food restrictions (taboos) • Secrecy	• 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	• Physiological • School facilities	• School absenteeism; Do not use medication; Sleep; Rest • Go with a friend(s); Use stored water; No handwashing; walk a distance; Home toilet; Staining

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.

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 unauthorised males, other than the schoolboys, easily entered the school premises due to poor security and accessed the 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 in the 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 a*m *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 to 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)

3.5 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 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.

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

Theme	Sub-theme	Codes
Need menstrual Information	• Needs and wishes • Lack of information	• Boys' behavior and attitude • Mothers (females) should teach girls; Content, timing, good menstrual practices

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 gendersensitive 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 menstrual hygiene matters 2016;https://www.edu.gov.zm/wp-content/uploads/2023/02/2016-09-30-MHM-Toolkit_Zambia_Final-2.pdf.

Recommendations for menstrual health and hygiene management

i) Focus group recommendations from schoolgirls

During the 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.

ii) 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.

iii) 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.

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CHAPTER FOUR

Gender Equity in Menstrual Health: Challenges in Product Access and Disposal Among Adolescent Girls in Lusaka, Zambia

4.1 Abstract

Background

Access to Menstrual Health and Hygiene (MHH) is crucial for the empowerment and well-being of women and girls in low-, middle-, and high-income countries. Despite global progress in menstrual health advocacy, disparities in menstrual product access, usage, and disposal persist, especially in low-resource settings. Adolescent girls in peri-urban Lusaka, Zambia, face significant sanitary product affordability, access, and disposal infrastructure challenges. Additionally, cultural perceptions and societal stigmas further shape menstrual health experiences, influencing both product access and disposal behaviors.

Methods

Employing a mixed-methods cross-sectional approach, menstruators aged 12-19 from one government school in peri-urban Lusaka (n = 266) were surveyed regarding their menstrual product access, use, and disposal behaviours. Focus Group Discussions (FGDs) about access and disposal were conducted with another group of mentors at the same schools, in the 6th and 7th grade (n=24), who were purposively sampled from various girls residing in different peri-urban communities, and in focus group discussions, contributing to an essential discourse on health service access. Data were analysed using JMP Pro and MAXQDA 10 after triangulation with other researchers.

Results and Discussion

Quantitative findings revealed a marked preference for disposable menstrual products (85%), with users reporting higher levels of comfort and convenience. Supermarkets and retailers accounted for 94% of the product supply, while others sourced available homemade materials. In contrast, reusable products were utilised primarily by households with lower economic means, where accessibility and cost were significant factors. Statistical analysis indicated a strong

correlation between education level and preferred product type. Qualitative insights from focus groups underscored the influence of cultural beliefs on menstrual management. Participants often transported waste home for discreet disposal due to their cultural understanding of managing waste and inadequate disposal facilities outside the house. Thematic analysis identified key cultural narratives that prioritise discretion and comfort but overlook environmental and health considerations, revealing gaps in knowledge that can hinder adequate reproductive health access.

Conclusion

Our research reveals significant disparities in the availability and acceptance of menstrual products, highlighting the roles of social stigma, educational opportunities, and environmental considerations. Enhancing access to culturally relevant menstrual health resources can significantly advance reproductive health access for girls. Findings suggest critical avenues for culturally sensitive interventions that provide access to appropriate menstrual products and foster educational programs about environmental impacts and health implications. By addressing these cultural dynamics and enhancing the availability of hygienic toilet facilities, we can significantly improve girls' experiences and promote gender equity in reproductive health. Interventions in reproductive health must include service delivery and more access to quality products for vulnerable populations like adolescent girls.

4.2 Introduction

Menstrual health is a critical yet often overlooked component of reproductive health that significantly impacts the well-being of women and girls. Access to menstrual products and safe disposal methods is essential for maintaining hygiene, enabling education, and promoting gender equity. Adolescent girls face numerous challenges: inadequate access to menstrual products, good hygiene practices, and limited knowledge. Disposable sanitary products are widely used for convenience, comfort, volume, protection, duration of blood absorption, and accessibility (Luchese et al., 2021; Tu et al., 2021), despite their environmental impacts (Tu et al., 2021).

Despite global advances in menstrual health advocacy, inequities in access to menstrual education and services remain stark, especially within school systems. Treating menstrual health as a girls-only issue reinforces stigma, perpetuates myths, and isolates menstruating adolescents. Furthermore, in LMICs menstrual health is not always a priority in school health and WASH

policies. These gaps highlight both a global failure to integrate MHH into broader reproductive health and gender er equity frameworks, which manifests acutely in peri-urban school settings, of Zambia. To achieve gender equality, it is important that girls can attend and reach their full potential in schools. Inadequate MHH recently received attention as a barrier to education for girls in low and middle-income countries (Behera et al., 2015). Schools are the primary point of intervention outside the home, and keeping girls in schools is crucial for achieving gender equity. "Schools provide a critical setting for menstrual health interventions as they serve as the primary point of engagement outside the home, offering a structured environment to promote hygiene education, improve WASH facilities, and support girls during menstruation. Ensuring menstrual health in schools is therefore essential for reducing absenteeism, promoting retention, and advancing gender equity in education (Sommer et al., 2016; UNESCO, 2021)."

Inadequate water, disposal, private changing facilities and materials in Low- and Middle-Income Countries (LMICs) leave menstruating girls with limited options for healthy personal hygiene during menstruation. These school facilities negatively impact girls' dignity, well-being, and performance (Phillips-Howard et al., 2016). Poor Menstrual Health and Hygiene (MHH) affects the health of millions of adolescents in Sub-Saharan Africa (SSA), as socioeconomic constraints influence product accessibility challenges (Anbesu & Asgedom, 2023) and preferences. Access to safe water supply, hygiene, facilities, and affordable products are crucial. Menstruators need access to sufficient products that can absorb blood safely, comfortably, and discreetly, while also being sustainable (Sambo et al., 2024). A prominent, persistent issue is a struggle to afford sufficient materials (Kaur et al., 2018).

In LMICs, girls experience poor menstruation due to limited reproductive health access, knowledge, and stigma, reinforcing harmful taboos that may negatively affect their health and well-being. This is further compounded by limited guidance on menstrual management. Notably, most adolescents only learn about menstruation at menarche, embedded in cultural beliefs (Alexander et al., 2014; Padmanabhanunni & Fennie, 2017). Accessibility to hygienic and culturally acceptable materials is key in addressing taboos and practices (Sambo et al., 2024). Product knowledge, usage, and affordability can influence the use of alternative reusable materials, like washable cloth and period underwear (Atari et al., 2021). Inaccurate menstrual knowledge is a great hindrance, as girls face difficulties, whether at school or home (Atari et al., 2021).

Menstrual waste, an essential component of MHH, is challenging in many LMICs, mainly due to poor waste collection systems, taboos, and superstitions surrounding menstruation (Atari et al., 2021). Menstrual products swell as they absorb liquid, contributing to blocked and clogged pipes if inappropriately discarded, in toilets and sewage systems. Menstruators manage waste differently at home and outside, trashing it or flushing it in toilets without knowing the consequences of clogging, environmental effects, and associated health hazards (Kaur et al., 2018).

Menstrual waste from disposable products is regarded as taboo waste to be dealt with discreetly (Sambo et al., 2024). This leads menstruators to dispose of waste inappropriately in toilets and pit latrines to avoid being seen by others. Sanitation workers hate removing menstrual waste from blocked sewage as it is annoying, disgusting, and hazardous (Sai et al., 2021). Improperly disposed waste requires treatment (Chandra-Mouli & Patel, 2017), making sustainable solid waste management a significant challenge, even for workers, if not handled correctly (Sambo et al., 2020; Wilmouth et al., 2013). Disposable products are common (Luchese et al., 2021; Tu et al., 2021) with cited environmental impacts of the waste created from disposable materials (Tu et al., 2021). The environmental impact increases as menstruators often dispose of waste inappropriately for privacy and discretion. Together, inadequate access to WASH, sanitary materials, and insufficient disposal infrastructure pose barriers to adequate MHH in Zambia.

There is currently limited research in Zambia exploring the intersection of socioeconomic, cultural, and environmental factors shaping adolescent girls' menstrual practices. This study seeks to address this gap by through the following research objectives: (i) examining socio-ceconomic factors like income and cultural norms like stigma, and how these factors affect menstrual product choices and sources, (ii) investigating the impact of the lack of household income (for instance) to product access, and (iii) exploring the menstrual waste disposal practices used and their environmental implications and health hazards. In doing so, this paper elucidates the cultural beliefs surrounding menstrual health in Lusaka and their implications for accessing reproductive health services.

4.3 Methodology

Study population and location

This was a mixed-methods study of adolescent girls in peri-urban Lusaka. The targeted population was menstruating adolescent schoolgirls between 10-19 years old. The inclusion

criteria was participants who had reached menarche (experienced their first menstruation) and were less than 19 years old. Based on the government school management's recommendation, we targeted one class each from 5th to 9th grade. The school was located in one of Lusaka's densely populated peri-urban areas and was attended by girls from several other peri-urban communities nearby.

