Addressing the Menstrual Health and Hygiene Needs of girls and young women in Zimbabwe

Tariro Mantsebo

Zimbabwe

57th Master of Public Health/International Course in Health Development (MPH/ICHD)

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KIT (Royal Tropical Institute)
Vrije Universiteit Amsterdam (VU)

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A thesis submitted in partial fulfilment of the requirement for the degree of Master of Science in Public Health

by
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Zimbabwe

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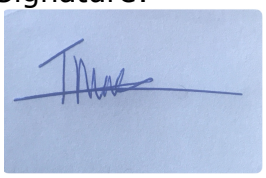

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Dedications

To my parents, Yeukai, Calvin and David, thank you for being my foundation, my strongest support and reminding me of the great possibilities I can achieve. You have been my pillars of strength.

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List of Abbreviations

CEDAW	Convention on the Elimination of Discrimination against Women
CHE	Current Health Expenditure
CSO	Civil Society Organisations
GDP	Gross Domestic Product
ICPD	International Conference on Population and Development
KFS	Kunashe Foundation Survey
LMICs	Low-and Middle-Income Countries
MHH	Menstrual Health and Hygiene
MHM	Menstrual Hygiene Management
MoHCC	Ministry of Health and Child Care
NGO	Non-Governmental Organisations
PLHIV	People Living with HIV
PMS	Pre-Menstrual Syndrome
SDGs	Sustainable Development Goals
SEI	Stockholm Environment Institute
SSA	Sub-Saharan Africa
SRH	Sexual Reproductive Health
STI	Sexually Transmitted Infections
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation and Hygiene
WHO	World Health Organisation

Glossary Of Terms

Adolescents- are defined as individuals aged 10-19 years (1)**.**

Gender- WHO defines gender as "the characteristics of women, men, girls and boys that are socially constructed. This includes norms, behaviours, and roles associated with being a woman, man, girl or boy, as well as relationships with each other"(2). Behavioural expectations differ upon different societies as it is a social construct.

Menarche- is the start of menstruation when a girl has a first period (3).

Menstruation- is the monthly shedding of the uterus lining that is released as bleeding through the vagina. It is as a natural physiological process (3). It is also referred to as menses or period.

Menstrual Etiquette -refers to the encouragement of discreet menstrual bleeding and discomfort, which is to be kept hidden from men and boys (4).

Menstrual Health- is defined as a "state of complete physical, mental, social well-being and not merely the absence of disease or infirmity, in relation to the menstrual cycle."(5)

Menstrual Hygiene Management (MHM)-The WHO/UNICEF JMP defined adequate menstrual health management (MHM) as "women and adolescent girls using a clean menstrual management material to absorb or collect blood that can be changed in privacy as often as necessary for the duration of the menstruation period, using soap and water for washing the body as required, and having access to facilities to dispose of used menstrual management materials" (6).

Menstrual Health and Hygiene- is defined by UNICEF as "both MHM and broader systemic factors that link menstruation with health, wellbeing, gender equality, education, equity, empowerment and rights" (3).

Period poverty- is defined as the "prevalent phenomena of being unable to afford products such as pads, tampons, or liners to manage menstrual bleeding"(7). The term also speaks to the financial strain girls and women face when existing in economically vulnerable environments (8). It considers lack of access to toilets, handwashing facilities, hygiene waste management (7) and analgesics and underwear (8). Period poverty is an issue that spans over economic, social and political factors (8).

Pink Tax- is gender-based pricing that taxes products such as period products as "luxury items" (9).

Abstract

Background: Poor menstrual health and hygiene (MHH) is a significant public health problem in Zimbabwe that affects many girls and women. This is the consequence of socio-cultural, psychosocial and environmental factors that impact on their experiences and influencing their needs. The aim of this thesis is to explore factors affecting menstrual health and hygiene experiences and needs of girls and young women in Zimbabwe, and analyse interventions in order to make suitable recommendations to improve MHH.