Quantitative Data

A cross-sectional design was used to collect socio-demographic data, product preferences, and menstrual waste disposal practices. Purposive sampling was used to select menstruators and lower and upper primary participants from the school who met the survey requirements. 400 participants were surveyed, and 266 provided sufficient data to facilitate analysis. A self-administered questionnaire survey was created after literature review on socio-demographics, socio-economic status, product choice, and menstrual waste disposal practices in LMICs. Descriptive statistics and further analysis were conducted to interpret the data. Age was divided into two groups based on median age to reveal differences in trends. Product access was categorised as disposable or reusable, with various disposal methods. Multivariable logistic regression analysis was used to identify the determinants of menstrual product preferences and disposal options while controlling for potential confounders. The stepwise regression technique was used to select the best predictive model.

Qualitative Data

FGDs with 24 menstruating girls from the same school, aged 12 to 19, from various peri-urban communities were conducted using convenience sampling. Each group consisted of 8 girls, lasted for 90 minutes, and explored participants' experiences with product preference and usage, disposal practices, and cultural beliefs surrounding health access. Thematic analysis was performed using MAXQDA version 10. Triangulation was conducted with three other researchers using qualitative and quantitative data, reinforcing data reliability.

Ethical Considerations

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki, which ensures the protection, dignity, and rights of all research participants. The Ethics Review Committee of the Faculty of Health Sciences, Hokkaido University (No. 2011-0001) reviewed and approved the study protocols and methods. After a

thorough briefing on the study, all participants provided informed consent. For girls under 18, informed assent was obtained from parents or guardians per Zambia's legal age of consent.

4.4 Results

These findings are based on quantitative and qualitative data. The quantitative data addresses factors affecting menstrual product access, menstrual waste disposal, and environmental implications. The qualitative data addresses product access, usage, health concerns and waste disposal practices and access to disposal facilities.

Quantitative results: factors affecting menstrual product access

The median age was 15.0 years (Inter-Quartile Range = 14-16 years), with 61% attending junior secondary school, sharing similar language and cultural practices (Table 1).

Table 1: Socio-demographic characteristics of adolescent schoolgirls (n=266)

Characteristic	n (%)
Age	
15 years and below	181 (68)
16 years and above	86 (32)
Age at menarche	
15 years and below	254 (95)
16 years and above	5 (2)
Unknown	7 (3)
Education Level	
Grade 5-7 (Primary)	104 (39)
Grade 8-9 (Junior Secondary)	163 (61)
Region (province) groups	
Northern	140 (52)
Eastern	69 (26)
Western	58 (22)
Household Monthly Income*	
$50 and below	55 (21)
$50 to $100	20 (8)
$100 and above	8 (3)
Missing	183 (69)

Household Head	
Both parents	63 (24)
Father	45 (17)
Mother	113 (42)
Guardian	28 (11)
Missing	17. (6)

*1 Zambian kwacha for $0.11 US dollar (Exchange rate on 25/12/2023).

In this study, menstrual absorbent products refer to sanitary pads, baby diapers, and cotton wool, whereas reusable products refer to cloth and washable pads. Out of those surveyed, about 67% of girls aged 15 years and below preferred disposable sanitary products like pads and baby diapers. Most participants (99%) sourced disposable materials from local shops and supermarkets. Chi-square analysis showed an association between absorbent materials and the education level (0.0141) attained, product source (0.0001) used, and waste disposal method (0.041) practised (Table 2).

Table 2: Menstrual product access and participant characteristics.

	Menstrual absorbent material		**p-value**
	Disposable (n=227)	**Reusable (n=39)**	
Age	**n (%)**	**n (%)**	
15 years and below	151 (66.52)	28 (71.79)	0.517
16 years and above	76 (33.48)	11 (28.21)	
Education Level			
Grade 5-7 (Primary)	81 (35.68)	22 (56.41)	0.0141*
Grade 8-9 (Secondary)	146 (64.32)	17 (43.59)	
Ethnic Region			
Eastern	60 (26.43)	9 (23.08)	0.534
Northern	121 (53.30)	19 (48.72)	
Western	46 (20.26)	11 (28.21)	
Household Income			
$50 and below	44 (19.38)	11 (28.21)	0.346
$50 to $100	23 (10.13)	5 (12.82)	
Missing	160 (70.48)	23 (58.97)	

Household Income Source			
Both parents	54 (23.79)	9 (23.08)	0.889
Father	40 (17.62)	5 (12.82)	
Mother	95 (41.85)	18 (46.15)	
Other	38 (16.74)	7 (17.95)	
Product Source			
Self-made	3 (1.32)	13 (33.33)	<.0001*
Shop/Supermarket	224 (98.68)	26 (66.67)	
Waste Disposal Method			
Burn and bury	102 (46.79)	11 (28.95)	0.041*
Pit latrine and flushing toilet	116 (53.21)	27 (71.05)	
Sanitary Products Monthly Expense			
$1 dollar and below	127 (55.95)	19 (48.72)	0.090
More than $1 dollar	43 (18.94)	4 (10.26)	
Missing	57 (25.11)	16 (41.03)	
Frequency of changing materials daily			
Once or twice	108 (47.58)	19 (48.72)	0.895
Three times and more	119 (52.42)	20 (51.28)	

* Significant p-value

[2] **1 Zambian kwacha for $0.11 US dollar (Exchange rate on 25/12/2022).

From the logistic regression analysis, product source showed a strong and statistically significant association with product type or choice. Girls who made their own menstrual products were the reference group. Girls who obtained products from a shop or supermarket were 34 times more likely (AOR = 33.99, 95% CI: 8.98–128.56) to use disposable products (Table 3).

Table 3: Logistic regression analysis of factors contributing to product access.

Characteristics	Menstrual product type/choice		AOR (95% CI)
	Disposable (n=227)	Reusable (n=39)	
Education Level	**n (%)**	**n (%)**	

Grade 5-7 (Primary)	81 (35.68)	22 (56.41)	1
Grade 8-9 (Secondary)	146 (64.32)	17 (43.59)	1.96 (0.90-4.26)
Product Source			
Self-made	3 (1.32)	13 (33.33)	1
Shop/Supermarket	224 (98.68)	26 (66.67)	33.99 8.98-128.56)

Qualitative results: product access, usage and health concerns

For qualitative data on product access, the following framing question was used to identify themes, sub-themes, and codes on product access: What menstrual product(s) do you use and why? The first theme addressed the product(s) used. The sub-themes included preferences, accessibility, and affordability. The codes included pads with wings and diapers, shops and stores, and expensive and alternative products. The second theme addressed the reason for the product(s) used. The sub-themes were health and safety. The codes were rash, itchiness, fungal infections, menstrual pain, safety concerns and perceived chemicals in diapers when cut into two or three pieces.

Themes, sub-themes, and codes are shown below.

Themes	Sub-themes	Codes
1. Menstrual product accessibility and its impact on product choice	• Preferences • Accessibility • Affordability	• Pads with wings; Diapers • Shops, stores • Expensive; alternative product
2. Reason(s) for usage and health concerns	• Health	• Rash, itchy, fungal infections, pain • Safety; chemicals

Theme 1: Menstrual product accessibility and its impact

Most girls preferred disposable materials like pads with wings, which better prevented menstrual leaks, and baby diapers, which were cheaper than sanitary napkins and had a wider surface area. The reasons girls stated for accessing particular products included:

"I choose disposable napkins for their comfort, especially since they have wings to hold onto the pants and tape to remain attached. The cloth napkins do

not have tape on the wings or bottom. I always fear that it will fall off and embarrass me." (13 years)

"Disposable pads are the best options; even if we use diapers sometimes, they are not as good as pads" (12 years)

"Normally, one to two sanitary packs are enough. My parents buy for me when buying household goods if I'm lucky." (13 years)

Girls faced challenges accessing these products and sometimes used reusable materials available at home.

"I use disposable sanitary napkins or baby diapers and reusable sanitary cloth." (15 years).

"I also use some leftover napkins and use washable clothes or ask my sisters or mother if they have any left." (14 years)

"I have used diapers before. I do not like them, but my mother forces me to use them. When she doesn't have enough money, I add my savings to buy pads since diapers are easy for others to see that you are menstruating (protrude due to big size) (16 years)

<u>*Theme 2: Reason for usage and health concerns*</u>

Some girls cited various health concerns influencing their menstrual product preferences, particularly expressing worry about the quality of available products. Specifically, those using cut diapers as makeshift pads were apprehensive about potential skin irritation and itching due to direct contact with the powder inside. While some girls found diapers to be better, others disagreed. Some health concerns included:

"We use disposable napkins because they are effective. However, they give rash or other vaginal reactions." (15 years).

"I am worried about the diapers' white particles on my skin (cotton dust after cutting diapers to make several pieces to drain blood)" (13 years)

"I don't use cotton wool. I find it difficult to use" (14 years)

Quantitative results: menstrual waste disposal practices

Disposal methods included burying, burning, throwing within a pit latrine, flushing toilets, and waste bins. For disposal practices, eligible independent factors were the household income source and the product used. While 69% of participants did not know their household income,

most came from families with household incomes of less than $50 a month. About 42% of participants lived in homes where mothers were the primary income source. Most participants reached menarche before the age of 15 (Table 4).

Table 4 shows that most (64%) girls aged 15 years and below disposed of sanitary absorbent materials in pit latrines or flush toilets compared to girls (36%) who were 16 years and above. On the education levelAt the secondary education level, 58% of girls (58%) at the secondary education level used latrines and toilets for disposal, and while 42% of primary schoolgirls did(42%) at the primary level. Household income source results showed that 73% of the girls did not know their household income, and mothers were the most cited household income source (41%). Chi-square analysis revealed associations between waste disposal practice and three other variables: household income (0.097), household income source (0.009), and product source (0.021), indicating that the significant independent predictors were the source of household income and the type of product used.

Table 4: Menstrual waste disposal methods used among schoolgirls.

Characteristics	Waste disposal practice*		p-value
	Burn and bury (n=113)	**Pit latrine and Flush toilet (n=143)**	
Age	**n (%)**	**n (%)**	
15 years and below	79 (69.91)	91 (63.64)	0.291
16 years and above	34 (30.09)	52 (36.36)	
Age at menarche			
15 years and below	108 (95.58)	138 (96.50)	0.759
16 years and above	2 (1.77)	3 (2.10)	
Unknown	3 (2.65)	2 (1.40)	
Education Level			
Grade 5-7 (Primary)	36 (31.86)	60 (41.96)	0.097
Grade 8-9 (Secondary)	77 (68.14)	83 (58.04)	
Ethnic Region (province) groups			
Eastern	28 (24.78)	40 (27.97)	0.422
Northern	56 (49.56)	76 (53.15)	

Western	29 (25.66)	27 (18.88)	
Household Monthly Income**			
$50 and below	31 (70.45)	24 (61.54)	0.097
$50 to $100	13 (29.55)	15 (38.46)	
Unknown	69 (61.06)	104 (72.73)	
Household Income Source			
Both parents	17 (15.04)	45 (31.47)	0.009***
Father	21 (18.58)	23 (16.08)	
Mother	51 (45.13)	59 (41.26)	
Other	24 (21.24)	16 (11.19)	
Product Source			
Self-made	2 (1.77)	12 (8.39)	0.021***
Shop/Supermarket	111 (98.23)	131 (91.61)	
Monthly expense on sanitary products			
One dollar and less	27 (23.89)	20 (13.99)	0.123
More than one dollar	58 (51.33)	85 (59.44)	
Unknown	28 (24.78)	38 (26.57)	
Frequency of changing sanitary towels daily			
Once or twice	57 (50.44)	64 (44.76)	0.365
Three times and more	56 (49.56)	79 (55.24)	

*Multiple responses allowed for waste disposal practice.

[2]**Zambian kwacha for $0.11 US dollar (Exchange rate on 25/12/2023).

[3]***Significant factor.

From the logistic regression analysis, household income source was significantly associated with the waste disposal method used. Girls from households supported by both parents served as the reference group. Those supported only by their father were 2.38 times more likely (AOR = 2.38, 95% CI: 1.05–5.42) to dispose of menstrual waste by burning and burying than using a latrine or toilet. Girls supported only by their mother were 2.34 times more likely (AOR = 2.34, 95% CI: 1.19–4.60) to use burning and burying as a disposal method. Girls whose household

income came from other sources (e.g., extended family, guardians, informal support) had the highest likelihood, being 4.18 times more likely (AOR = 4.18, 95% CI: 1.78–9.82) to dispose of waste through burning and burying.

Table 5: Logistic regression analysis of factors associated with waste disposal practices.

Characteristics	Waste disposal practice*		AOR (95% CI)
	Burn and Bury (n=113)	Pit latrine and Flush toilet (n=143)	
Household Income Source	**n (%)**	**n (%)**	
Both parents	17 (15.04)	45 (31.47)	1
Father	21 (18.58)	23 (16.08)	2.38 (1.05-5.42)
Mother	51 (45.13)	59 (41.26)	2.34 (1.19-4.6)
Other	24 (21.24)	16 (11.19)	4.18 (1.78-9.82)
Product Used			
Reusables	11 (9.73)	27 (18.88)	1
Disposables	102 (90.27)	116 (81.12)	2.29 (1.06-4.95)

*p<0.05

Qualitative: waste disposal practices and access to disposal facilities

The framing question addressed appropriate disposal methods for qualitative waste disposal and facility access results. The first theme addressed disposal locations. The three sub-themes included rinsing off the blood before disposal, throwing where?, burying or burning and waste handling procedures. The three corresponding codes were safety and home, discreet and private, and mistrust and evil. The second theme addressed the reason for the preferred disposal methods used. The three sub-themes included cultural beliefs, the disposal options taught, and ideal practices. The corresponding codes were private and hygiene, knowledge and home, preferred and safe.

Themes, sub-themes, and codes are shown below.

Theme	Sub-theme	Codes
3. Sociocultural perceptions of menstrual waste disposal	• Rinse off the blood before • Throw, bury or burn • Waste handling process	• Safety; home • Discreet; private • Mistrust; evil
4. Preferred disposal methods and their influence on practices	• Cultural beliefs • Disposal options taught • Ideal practices	• Private, hygiene • Knowledge; home • Preferred; safe

Theme 3: Sociocultural perceptions of menstrual waste disposal

Most schoolgirls did not dispose of waste at school. Instead, waste was wrapped in paper or plastic and carried and disposed of at home. Girls preferred to do this because they feared that if they disposed of their products in public disposal facilities at school, evil people would have access to them and could bewitch them using their menstrual blood. These beliefs about waste mean it is essential to consider cultural superstitions when designing WASH facilities:

> *"At school, we carry the used napkins back home wrapped in plastic bags" (12 years).*
>
> *"We want a toilet (pit latrine) that we can use to throw pads in." (13 years)*
>
> *"A trash bin is not ideal at all. I have never thrown in school. We do not want bins in the school or public places at all. I can only use the bin at home by hiding the waste under other household waste" (14 years).*

Theme 4: Preferred disposal methods and their influence on practices

Girls found it challenging to manage menstrual waste at school. At home, some girls used a pit latrine, burned materials, or rinsed the blood before throwing the garbage in the trash bins. Others mentioned concerns about who and how their waste is handled at school.

> *"As for me, rinsing off blood from the napkins and later throwing them away in the bin is the best option" (15 years).*

"Just throwing away the used napkin in the bins is not ideal or good, especially at school, where we do not know how the materials will be handled later" (14 years).

"The pit latrine is the best. We also dig a hole in the ground to throw away waste. I do not throw away in the trash as others may get the pads from the trash and use them for evil things" (13 years).

All the girls preferred changing materials at home. Some girls revealed that the school toilets were dirty. Some cited practices included:

"I do not change pads from school; I always go home where I feel safe." (13 years)

"No, I do not change, I wait until I get home" (12 years)

"Throwing away from home, in a trash bin, is good. Even if they put bins in school, we can't use them" (15 years).

4.5 Discussion

Factors affecting menstrual product access

This study focuses on the experiences and practices of menstrual management of Zambian schoolgirls in peri-urban Lusaka (Lahme et al., 2018). Similar practices to those in the present study were found in a study conducted in Blantyre, Malawi, that surveyed 258 women about their sociodemographic characteristics, menstrual absorbent choices, and disposal practices and studies conducted in Bangladesh (Roxburgh et al., 2022). This suggests that adolescent girls' MHH practices tend to be similar in LMICs despite differences in religion, geographical location and socioeconomic status (Ha & Alam, 2022).

Menstrual product choices were affected by accessibility, affordability, reliability, comfort and convenience. Girls preferred to use store-bought disposable sanitary napkin materials for their comfort and absorbency, but when they could not afford those, they used cotton wool, baby diapers, and cloth pads. Most girls wanted to be comfortable and confident that their chosen product would perform well (Peberdy et al., 2019; Sommer et al., 2021). A product's performance measure is its ability to protect girls from leakages and associated embarrassment (Chinyama et al., 2019; Davidson, 2012). A study in Zambia highlighted how schoolboys would shame and embarrass girls upon finding out when they were menstruating or witnessing'menstrual accidents' or leaks in school (Chinyama et al., 2019). This led girls to experience fear and anxiety while menstruating

due to harassment from male peers (Chinyama et al., 2019). A study in Zimbabwe showed that product choice and consumption go beyond provision—external environmental factors such as access to water, soap, sanitary facilities, and sociocultural factors also influence decision-making (Tembo et al., 2020). In addition, comprehensive education and accurate knowledge are critical in combating gender bias and stigma (Zablock & Fei, 2024). Therefore, girls must be comfortable with the products used, especially when their male counterparts are present at school. Ultimately, affordability, convenience, durability and socio-cultural factors affect the choices.