Methodology: A literature review was conducted including peer-reviewed articles and grey literature. Sources of information include VU Library, PubMed and other search engines. To guide the analysis, the analytical framework proposed by Hennegan et al., was used and further adapted to include attention to health system factors and the gendered context (10).

Results: Findings indicate negative experiences amongst girls and women influenced by social stigma, period poverty and a lack of water, hygiene and sanitation (WASH) facilities. Socio-cultural factors interlink with resource-related factors as determinants of physical and economic environment inadequacies. Menstrual stigma and shame are manifestations of deep-rooted gender bias. MHH interventions addressing social and resource needs are applicable in Zimbabwe if contextualised.

Discussion: Menstrual stigma and gender inequity are key factors affecting the MHH challenges faced by girls and women. These affect not only MHH needs, but also limit the resources and the favourable environment needed for appropriate menstrual health management. Thus, multi-level approaches need to be considered to intervene on improving knowledge, practices, infrastructure and resources.

Key Words : menstruation, menstrual health, adolescent girls, young women, Zimbabwe

[Word Count 13,102]

Introduction

I would like to start by sharing about myself. My name is Tariro and I am young Zimbabwean, born and raised. My background is in medicine and I spent the last few years practising in a rural community the North West province of South Africa. My interest in sexual reproductive health and rights developed over recent years as I began doing health writing on women's health and wellbeing. I am an advocate for gender equity and sexual reproductive health, especially menstrual health. My public health journey is in early stages but I eagerly anticipate to engage and expand in my knowledge and experience.

Menstruation is a natural biological process that 1.8 billion people experience throughout their lifetime (3). It is estimated that on average, there are 800 million girls and women between the ages of 15-49 years menstruating every day. For millions of women and girls around the world, there are challenges that prevent them from managing their menses in a dignified manner (3). Period poverty is one issue that cuts across many developing countries such as Zimbabwe. It impacts women and girls on various levels of health, education, economics and social outcomes. UNESCO estimated that 1 in 10 girls in Sub-Sahara Africa misses school during their menstruation (11).

This thesis was inspired by a desire to understand the impact of period poverty in Zimbabwe and understand the menstrual health landscape. As an adolescent girl growing up in Zimbabwe menstruation was a difficult experience that used to embarrass me to talk about even with my peers. I feared soiling myself in public and learnt to silently manage my menstruation. Over the years I have had the opportunity learn more about menstruation and to accept it as a normal bodily function.
Though, this may be my experience there are many Zimbabwean girls and women who continue to feel shame and lack in the necessary materials and facilities to adequately manage their menses.

1:Background

1.1 Geography and Demography

Figure 1: Map of Zimbabwe (12)

Zimbabwe is a landlocked Southern African country, bordered by Botswana, Mozambique, South Africa and Zambia, illustrated in Figure 1 (13). The country lies at an altitude of 1,000 feet above sea level. It was formerly known as Rhodesia during a period of British colonial rule and a 15 year white minority control (13). It gained independence in April 1980, with the majority black population coming into power. The capital city of Zimbabwe is Harare, which is a political, economic and cultural hub with a population of 1.6 million in the city (14). The country is divided into ten administrative provinces, and 63 districts (15). The total population of the country was 15 million in 2019 (*see population pyramid in Figure 1)* (16). Zimbabwe has a relatively young population with nearly 60% of the population being below the age of 24 years and the median age being 20.5 years (17). Life expectancy is pegged at 61.49 years (18). There is a total fertility rate of 3.60 births per woman and an infant mortality rate of 38 per 1000 live births (19,20). About a one-third of the total population resides in urban areas i.e. Harare and Bulawayo (13), with 68% residing in rural areas (20). There is an annual population growth rate of 1.5%. The country ranks 150 out of 189 on the human development index (21). The gender inequality index was 0.527 in 2019.