Factors impacting product access, usage and health concerns

Schoolgirls' household income impacted what products they used, despite their preference for commercial and disposal products due to their ease and suitability. Interestingly, girls sometimes used baby diapers as pads and bought them as a single diaper for about $0.11 from local retailers and shops. Diapers were easily accessible as a single piece for unanticipated periods without purchasing an entire pack. This is in contrast to sanitary napkins, which must be purchased as an entire pack and were therefore more expensive. Additionally, diapers provided a larger surface area than napkins, which made them better equipped for girls with heavy menstrual flow. However, the tendency of girls to flush menstrual product waste in flush toilets and pit latrines means that diapers' larger size pose a more significant threat to sewage systems and the environment. Together, these findings exemplify how lower-income girls experience difficulties accessing affordable, sustainable menstrual products (Davies et al., 2022).

Most girls preferred disposable sanitary products with wings and tape for secure attachment to underwear. However, financial challenges caused some girls to opt for reusable materials sourced from home (Kaur et al., 2018). Few participants in focus groups used cotton wool due to their tendency to soil quickly, tear off what?, and lack of secure attachment. Girls' sources of materials differed, and access was hindered by lack of affordability.

Product choices were also influenced by availability, product knowledge, and social expectations (Peberdy et al., 2019). Girls emphasised that products must be accessible, affordable, culturally acceptable (Tembo et al., 2020), and comfortable to support sustainable use and environmental safety. Alternative products like menstrual cups and washable absorbent materials have recently become popular due to their environmental and cost benefits (Tembo et al., 2020). A study in Zambia that introduced menstrual cups revealed that cups were not commonplace, were perceived to cause cancer or injury to the reproductive organs, and, in some cases, result in loss of

virginity. Interestingly, the study also revealed that participants wanted to use cups as an alternative product after product and information access (Gondwe et al., 2025). However, menstrual cups may not be culturally appropriate in some regions, where vaginal insertion is taboo for unmarried girls due to concerns about virginity. Misconceptions about hymen breakage and sexual dissatisfaction persist (Kambala et al., 2020). In some cultures, there are also fears about fertility (Pokhrel et al., 2021). Interestingly, despite these challenges, girls showed interest and a need for more awareness about cups. Cultural beliefs significantly impact menstrual choices(Sambo et al., 2024), along with socio-economic factors, product safety, acceptability, and menstrual knowledge.

Menstrual waste disposal and environmental implications

Waste disposal methods included burning, burying, pit latrines, flush toilets and waste bins,. Studies in Malawi showed that most menstrual waste was thrown in pit latrines or burned (Roxburgh et al., 2022). These practices threaten the sewage system, human health, and the environment. Some girls rinsed blood off before throwing waste in bins, such as in Indonesia (Sato et al., 2021). Other girls also stated concerns about how waste was handled if disposed of at school, implying a lack of trust and uncertainty about who and how others might handle their 'sacred' waste. Participants used several methods while expressing the need to learn more about sustainable methods and the implications of their practices. In Zambia, sustainable solid waste management remains challenging in peri-urban areas due to rapid population growth, unplanned sanitary facilities, and inadequate service provision. Sewage systems were blocked due to waste like pads and diapers. A Lusaka study revealed that most of the solid waste generated in the urban areas was not collected and disposed of at designated sites. Solid waste treatment was conducted at minimal rates and was not sustainable (Sambo et al., 2020). Similarly, in India, waste was disposed of in toilets without knowing the consequences of blockage (Kaur et al., 2018b).

Waste disposal practices and access to disposal facilities

Most girls preferred pit latrines and were unaware of the environmental issues of sewage blockages or the time taken to decompose. Moreover, most participants were unaware of the amount of plastic in disposable products (Peberdy et al., 2019). Cultural myths and taboos surrounding waste were also prevalent, as some girls did not utilise municipal garbage collection services unless materials were hidden or blood washed off beforehand, which was also observed among schoolgirls in Indonesia (Sato et al., 2021). Culture and religion can influence practices

when discreetness with waste handling is encouraged, and it may have adverse effects if menstrual knowledge is lacking. Sociocultural factors significantly influenced product choice and disposal practices. Beliefs and teachings about menstruation influenced these practices. Menstruators need access to private, safe, and convenient disposal options that support sustainable use.

A Zambian study revealed that adolescent girls (or whoever was surveyed here) preferred throwing used menstrual materials in toilets for fear of others mishandling waste for witchcraft practices that may result in menstruators experiencing stomach pains or infertility (Chinyama et al., 2019). Similar beliefs about menstrual waste being sacred and fear of evil people were cited in our focus groups. Poor knowledge of best disposal practices linked to cultural beliefs has significant environmental impacts. The school environment itself lacked the necessary facilities to manage menstruation despite the girls' desire to utilise them. Therefore, menstrual education, provision of female-friendly toilets with locks on doors, water within stalls, and menstrual disposal options are needed in school WASH infrastructures (Chinyama et al., 2019; Connolly & Sommer, 2013). Menstrual waste remains a neglected MHH and sanitation value chain issue, impacting users, the sanitation systems and the environment (Elledge et al., 2018). The lack of acceptable and culturally sensitive disposal infrastructure, menstrual awareness, and social stigma can contribute to improper disposal practices. Personal and sociocultural factors and WASH facilities affect the girls' practices and the environment. Our study builds on previous research to explain materials and waste disposal practices in LMICs (Elledge et al., 2018). The available facilities, knowledge, and cultural myths influenced the disposal practices.

Strengths and limitations

One limitation of the study is using purposive sampling with a relatively small sample size. While purposive sampling enabled us to target girls with relevant characteristics, it limited the generalizability of findings. Nonetheless, this limitation was offset by several strengths of our study. Obtaining in-depth and detailed qualitative data using purposive sampling provided rich insights into the phenomena under investigation. We employed rigorous methodological practices to ensure the reliability and validity of our qualitative data through triangulation. Moreover, our study addresses a significant gap in the current literature by focusing on an understudied population, adding valuable new knowledge to the MHH field.

Novelty and international relevance

This study contributes novel perspectives by identifying the sociocultural factors and infrastructural constraints in peri-urban Lusaka to inform context-specific interventions that enhance menstrual equity and strengthen reproductive healthcare service access. In moving toward menstrual equity, it is essential to recognise that cultural beliefs and gender norms profoundly shape how menstruation is experienced and managed. Respecting cultural sensitivities does not mean avoiding the conversation; instead, it means engaging communities in ways that honour their values while protecting health and dignity. Inclusive menstrual education involving accurate knowledge of products and disposal and incorporating both girls and boys in the discourse, paired with context-sensitive infrastructure and policy support, can reduce stigma and foster understanding.

Future research and policy implications

These findings also highlight deeper systemic inequities within school-based reproductive health education. While some schools provide menstrual products, the lack of awareness among girls reflects a communication gap. More critically, the exclusion of boys from menstrual health education perpetuates stigma and reinforces harmful gender norms. Globally, MHH is often framed as a private, female concern, leaving boys uneducated and girls unsupported. This unequal distribution of information contributes to reproductive health inequities, as girls bear the burden of secrecy and shame. In Zambia, like in many settings, school health policies lack explicit guidance on integrating MHH into comprehensive reproductive health education for all students. Addressing this silence through inclusive, gender-transformative education could help dismantle stigma and promote shared responsibility in menstrual health.

Importantly, the exclusion of boys from menstrual health education contributes to a broader inequity in reproductive health knowledge. While boys may not require menstrual products, their lack of accurate information perpetuates teasing, misunderstanding, and a culture of silence that directly affects girls' dignity and safety at school. This creates an unequal emotional and social burden for menstruating students, placing the responsibility of discretion, coping, and shame solely on girls. Promoting inclusive, culturally-senstitive menstrual health education can help cultivate mutual respect, reduce stigma, and shift school environments toward greater gender equity.

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CHAPTER FIVE

General Conclusion and Recommendations

5.1 General Conclusion

Policy analysis and factors affecting policy implementation

Policy analysis highlights gaps between national MHH guidelines and their implementation at the school level. While frameworks exist to support MHH, inconsistent application and lack of resources hinder their effectiveness. Addressing these challenges requires a holistic approach: (i) infrastructure development: investing in the construction and maintenance of girl-friendly WASH facilities that ensure privacy and hygiene, (ii) educational programs: implementing comprehensive MHH education to dispel myths and promote healthy practices among students and staff, and (iii) policy enforcement and support: strengthening the implementation of existing MHH policies through adequate funding, training, and monitoring mechanisms.

Fraser's Social Justice Theoretical Framework (Fraser, 2000)

Policymakers and stakeholders' limited awareness and poor implementation of MHH policies significantly hinder girls' access to education during menstruation, contributing to absenteeism, increased dropout rates, and lower academic performance. Strengthening policymakers' awareness through training, capacity-building initiatives, and fostering stakeholder collaboration are essential for addressing these issues. Additionally, sufficient resource allocation for MHH programmes, alongside establishing robust monitoring and evaluation mechanisms, is critical for practical policy realisation and improvement. Policy advocacy plays a vital role in raising awareness about MHH issues and driving gender-responsive, evidence-based policy changes. This focus ensures that policies prioritise the needs of menstruators, promoting educational equity for girls. In Kafue, heightened awareness and a thorough understanding of MHH policies among policymakers and stakeholders are necessary. Insufficient comprehension of MHH-related challenges continues to perpetuate stigma and hinder girls' access to education, adversely affecting their well-being, health, and academic outcomes.

Collaborative efforts among policymakers, educators, communities, and the students themselves are essential to create an enabling environment that supports effective menstrual health management. Such an environment not only enhances the educational experiences of adolescent girls, but also contributes to their overall health and empowerment. Limited awareness and weak implementation of MHH policies among key stakeholders significantly undermine girls' educational participation in Kafue, contributing to absenteeism, dropout, and reduced academic performance. Strengthening policymakers' capacity through training, improved coordination, adequate resource allocation, and stronger monitoring systems is essential for translating policy into practice. Cultural, economic, and political barriers continue to shape menstrual experiences and perpetuate stigma, highlighting the need for targeted, culturally sensitive interventions informed by Fraser's social justice framework.

In the Zambian context, cultural, economic and political factors significantly affect menstrual practices, hindering girls' education and overall well-being. Addressing these issues through targeted interventions is crucial to fostering a more equitable educational environment. The study emphasises the importance of holistic solutions that integrate Fraser's social justice theory to guide interventions. Collaboration between the Ministry of Education, schools, families, communities, and governmental and private organisations is needed to address menstrual health

challenges effectively. Government and private organisations have made strides by providing menstrual supplies and offering training in producing reusable materials. However, misconceptions surrounding menstruation persist, underscoring the need for continued advocacy and education on good MHH practices. This research underscores the critical role of policymakers in improving MHH practices within the education system. Sustainable MHH initiatives, supported by increased funding and a focus on educational equity, can help reduce absenteeism and dropout rates among menstruating schoolgirls. Prioritising evidence-based policies and accessing menstrual myths are vital steps toward overcoming gender inequality in education and fostering long-term development. MHH policies, policymakers and all stakeholders should consider diversity in experience, cultural sensitivity, economic support, facility improvement, and inclusion education.

Challenges faced in managing menstruation: School WASH facilities and coping strategy

Schoolgirls face significant menstrual health challenges due to inadequate sanitary facilities, including the lack of safe water, functional toilets, handwashing stations, and sufficient privacy. Safety concerns, heightened by a defilement incident, further restricted girls' use of school toilets, leading some to stay home throughout their menstrual period, while others adopted coping strategies to manage pain and discomfort. These conditions contribute to reduced participation, increased health risks, and limited mobility, especially for girls without reliable menstrual products or those experiencing stigma around menstrual leaks. Cultural expectations that girls must quickly assume adult responsibilities at menarche, combined with limited menstrual knowledge, exacerbate negative experiences and harmful practices. Overall, the findings emphasise the critical need for improved access to menstrual materials, safe and private WASH facilities, and comprehensive menstrual education to support the well-being and dignity of menstruating schoolgirls.

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 adherence to specific dietary and cooking regulations around menstruation. A noticeable lack of pre–post 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.

Challenges of menstrual product preferences and waste disposal at school and home

The findings also underscore the complex interplay of factors influencing MHH among schoolgirls in Peri-Urban schools in Lusaka Province. Infrastructural assessments reveal that many schools lack adequate WASH facilities, with insufficient privacy and hygiene resources, contributing to discomfort and absenteeism during menstruation (Sambo et al., 2024). Studies indicate that cultural taboos and misinformation perpetuate negative attitudes toward menstruation, leading to secrecy and inadequate hygiene practices. Additionally, limited access to affordable and effective menstrual products exacerbates these challenges, disproportionately affecting girls from low-income settings and households.

Our study investigated factors affecting access to menstrual materials, disposal methods, and their environmental impacts among schoolgirls in peri-urban Lusaka, Zambia. Firstly, our analysis reveals that menstrual product access among adolescent schoolgirls is influenced by their education level and the sources of product materials. Most participants preferred disposable products for comfort, durability, and convenience. Additionally, some girls used baby diapers as a cost-effective alternative for wider absorbency surface area. Household income was also crucial in determining access to quality absorbent materials. While some households prioritised buying menstrual materials, others did not, resulting in MHH disparities and barriers to accessing required

materials to manage menstruation. Cultural beliefs influenced disposal practices. For instance, although the school provided sanitary waste bins, they were underutilised due to cultural teachings regarding the sacred nature of menstrual waste. Consequently, girls carried their waste home, with most discarding waste in pit latrine toilets without awareness of the environmental impacts. These findings underscore the necessity of providing culturally acceptable and sensitive disposal options and facilities. Such measures are essential to creating MHH-friendly facilities and promoting educational equity and advancement.

Overall, chapter 2 discusses unsafe sanitation and cultural stigma compel girls to manage menses privately and endure discomfort in secret. Chapter 3 addresses inadequate product access and waste disposal facilities as the major barriers to positive MHH practices and experiences. Chapter 4 unveils policy implementation barriers that include funding constraints, lack of awareness and sustained political will.

This thesis finally concludes and argues that unsafe sanitation and cultural stigma compel girls to manage MHH privately and endure discomfort in secret. The three main ideas are crtical to inform MHH research; toilet safety, diginty and wellbeing are critical. Cultural sensitivity must be specific to a particular context. Finally, existing MHH policies require more sustainable frameworks and economic investments for schools, and communities.

5.2 Recommendations

Sustainable progress requires multisectoral collaboration between the Ministry of Education, schools, communities, and partner organisations, alongside continued advocacy and education to address persistent misconceptions about menstruation. Although government and private actors have expanded product distribution and training initiatives, gaps remain in awareness, infrastructure, and inclusive policy design. Prioritising evidence-based, gender-responsive policies, supported by adequate funding, improved facilities, and attention to diverse menstrual needs critical to reducing inequalities and ensuring that menstruating schoolgirls can fully participate in education.

MHH interventions must prioritise not only the provision of quality products but also the delivery of culturally sensitive education that empowers girls with accurate information and confidence to manage menstruation safely. Overall, the evidence emphasises that meaningful improvements to menstrual health depend on multisectoral policy collaboration and

implementation, sustainable resource allocation, and community engagement. Addressing infrastructural shortages while challenging harmful beliefs can significantly improve girls' menstrual experiences and advance gender equity in education and health systems in Zambia. Together, these three complementary investigations provide a comprehensive understanding of menstrual health gaps and opportunities in Zambian schools, offering evidence to inform improvements in MHH programming, resource allocation, and national education policy.

Therefore, improving schoolgirls' WASH and MHH infrastructures, especially in schools, is a priority and a safety issue. Comprehensive and accurate MHH information must involve culturally sensitive education on good MHH practices. Interventions must address product accessibility, product afforadility, usstainale waste disposal mechanisms and progressive policies.

5.3 Final insights and takeaway

Across the three chapters, the findings clearly show that menstrual health in peri-urban Lusaka schools is not a peripheral social issue but a core adolescent health concern. Inadequate WASH facilities, limited access to menstrual products, cultural misrecognition of menstruation, and weak policy implementation collectively create conditions that heighten infection risks, limit girls' mobility, undermine health and wellbeing, and disrupt educational participation. Ultimately, menstrual health must be recognised as an essential public health priority embedded within sexual and reproductive health, adolescent health, health equity, and health systems strengthening.

5.4 Contributions to health sciences and research

This dissertation is deeply a health sciences research because it examines adolescent health, interrogates inequalities in policy and access to safe conditions and hygiene materials, infrastructure and the broader social support systems. This research also links schooling to health trajectories, identifies policy and systems failures and proposes structural reforms to protect adolescent wellbeing.

The novelty is on MHH safety in schools and the hidden coping mechanisms girls use to manage menstruation. There is also an urgent need to reframe priorities, especially around menstruation and health. Finally, WASH and MHH interventions need to ensure that they target materials access and affordability, coupled with ensuring WASH and MHH dignity for schoolgirls.

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Psalm 118 verse 23 "This is the LORD's doing; it is marvellous in our eyes".