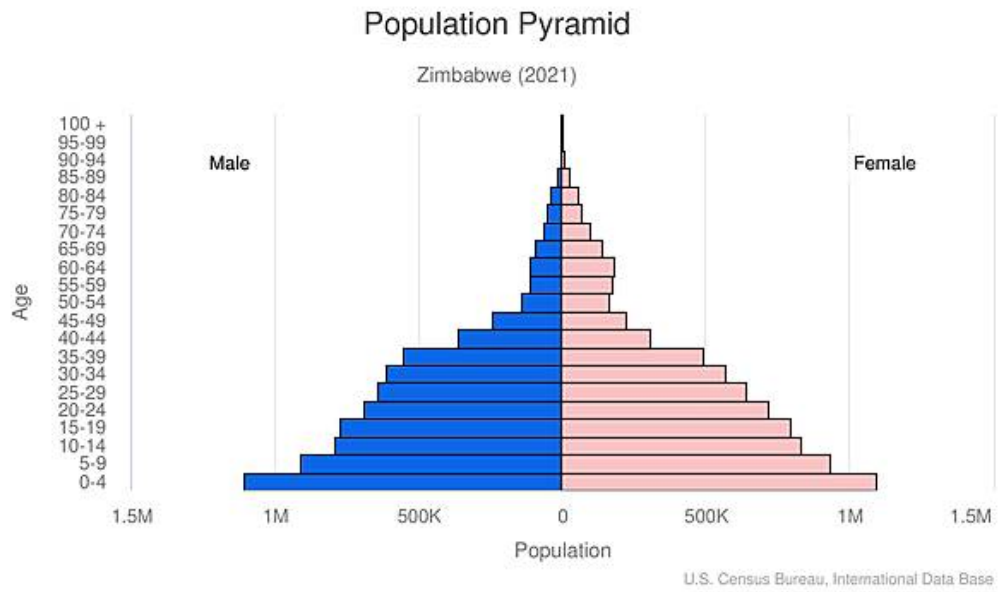

Figure 2: Population Pyramid of Zimbabwe(17)

1.2 Culture, Religion, Ethnicity

Zimbabwe has 16 official languages, and Shona is the most widely spoken with over two-thirds of the population citing it as their first language (13,17). This is followed by the Ndebele language which is predominantly spoken in Matabeleland provinces. There are various African ethnic groups in the country, such as the Shona, Ndebele, Kalanga, Tonga, representing 99.4% of the population(13). Less than 1% of population is made up of other ethnic minorities(13), which include the White, Indian (Asian) and Coloured communities. More than 80% of Zimbabweans identify as Christians with almost half of them being Apostolic (13).

1.3 Economy

Zimbabwe is categorized as a low income country under the World Bank definition(18). The economy heavily relies on the mining and agriculture sectors (17). However, low mineral process, poor infrastructure and regulation, a poor investment climate and massive public and external debt burden has hindered Zimbabwe's economic functioning. COVID-19 halted economic recovery leaving the gross domestic product (GDP) rate at -8% in 2020. The pandemic also brought operational restrictions on multiple industries. Several years of drought have increased demand for imports of maize and electricity. Zimbabwe continues to experience inflation at a rate of 322% in February 2021. The pandemic disrupted many livelihoods, particularly in urban areas where jobs and wages were lost, driving 1.3 million people into extreme poverty. The number of the extreme poor was 7.9 million in 2020, representing almost 49% of the population. Youth unemployment is at 27.5% and the female youth have 31.4% unemployment rate (17).

1.4 Education

The total population has 86.5% literacy rate and female literacy stands at 84.6% (22). Primary school completion for girls is at 91.6% and secondary school completion at 54.5% (male rate at 53.65%) (23). Gender parity index (adjusted net attendance) is at 1.02 for primary school and 1.19 for secondary schools, indicating the ratio of girls to boys attending school (23). .

1.4 Physical Environment

The country has faced deteriorating water, sanitation and hygiene (WASH) conditions since 2004, compounded by the cholera epidemic of 2008-09 and 2018 (24). The CARE International Report for Gender Analysis outlined that access to WASH services remains low in both urban and areas, with challenges being attributed to absence of fiscal investment in the sector and collapse of service delivery due to long-existing economic crisis (25). Households with WASH conditions that met Sustainable Development Goals (SDG) criteria were surveyed at 19.3% in 2019 (23).

1.5 Health Systems

Zimbabwe faces double burden of communicable and noncommunicable diseases. HIV prevalence remains high with 11.9% of adult prevalence rate, with girls and women being disproportionately affected compared to men (26,27). Mortality due to tuberculosis being a co-infection heavily associated with HIV/Aids (15). Malaria is a major cause of morbidity and mortality, paediatric nutritional status is poor and outbreaks of rabies and anthrax are not uncommon.

Zimbabwe has structured its health system in accordance with a primary health care approach. There are health services delivery systems which include primary, secondary, tertiary and quaternary facilities (15). Mission and private sector facilities provide services in both rural and urban areas (15). Currently Zimbabwe has a universal health coverage index of 54.5, indicating the effective essential services provided for in the country (28). These challenges are compounded by the health system restraints from critical health workforce, aging infrastructure and equipment, inadequate supply of medicines and other commodities, and limited health funding.

In 2018, current health expenditure (CHE) was at 4.7% of GDP (17) of which 80% goes to salaries and curative services (15). This is much below the 15% GDP allocation to the health sector expected by The Abuja Declaration 2001, of which Zimbabwe pledged to (29). Out-of-pocket expenditure made up 24.36% of CHE in 2018 (20). The health sector is underfunded and largely relies on external funding for service delivery (over 40% Overseas Development Assistance).There have been supply challenge in human capital in the health system with the doctor's strikes, reduced nurse working hours and insufficient resources, contributing to a decline in the coverage and quality of essential health services (18).

2: Problem Statement

In Zimbabwe, menstrual health and hygiene (MHH) needs are often overlooked. There are more than 3 million women and girls that menstruate (30) in Zimbabwe. The majority face difficulties regarding access to adequate menstrual materials to ensure dignity and health to the menstrual process they experience. A study done in 2014 reported Zimbabwean girls using old cloths, rags, cotton wool, newspapers or leaves for menstrual protection (31).The predominant cause to inadequate menstrual supplies is unaffordability and poor financial means (30).

Stigma and shame is key factor when it comes to challenges surround MHH. Menstruation is a topic that is considered taboo in Zimbabwe. This is a significant barrier to MHH-related issues. The attitudes and perceptions around menstruation cause restrictions and unsanitary practices that affect the health of girls and women, especially those located in rural communities (32).
Another challenge affecting menstrual hygiene is lack of adequate WASH facilities within schools and work environments (30). Access to sufficient sanitation facilities is still needed by 35% of the rural Zimbabwean population (33). There are challenges in waste disposal of soiled sanitary materials with many toilets lacking sanitary bins, leaving women to dispose of them by throwing them down latrines, on the floor or flushing them down the toilet (30).

Unmet MHH needs leads to various consequences that affect life on multiple dimensions. Challenges in MHH affect school and work attendance for many girls and women. It has been found that discomfort from period pain and use of improper menstrual materials leads to increased anxiety and low confidence (34). It also causes absenteeism from school, work, and activities of social and economic significance. Poor menstrual hygiene practices i.e. using leaves, rags or old cloths can increase susceptibility to reproductive tract infections such as bacterial vaginosis (35). Moreover, shame and insensitivity surrounding the topic affects the psychological and emotional wellbeing of girls and women (32). A survey study revealed that 54% of girls have been stigmatised and bullied for their menstruation (31). Stigma around MHH violates girls' rights to "human dignity, non-discrimination, body integrity, health, privacy and the right to freedom from inhumane and degrading treatment"(32). Period poverty not only impacts health outcomes but is also suggested to increase risk of early marriage, with parents passing on the expenditure of MHH products, and transactional sex (36) . This will be further explored in the results.