ACADEMIC ACHIEVEMENTS

Academic Publications in Scientific Peer-Reviewed Journals

i) Dinala H, **Sambo J,** Nyambe S, Yamauchi T, A Comparative Report on Health and Water, Sanitation and Hygiene in Malawi, Tanzania and Zambia, Sanitation Value Chain, 2020, Volume 4, Issue 3, Pages 37-60, Released on J-STAGE November 26, 2020, Online ISSN 2432-5066, Print ISSN 2432-5058, https://doi.org/10.34416/svc.00025, https://www.jstage.jst.go.jp/article/svc/4/3/4_00025/_article/-char/en.

ii) **Sambo J,** Muchindu M, Nyambe S, Yamauchi T, An Assessment of Sustainable Solid Waste Management and Occupational Health in Lusaka, Zambia, Sanitation Value Chain, 2021, Volume 5, Issue 1, Pages 55-, Released on J-STAGE February 05, 2021, Online ISSN 2432-5066, Print ISSN 2432-5058, https://doi.org/10.34416/svc.00058, https://www.jstage.jst.go.jp/article/svc/5/1/5_00058/_article/-char/en.

iii) **Sambo J,** Nyambe S, Sai A, Yamauchi T (2024) A qualitative study on menstrual health and hygiene management among adolescent schoolgirls in peri-urban Lusaka, Zambia. Journal of Water, Sanitation and Hygiene for Development 1 January 2024; 14 (1): 15-26. DOI https://doi.org/10.2166/washdev.2024.069.

iv) **Sambo J,** Mifune R, Nyambe S, Sai A, Yamauchi T (2025) Exploring Sanitation Challenges among Indigenous Hunter-gatherers, Farmers, and Merchants in Cameroon. AFRICAN STUDY MONOGRAPHS Supplementary Issue, 63: 97-104.

v) **Sambo, J**., Nyambe, S. and Yamauchi, T. (2025). Obstacles and challenges of policy implementation on menstrual health and hygiene for schoolgirls: Insights from stakeholders in Kafue District of Lusaka, Zambia, Education and Conflict Review, 6, 89–96.DOI 10.14324/000.ch.10216111.

Presentations at International Conferences (Peer-Reviewed)

2025 presentations:

i) Yamauchi T, Nyambe S, Kataoka Y, **Sambo J,** Zgambo J. Investigation of Knowledge, Risk Perception, Efficacy of Solutions using Participatory Action Research in Water and Sanitation Planning. SPLASH 2025FY Update Meeting. Online (Zoom). 27th November 2025.

ii) **Sambo J,** Nyambe S, Zgambo J. Yamauchi T, Schoolboys' Awareness and Knowledge on Menstrual Health and Hygiene: An Exploratory Case Study of a Peri-Urban School in Kafue District, in Lusaka, Zambia. SPLASH 2025FY Update Meeting. Online Seminar (10th November 2025).

iii) **Sambo J,** Nyambe S, Zgambo J. Yamauchi T. Menstrual Health and Hygiene Challenges in Product Access and Waste Disposal Among Adolescent Schoolgirls in Lusaka, Zambia. 7th FHS International Conference. Oral Presentation (24th October 2025).

iv) **Sambo J,** Nyambe S, Zgambo J. Yamauchi T. Menstrual Health at the Intersection of Culture, Environment, and Public Health: Lessons from Traditional Educators in Zambia. JSHHE 2025. In-person Poster Presentation (11th October 2025).

v) **Sambo J,** Nyambe S, Zgambo J. Yamauchi T. Exploring Schoolboys' Awareness and Knowledge to Support Menstrual Health and Hygiene Management: A Case Study of a Peri-Urban School in Kafue, Zambia. JSHHE 2025. In-person Oral Presentation (12th October 2025).

vi) **Sambo J,** Nyambe S, Zgambo J. Yamauchi T. The Role of Policymakers and Stakeholders' Decision-making on Menstruating Schoolgirls' Educational Access in Peri-Urban Kafue District, in Lusaka, Zambia. ISSS AC 2025. Online Oral Presentation (30th September 2025).

vii) **Sambo J,** Nyambe S, Zgambo J. Yamauchi T Sustainable Research Innovations (SRI) Africa Satellite Event. Nairobi, Kenya. Title: Exploring the role of Policymakers: Decision-making for Menstrual Health and Educational Access for Schoolgirls in Kafue District, Zambia (4th-6th June, 2025).

viii) **Sambo J,** Nyambe S, Zgambo J. Yamauchi T Japanese and African Society Conference (JAAS) Annual Conference, Kyoto-Japan. Title: Menstrual Product

Choices and Disposal Challenges Among Schoolgirls in Peri-Urban Lusaka, Zambia: Barriers and Implications (18th-19th May, 2024).

2024 presentations:

i) **Sambo J,** Nyambe S, Yamauchi T.Water, sanitation and hygiene assessment for menstrual health and hygiene in peri-urban schools of Kafue district in Lusaka, Zambia, Sanitation, 2024-2025, Volume 8, Issue 1, Pages 7-8, Released on J-STAGE November 26, 2024, Online ISSN 27580334, https://doi.org/10.34416/sanitation.00032, https://www.jstage.jst.go.jp/article/sanitation/8/1/8_00032/_article/-char/en.

ii) **Sambo, J**., Nyambe, S. and Yamauchi, T. International Sanitation and Social Science Conference (ISSS) Annual Conference. Title: Challenges of Menstrual Product Preferences and Waste Disposal among Adolescent Schoolgirls in the Peri-urban Areas of Lusaka, Zambia. Online (23rd November 2024).

iii) **Sambo, J**., Nyambe, S. and Yamauchi, T. University of Melbourne and Hokkaido University Joint Workshop. Title: Menstrual Health and Hygiene Practices: Insights from Peri-urban Adolescent Schoolgirls in Lusaka, Zambia. Online (29th October 2024).

iv) **Sambo, J**., Nyambe, S. and Yamauchi, T. Japanese Society of Health and Human Ecology (JSHHE), Tokyo-Japan. Title: Menstrual Health and Hygiene Management (MHHM) practices among adolescent schoolgirls in peri-urban areas of Lusaka, Zambia. In-person Oral Presentation (12th-13th October 2024).

v) **Sambo, J**., Nyambe, S. and Yamauchi, T. Sustainable Research Innovations (SRI), Helsinki, Finland. Title: Harmony in Hygiene: A cross-cultural exploration of menstrual health management in Global, Indigenous (Cameroon) and Cultural (Zambia) Contexts. In-person (10th June 2024).

vi) **Sambo, J**., Nyambe, S. and Yamauchi, T. Japanese and African Society Conference (JAAS) Annual Conference. Title: Navigating Menstrual Hygiene Management (MHM) in Peri-Urban Lusaka, Zambia: Unveiling Perspectives from Adolescent Schoolgirls and Traditional MHM Teachers (18-19th May 2024).

2023 Presentations:

i) **Sambo J,** Nyambe S, Yamauchi T. International Society for Sanitation Studies (ISSS) Annual Conference, Title: Water, Sanitation, and Hygiene Assessment for Menstrual Health and Hygiene in Peri-Urban Schools of Kafue District, Lusaka, Zambia. Online (28th November, 2023).

ii) **Sambo J,** Nyambe S, Yamauchi T. PEER Network Conference. Istanbul, Turkey. An exploratory study on the role of policymakers: Decision-making concerning menstruating schoolgirls' educational access in Kafue District of Lusaka, Zambia. In-person (22nd November 2023).

iii) **Sambo J,** Nyambe S, Yamauchi T. Envisioning Menstrual Hygiene and Sanitation Practices: Experiences of Adolescent Schoolgirls in the Peri-urban Settings of Lusaka, Zambia, Sanitation, 2023, Volume 7, Issue 3, Pages 26, Released on J-STAGE October 18, 2023, OnlineISSN27580334, https://doi.org/10.34416/sanitation.00024, https://www.jstage.jst.go.jp/article/sanitation/7/3/7_00024/_article/-char/en.

iv) **Sambo J,** Nyambe S, Yamauchi T. Zambia Water Forum and exhibitions Conference (ZAWAFE), Lusaka- Zambia. Title: Adopting a holistic approach for Menstrual Health and Hygiene. Possible Opportunities and Challenges for Water, Sanitation, and Hygiene Interventions in Peri-Urban Lusaka, Zambia. Online (12th June 2023).

v) **Sambo J,** Nyambe S, Yamauchi T. Japanese and African Society Conference (JAAS) Annual Conference. Title: The Health Impact of Sanitation. A case study in an Urban Slum Dumpsite in Lusaka, Zambia (15th March 2023).

vi) **Sambo J**, Nyambe S, Yamauchi T. Understanding menstrual hygiene management practices and menarche reactions among adolescent schoolgirls in the peri-urban slums of Lusaka, Zambia. 2022 Mini-Symposium on Indigeneity, Sustainability, and Resilience Research (GSI). 2022 Online session. Oral presentation.

vii) **Sambo J,** Nyambe S, Yamauchi T. Sustainable menstrual product alternatives: Product choice and disposal challenges in peri-urban Lusaka. Zambia Water Forum and Exhibition (ZAWAFE) 2022. Conference theme: Transforming the Investment Outlook for Water Development, Sanitation and Job Creation in Zambia and Africa. Oral presentation.

viii) **Sambo J,** Yamauchi T, Shanks K. Political Economy of Education (PEER Network) Africa Hub. An exploratory study on the cultural and political economy of education: decision-making concerning menstruating girls' education access. 2022 Online Conference. Oral Presentation.

ix) **Sambo J**, Muchindu M, Nyambe S, Yamauchi T, Sustainable Solid Waste Management, Sanitation Value Chain, 2020, Volume 4, Issue 2, Pages 39-50, Released on J-STAGE August 25, 2020, Online ISSN 2432-5066, Print ISSN24325058, https://doi.org/10.34416/svc.00022, https://www.jstage.jst.go.jp/article/svc/4/2/4_00022/_article/-char/en.