The Zimbabwean government removed duty tax and VAT upon raw material used to produce sanitary wear. This waiver was for the period 1 December 2018 to 30 November 2019(9,37). It did not include underwear, sanitary soap or menstrual cups (37). It was meant as a measure to provide a recovery period for the local sanitary product manufacturers, which was functioning at only 15% capacity due to economic hardships (9). It was reported that since July 2019, menstrual product costs escalated by 800%, because of hyperinflation, leaving girls and women unable to afford the materials (9). In efforts to ease the burden of period poverty, government initiated a program of free sanitary wear in rural schools but this has been met with challenges of inconsistency and incorrect product distribution (38). The Zimbabwe Education Act 1976 was amended in 2006 to make provision for WASH in schools, however there was little mention of MHH (31).Currently Zimbabwe has no MHH policy and the existing Health Policy does not cover matters of MHH.

2.1: Justification

There is a close link in addressing MHH needs and the United Nations' SDG 2030 (39). Tackling MHH related-challenges works towards improving health and wellbeing of girls and women (SDG 3) particularly, reproductive health. Menstrual health is also linked to SDG 4 (quality of education), SDG 5 (gender equality and participation), SDG 6 (clean water and sanitation), SDG 8 (decent work and economic growth and lastly SDG 12 (responsible consumption and production) (40).

Menstrual health is a public health issue that is closely connected with several human rights (41). A human rights-based outlook considers that MHH needs to be understood and addressed from awareness of the women and girls' lived experiences in context of marginalisation, discrimination and inequalities (42). It also calls for access to menstrual hygiene products be considered realising the influence of menstrual stigma and, to focus on underlying structural causes of MMH unmet needs (42). Furthermore, Zimbabwe has commitments to regional and international agreements such as ICPD 1994, CEDAW to improve adolescent reproductive health outcomes (43,44).

There are limited peer reviewed journal articles regarding menstrual health and hygiene in Zimbabwe. What has been done are pilot studies researching MHH interventions amongst young people and qualitative studies with a focus on the experience of adolescent girls in- and out-of-schools, rural girls and urban women. Currently there is a lack of research data on MHH that is comparable across settings and different points in the life course (41). There is a unique opportunity in providing a new insight to the intersect of these various experiences through inclusion of literature from Zimbabwe as well as similar contexts, as it relates to MHH needs in Zimbabwe. This paper should serve to be provide policymakers and programs in measures to better improve MHH for girls and women in Zimbabwe

2.2: General Objective

To explore the factors affecting menstrual health and hygiene experiences and needs of girls and young women in Zimbabwe, and to analyse how interventions might address their needs, in order to make recommendations to improve menstrual health and hygiene for Zimbabwean girls and young women.

2.3: Specific Objectives

1. To identify the current menstrual health and hygiene experiences and needs of girls and young women in Zimbabwe and similar contexts.
2. To explore socio-cultural and resource-related factors influencing menstrual health and hygiene for girls and young women in Zimbabwe and similar contexts.
3. To analyse evidence-based interventions to address menstrual health and hygiene needs, applicable for girls and young women in Zimbabwe and similar contexts.
4. To make recommendations to inform policies, strategies and programs of approaches to address the unmet menstrual health and hygiene needs of Zimbabwean girls and young women.

2.4: Methodology

Research Design and Approach

This thesis was done as a literature review paper. It was a descriptive study of current menstrual health and hygiene needs, barriers, and applicable interventions for Zimbabwean girls and women. It made use of peer-reviewed journal articles and grey literature. Analysis was done using a conceptual framework of women and girl's experience of menstruation in LMIC developed by Hennegan et al. (10), which will be further explained in this section.

Search Strategy

Search engines such as VU Library, PubMed, Google Scholar, Semantic Scholar and NCBI were used to source peer-reviewed journal articles and additional resources . Grey literature was sourced from such as WHO, UNFPA, UNICEF, PLAN International and Guttmacher Institute. Additional articles were located from websites, reports (published and unpublished), surveys by non-governmental organisations (NGOs) and statistical information provided by Zimbabwe Statistics (ZIMSTATS) and Ministry of Health and Child Care Zimbabwe (MoHCC). Where relevant, anecdotal news/website articles were utilised. Snowballing was utilised to obtain further literature.

Inclusion criteria for this thesis was done on basis of relevance to the study topic. The search delimiters include using literature published in the last 15 years. This range was selected as there was limited peer reviewed literature on menstrual health as a subject. Additional criteria was selection of English language papers and content. Studies that were centred in Sub-Sahara Africa (SSA) countries and low-income countries of similar context to Zimbabwe were considered for the problem statement and results chapters. The interventions chapter includes literature from LMICs, with preference to those from African countries, which may be applicable to the Zimbabwean context. Global perspectives were included to give an encompassed outlook where needed. The literature review includes studies of various methods i.e. qualitative, quantitative and mixed methods. Major Key words included ' menstrual health' OR 'menstrual hygiene'; 'experiences' OR 'needs' Or 'intervention' ; 'menstrual products' OR 'period poverty' and ' adolescent girls' OR women. See full search strategy in Annex.

Limitations of Study

Some limitations regarding the study include the literature search being restricted to publications in English. There was limited information on the experience of young women and adolescents out of school, as menstrual health studies tend to focus on adolescents within school systems. There was not much evidence found on the experiences of girls and women in marginalised communities such as people with disabilities, women in prisons, LGBTQ or for people living with HIV. In summary, there was a lack of research focused primarily on women of various life courses in the context of Zimbabwean or SSA.