Professional Awards

i) Zambian Government University Scholarship (Bursary): 2015-2017 (Bachelor of Arts Degree in Sociology with Gender Studies).
ii) One Year Exchange Program (HUSTEP) At Hokkaido University: 2014-2015.
iii) Japanese Government MEXT 2019 April-2023 March (Master's degree In Comprehensive Health Sciences).
iv) Japanese Government MEXT 2023 April - 2026 March (Doctoral degree program).
v) Audience Award: Tohoku Forum of Creativity, Falling Walls – Lab Sendai Competition, Japan 2021.
vi) PEER Network Grant (Africa Hub). Education in Conflict Review 2021-2013 https://peernetworkgcrf.org/about/peer-network-fellows/.
vii) SRI/SSD2024 Scholarship: One-week conference attendance and presentation University of Helsinki and Aalto University, Helsinki, Finland.

APPENDIX

CHAPTER TWO: INTERVIEW GUIDE:

Research priority: 'understand what people in decision-making positions are doing on MHH.'

Introduction Questions:

1.Clearly state your name, organization, and role.

2.What do menstrual hygiene and health mean to you?

Probes: • What is needed for good menstrual hygiene and health?

3.What is your connection to menstrual hygiene and health policy? Probes:

- What prompted you first to get involved in this way?
- When was this? Who brought you into this work?

Main Questions:

1.The factors that obstruct/block change in school policy.

2. The impact/influence of culture and the political economy on the girls' menstrual practices.

Sub-Questions:

1. What policies are there on menstrual health and hygiene (if any)?

-Policies: Ask about implementation.

-What is being implemented?

-What is working?

-What needs to be fixed? –

-What can be done to improve the implementation?

2. How do the policies impact girls?

3. What stumbling blocks exist with how MHM is viewed culturally?

4. What are the obstacles to making more inclusive policies to ensure girls don't have to leave school/must miss periods/times of education each month?

5. why is there a lack of knowledge on MHM knowledge today generally?

Closing Questions:

1. What is one thing you would like to change about the menstrual hygiene and health policy landscape radically? Why?

2. Are there specific documents, organisations, or people we should reach out to? Why? Is there anything else you would like to add?

CHAPTERS THREE AND FOUR: FOCUS GROUP DISCUSSION GUIDE

Additional Probes

Study Participants - Female pupils aged between 14 and 18 years that have commenced menstruation.

Sample: 48 (8pupils x 6schools)

Objectives:

A. To explore whether MHM practices are related to adolescent girls' school attendance.
B. To understand how adolescent girls are affected by the availability of water supply and sanitary facilities and materials (such as toilets, hand washing devices, sanitary pads, materials and soap) during menstruation.
C. To determine acceptable and feasible strategies promoting healthy MHM practices can be implemented in schools.

Location:

— Rufunsa District
— Mumbwa District

Date: _____

Moderator:_____

Note Taker:_____

School Name:_____

Time Start: _____

Time End: _____

SELF-INTRODUCTION

My name is _____ I am from CIDRZ along with my colleague here who will introduce herself. We are working together with the Ministry of Education. We would also like to know you, please introduce yourselves. Using a different name. You can pick a paper from tis box and the name written on the paper is what you will be referred to as.

OPENING STATEMENT

Welcome to this group discussion. We know as adolescents there are a number of things we go through including changes with our bodies. We would like to learn about these experiences so we can work together to support you as you go through these experiences. Your experiences and thoughts will go a long way in our efforts to support you. We will use a voice recorder to make sure we capture everything you say. Anything you say will be kept confidential your identity will not be revealed. The discussion will take a maximum of 1.5 hours.

SECTION A – ICE BREAKER

- Start by singing a famous song known to all the pupils.
- Tell us what you would like to work as when you grow up and give a reason for your answer

Opening Questions *In these first few questions, we will talk about school and what you learn at school.*	
Questions	**Probes**
1. What do you like about school? *[Friends, teachers, subjects*]	a. What are some reasons students do not go to school sometimes? o Anyone who discourages you from attending school? Why? Who? b. Who encourages pupils to always attend school?
2. What are girls first taught about menstruation?	a. At what age are girls usually taught about menstruation? *[Probe: before or after they start menstruation]* b. Who is responsible for teaching young girls about menstruation? c. What health education do students receive here at school? o What grade is it taught? o Who is responsible for teaching this topic? o What topics are discussed? o Are boys and girls taught together?
3. What is challenging about menstruating?	a. What cultural practices do girls observe when on their menstruation?

	b. How are girls expected to behave once they have started menstruating? How is their behaviour different from before? c. How do girls manage menstrual pain: when at school? At home? d. Do girls miss school because of menstruation? Why or why not?

KEY ACTIVITY – Scenario: Menstruation During a School Term	
Aim: *this exercise is designed to understand what young girls go through while menstruating on a school day. The facilitator will read out a scenario that will be supported by a story board to help the girls understand.* ***Scenario****: We are going to start talking about a gril's experience of menstruation. Imagine a girl in your school name Jelita. Jelita is 15 years old. This morning, she wakes up in the morning and she realizes that she has started her periods. She goes to bath and gets ready for school. She goes to school and sits in class. Jelita asks her teacher to go the toilet at around 10:00am, she goes to check herself and change. In the afternoon, Jelita is playing outside. Her friend Mainza then sees a red spot on her dress.* **What's Needed**: Story board depicting the scenario.	
Scenes	**Questions and Probes**
Scene 1: Jelita wakes up	1. Please describe what you see in this picture. a. What is happening?
	2. How does Jelita feel when she realizes she has started her period when she wakes up? [*Happy, excited, confusion*] a. What do you think is the first thing she will do when she realizes she has started her period? b. Do you think she will tell anyone? If yes, who? • Will her father know that the she is on her period? • What about her brother? c. Now that Jelita is on her period, how does she feel about going to school? d. If Jelita's mother or guardian know that she is on her period, will they allow Jelita to go to school? Why or why not?

Scene 2: Jelita prepares herself for school	3. Think about the way Jelita gets ready for school everyday. Does she get ready ant different now that she is on her period? a. Is it important that she bathe? b. Where does she take her bath from while she is on her period? c. Do other people also take baths in the same place where she takes a bath? Why or why not?
	4. What material does Jelita use? a. Why is she using this material? Who do you think taught her to use this material? b. How comfortable is the material Jelita is using? Would Jelita prefer to use another material? If so, what material and why?
	5. **Scene 3:** Jelita is at school Once Jelita is in the classroom: a. How is her concentration? Participation? b. b. Who at school do you think she told that she is on her period? Boys? c. How is her behaviour towards her male friends? Her Her teacher?
Scene 4: Jelita goes to use the latrine at school	6. Please describe what you see in this picture. a. What is happening?
	7. If Jelita wants to go and check on herself: a. Are there any rules around leaving the classroom during class? What rules? b. Is her teacher (probe: male and female) supposed to know why she is going to the toilet? Why? c. Do you think her teacher is ok with her leaving the room? d. How possible is it for Jelita to change her material at school? What are the challenges?
Scenario 5: Jelita is playing outside and has a red spot on her dress by her bum.	8. Please describe what you see in this picture. a. How does Jelita feel when her friend tells her that she has a spot on her back? (Scared, embarrassed, shy, afraid)

Her female friend noticed the spot and has told her.	b. What is the first thing Jelita will do when she finds out she has a red spot on her back? *c.* What will she do to manage the spot on her dress? *[Is she thinking of leaving school?]* *I.* Where will she go? *II.* Who will she talk to?
	8. If boys see the red spot on her dress, a. How do you think the boys will react? Why will they react this way? b. If other girls see the red spot on her dress, how do you think they will react? 9. What will her mothers/grandmother do if they know that Jelita has messed up her uniform?

Understanding Facilities at School *Great, let's continue. These next couple questions ask about the facilities available at this school.*	
Questions	**Probes**
1. Please describe the usual condition of the latrines/facilities at this school? Cleanliness? Smell? Privacy (locked/unlocked)? Safety?	a. How many latrines are there? How many of them can you use? b. Are there separate latrines for boys and girls? c. What materials are available for personal hygiene? [*Soap/water/materials/tissue/handwashing stations*] d. Where are the latrines located from your class? e. Does everyone use the latrine? Where else do others go? f. How comfortable do you feel using these latrines?
2. How do girls utilize the toilet when they are menstruating?	a. Are you able to clean yourselves with the current toilet structure? b. Do girls feel safe when they use the latrine? Why or why not? c. Do girls visit the latrine with a friend? d. What things do you feel should be in the toilet to help manage menstruation?

KEY ACTIVITY – MENSTRUAL MANAGEMENT MATERIAL ACTIVITY	
Activity Summary: This activity involves showing girls a variety of materials for managing menstruation. The products selected should be include items that are typically used (like cloth or cotton wool) as well as products that may be hard to get (disposable sanitary napkins) or that may not be in use but are of interest (lie reusable sewn sanitary napkins). They should be able to touch them and look at them closely. Girls will then be asked a series of questions about the items they are shown. **Activity Goal:** The goal of this activity is to understand what girls think about a variety of materials so that any recommendations for materials are well informed. **Activity Strengths:** By presenting many materials together, you can have the girls compare and contrast the items. It also eliminates bias as not just one material (like commercial pads) is being queried.	
Key Questions	**Probes/Follow-ups**
1. Now I'd like to show you a few materials. *Show the girls several materials: commercial sanitary napkin, reusable sanitary napkin, cloth, toilet paper, cotton, pants, whatever else girls in your community may use, etc.* *Ask the probing question regarding each material first and then move on to the next material.*	**FOR ALL MATERIALS:** a. Can someone explain to me what this is? How is it used? b. Is this material available in your community? c. How effective is this material for managing menstruation? d. What do you think of using this material in school? e. What do you think of changing this material in school? f. How do girls know when to change this material? How often are they supposed to change do you change this material? g. How expensive are these materials? h. Where do they purchase the material? i. Who purchases them? **FOR REUSABLE MATERIAL (CHITENGE):** j. When is this material supposed to be cleaned? How is this material cleaned? With water? With soap? k. How is this material dried? Where is it dried? l. Where is the material stored? m. Is the material ever thrown away?

Closing Questions *Great, now we're almost done. Before we finish, I want to get recommendations from you on how to improve your ability to manage your period at school. We will share your recommendations with the Ministry of Education.*	
Questions	**Probes**
4. What information would you like the school to provide on menstruation?	a. Is there any information you would like to be taught on menstruation in your school? • Who, at school, is the best to teach this? b. Should boys learn about menstruation? • What would you like them know? c. When should boys learn about menstruation? Who should teach them?
Do you have any questions?	
Thank you so much for your time! You have provided us with real valuable information. This information is useful for the ministry when they make decisions.	
	FOR DISPOSABLE PADS/TAMPONS/COTTON WOOL: n. Where are these pads normally disposed? Why? o. How expensive is the material?
2. How many different materials do girl use at certain times of your period?	a. What affects girls' choice of material? b. Do girls use different materials at home? c. Do you use different materials at different times during your menses? Why?
3. How do girls access these materials at school?	a. What materials are available at school? b. Where at school do you find the material? c. How many materials can a girl get at one time? d. Can you get these materials at any time? What time?

CHAPTER FOUR: QUESTIONNAIRE SHEET (FOR ADOLESCENT GIRLS)

【Demographic information】

1. Name:
2. Age
3. DOB
4. Grade:
5. School:
6. Religion:

a) Christianity b) Islam c) Hindu d) Buddhist e) Other:

【Menarche-related questions】

1. Have you experienced your menarche? □Yes □No

If yes, at which age? Years old

2. What did you think when you experienced your menarche? (Please select the one that best applies)

a) Scared b) Indifferent c) Discomfort d) Disgusted e) Guilty

f) Delighted g) Surprised h) Normal phenomena i) Disease j) Other:

3.Who or what did you receive information from about menarche before experiencing menarche?

a) Friends b) Mother c) School teacher d) Father e) Relatives

f) Siblings g) Health service provider h) Religious leader i) Magazine/internet

j) No information k) Other:

【Menstrual-related questions】

1. How often do you get menstrual period?

a) Less than 13 days b) 14-20 days c) 21-28 days d) 29-35 days

e) More than 36 days f) Irregular g) Other;

2. How many days is menstruation?

a) 2-3 days b) 4-5 days c) 6-7 days d) More than 8 days

3. Do you use pain killers when you feel pain during menstrual period? □Yes □No

If yes, how often? a) Frequently b) Sometimes c) Rarely d) Other:

4. Who do you discuss menstruation with?

a) Friends b) Mother c) School teacher d) Father e) Relatives

f) Siblings g) Health service provider h) Religious leader i) No one j) Other:

【Socio-economic related questions】

1. Whose income do you use in the home?

a) Mother b) Father c) Guardian d) Other

2. What is your family's income per month?

a) Below k1000 b) k1000-5000 c) k5000 and above d) Other

3. How much money do you usually have each month for personal use?

a) K50-100 b) K100-200 c) K200-500 d) K500 or more e) other;

【Socio-cultural related questions】

1. Is there any cultural belief/taboo that you know on menstruation? Please explain;

2. Is the any cultural belief or teaching you do not like on menstruation? Please explain;

【menstrual practices related questions】

1. What products do you use during menstruation?

a) Disposal pads b) Washable pads c) Pieces of clothes d) Cotton wool e) Others;

2. How often do you change your menstrual materials?

a) Once b) Twice c) Thrice d) Other

3. Do you always wash your hands with water and soap after changing? □Yes □No

If yes, how often? a) Frequently b) Sometimes c) Rarely d) Other:

4. What is the frequency of bathing with soap during menstruation? a) Once b) Twice c) Thrice

5. Where do you throw your used menstrual products?

a) Flush in a toilet b) Refuse bin c) Pit latrine d) Bury e) Burn f) Other

【School absenteeism related questions】

1. Are you absent from school during your menstrual period? □Yes □No

i) If yes, how often? a) Every period b) Sometimes c) Rarely d) Other:

ii) If yes, please state the reason. (Multiple answers allowed)

a) Pain/discomfort b) excessive bleeding c) lack of disposal system d) fear of leakage e) lack of running water/soap f) no privacy at school g) no separate toilets h) Other:

2. Do you limit your activities during your menstrual period? □Yes □No

i) If yes, what activities are those?

3. Is there any challenge you experience at school or any changes you want to see to help you have your menstruation in a more healthy and dignified matter? □Yes □No

i) If yes, please explain.

PARTICIPANT INFORMATION SHEET SPECIFIC RESEARCH CONTENT

1. Research Title: An intervention study on Menstrual Health and Hygiene (MHH) among Adolescent Schoolgirls in Kafue: A pilot Study'
2. Purpose of the research: To pilot an intervention study on menstrual education and access to materials among schoolgirls.
3. Methods: The study will be conducted with menstruating adolescent schoolgirls as participants from schools in Kafue District, in Lusaka, Zambia.

   Data collection will include: i) One questionnaire on socio-demographic information Knowledge, Attitudes and Practices (KAP)s and ii) Focus Group Discussions on MHM among teachers, boys, and other key persons.
4. Participation: Participation is entirely voluntary. Refusal to take part will involve no penalty. If you decide to participate, you are to withdraw at any time without giving a reason for your withdrawal. You may choose not to answer questions infer not to discuss; please feel; please say so. If you have any questions or concerns about participating in the study, please feel free to ask.
5. Research plan: You are free to see the contents of the research plan at any time.
6. Benefits to participants: Research findings will be shared with school management to help improve school sanitary standards.
7. Confidentiality: The information collected will be kept strictly confidential. The names, date of birth, affiliation and other sensitive information will be deleted from survey forms and other pertinent documents and replaced by a coded number. The correspondence table that connects you with this number will be kept strictly by the researchers. Furthermore, your information will not be used for anything other than research. The data will be discarded at the end of the entire research period.
8. Results: Research results will be made available to you at your request.
9. Publication of results: Research results will be presented at academic conferences, journals, and other research-related events.

Corresponding Address (In case of questions and concerned

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PARTICIPANTS' CONSENT FORM

Principle Investigator, Professor Taro Yamauchi

Faculty of Health Sciences, Hokkaido University

I have read (or explained) the information about the research titled, 'An intervention on Menstrual Health and Hygiene among Adolescent Schoolgirls in Kafue: A pilot Study' contained in the Participant Information Sheet. I have had the opportunity to ask questions about it, and any questions I have asked to have been answered to my satisfaction.

I now consent voluntarily to be a participant in this research and understand that I have the right to end my participation at any time to choose not to answer questions that are asked in the study.

My signature below says that I am willing to participate in this research:

Parents' name (Printed): .....

Parents' signature: ..... Consent Date: .....

Child's name (Printed): .....

Child's signature: ..... Assent Date: .....

Principal Investigator: Professor Taro Yamauchi

Other Investigators: Joy Sambo

北海道大学

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Dear Sir/Madam,

RE: <u>Letter of Introduction - Ms Joy Sambo.</u>

I am writing to request your assistance of the above-named student of Hokkaido University, Japan. Ms Sambo (NRC Number 195892/18/1) is a research student in the Graduate School of Health Sciences. As part of her study programme, she must conduct a research project.

She would like to conduct a survey of school and town leaders/officials focusing on Menstrual Health and Hygiene (MHH) and Water, Sanitation and Hygiene (WASH) in the peri-urban areas of Kafue District. In this survey, she will be collecting data from schools andkey contact persons in selected areas in order to understand the current status of MHH.

We hope that your institution will see the value of this project and in turn, give Ms. Sambo every assistance possible in bringing the project to a successful outcome.

Yours sincerely,

Taro YAMAUCHI, Ph.D.
Professor of Human Ecology,
Faculty of Health Sciences,
Hokkaido University