Conceptual Framework

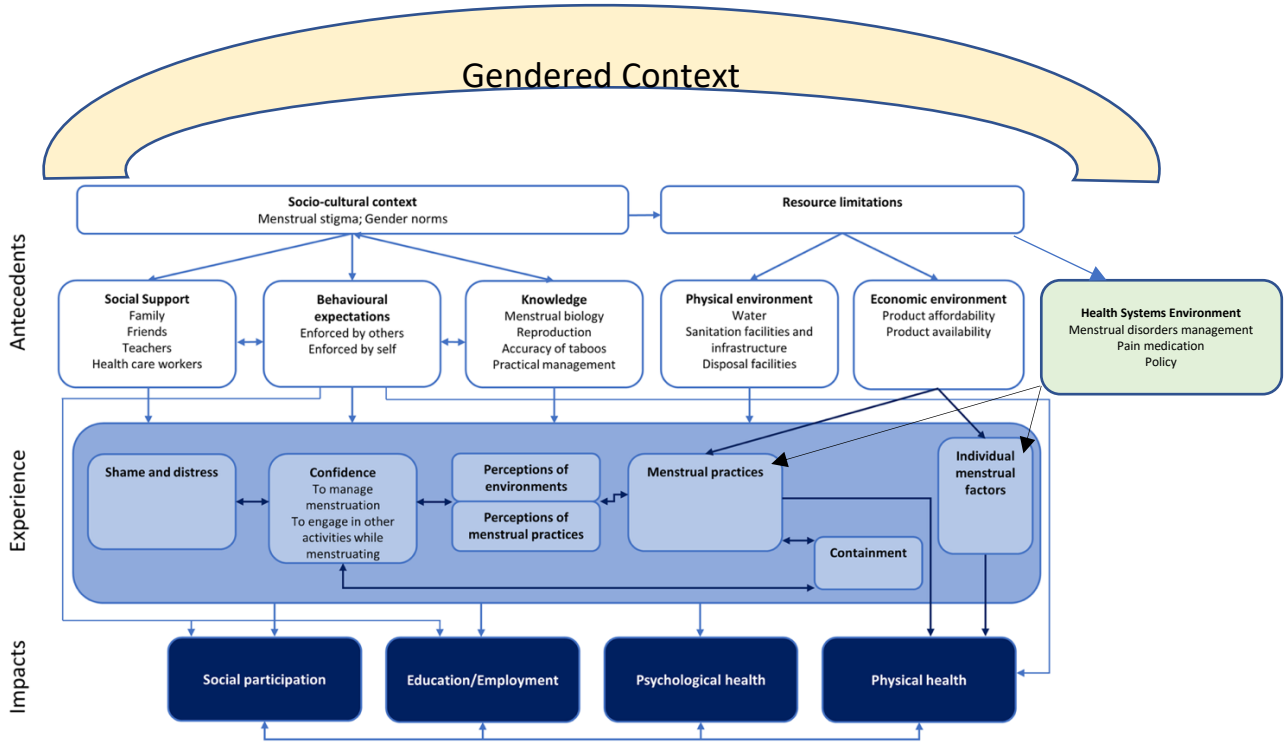

Figure 3: Integrated Model of Menstrual Experiences (10)

Description of Framework

The conceptual framework in use of this paper was developed by Hennegan et al., focusing on the menstrual experiences of women and girls in LMICs by doing a systematic review and qualitative metasynthesis. The framework encompasses a broad overview of MHH needs as it acknowledges sociocultural context and resources limitations, which were often the main themes of focus in the studies reviewed. It examines the results and interlinkages of factors that influence menstrual experiences, and also takes into account, the resultant impact of these experiences on health, social and economic life of girls and women. This framework was selected as it relates with the study objectives to identify the experiences or needs of girls and women, and antecedent factors. The structural set-up clearly articulates how interwoven and connected the antecedents, experiences and impacts are.

Adaptations

1. To better align with the study objectives, this framework was adapted to include a health systems environment. This predecessor factor falls under the distal antecedent of resource limitations. It identifies the role of the health system in the experience of girls and women. It addresses medical management of menstruation disorders, availability and accessibility of menstrual products such as analgesia and, health policy in regards to MHH. In addition, there is consideration of the sociocultural context upon health systems as a resource limitation, as health worker attitudes, access to services or prioritisation of menstrual health public health policy, is influenced by societal and cultural norms.

2. *The Gendered Context* -Though gender has been considered under the social-cultural context as "gender norms", gender should be acknowledged as a power dynamic that is socially, politically and economically encompassing of a much broader over-arching role. It is a cross-cutting theme that appears as a common thread through the distal and proximal antecedents, experiences and impact of menstruation on girls and women.

   Under MHH, gender intersects with sex which refers to "the different biological and physiological characteristics of females, males and intersex persons" (2). Girls and women who menstruate experience a biological process, yet their gender also influences their experiences and/or access to healthcare. Menstruation is a gendered experience, often negatively influenced by gender bias and gender inequality, through the perpetuation of patriarchal beliefs and standards (45). Menstrual taboos are based in and are reinforced by gender inequality (46). Though menstrual health is perceived as women's issue, there are non-gender conforming persons and trans people that often face discrimination in access of materials an facilities they need (3).

Components of Framework

Sociocultural context makes reference to menstrual stigma and gender norms which are derived from cultural and social beliefs. They heavily influence the menstrual experience as a distal antecedent. Menstrual stigma is based on menstruation being viewed as "dirty", a social taboo and perpetuated by silence which make it difficult for girls and women to access information, or support. Internalised stigma exists as a negative beliefs that work as shame and fear that makes girls and women keep their menstruation hidden. Gender norms are often restrictive and dictate upon behavioural expectations, by influencing the access and availability of knowledge, support and resources.

Resource limitations are created by economic and physical environment that impeded on women's options for menstrual practices and thus form their menstrual experience. The socio-cultural context impacts on resources limitations.

Antecedents

Social support in this framework is considered multiple layers of social network from close family, friends, teachers and health workers. The experience based on support or lack of guides internal perceptions and practices surrounding menstruation. In the framework adaptation, peers have been included as they represent an unmentioned network of interaction that can either provide or lack support.

Behavioural expectations speaks to both internal and external based expectations that show up through self-regulated body control and religious or cultural restrictions, respectively.

Knowledge access and understanding is an important predecessor to the menstrual experience as it plays a role in every phase of the menstrual life course. Knowledge deficits are often a source of confusion in body literacy, menstrual practices and can bring amount feelings of shame, distress and low cow confidence.

Physical environment in this framework is considered in the context of water, sanitation facilities and disposal facilities and how these shape the menstrual experience when inaccessible or limited either in homes, schools, work or public spaces. It is also considered as an integral part to needs, expectations and behaviours that influence the menstrual experience.

The **economic environment** is a key predecessor component to the considering the context on which the framework is based. Most women and girls in LMICs face economic challenges that gravely impact their choice of menstrual products and thus practices.
Health systems (adaptation) is an important antecedent that was added to recognise the role of the health system structure as it relates to menstrual health and how that influences the menstrual experience.

Experiences

Menstrual practices are included as a mention to the behaviours that underpin menstrual hygiene management. These have significant impact on physical health as a consequence i.e. unhygienic practices predisposing to urogenital infections. They influence other experiences such as confidence.

Perceptions of practices and environments, though closely linked to practices are set apart as they speak to the girls or women's understanding of menstruation and their perceived expectations of what is recognised as optimal practices. **Containment** as in prevention of leakage, foul smell or displacement of menstrual material, refers to the need for privacy to preserve dignity, give confidence but also the behavioural expectation imposed on girls and women to prevent the retaliation as stigma. **Confidence** is a fundamental part of the menstrual experience inclusive of "self-efficacy and perceived agency". Level of confidence varies dependent on a number of antecedents and is greatly influenced by psychological health and quality of social participation. **Shame and distress** is considered as recurring theme brought on by expectations and internalised stigma. **Individual menstrual factors** is included in this framework to address physical symptoms, primarily menstrual pain which causes physical distress but also affected level of confidence and can restrict social, work and school life.

Impacts

The effects of the menstrual experience exist as the impact on the health **(physical health and psychological health)** and the economic, social wellbeing **(education and employment, and social participation.** These are important in consideration of MHH interventions (objective 3) and how they are designed to address not only the need but to improve on areas of impact and minimise negative consequences.

3: Study Findings and Results

This chapter was structured by first identifying the needs and experiences of girls and women, followed by the analysis of socio-cultural and resource-limiting factors that contributed to MHH and lastly by analysing evidence-based interventions to address MHH in Zimbabwe. The reasoning was to present the findings in manner that corresponded with the specific objectives and not necessarily the conceptual framework at large.

3.1 Experiences and Needs of Adolescent Girls and Young women in Zimbabwe and Similar Contexts

Menstruation is a natural process that is a physiological and psychological milestone in female reproductive life (47). It is however, associated with negative experience and secrecy (48). A study on menstrual experiences of schoolgirls in certain SSA countries, reported that in Zimbabwe 54% of girls had experienced stigma or humiliation during menstruation (31). This was related to negative attitudes from male classmates who sometimes mocked them when aware of their menstruation:
" Boys tease girls because of where the blood is coming from" boys in primary school (24)
Zimbabwe studies identified that boys teasing menstruating girls was connected to misinformation, cultural beliefs and menstrual stigma (24,32). In Zimbabwe, misinformation is prevalent and is exemplified in cultural beliefs i.e. early menstruation is a sign of sexual experience or that menstrual pains will leave you barren (31). Such false beliefs give anxiety and mental distress to young girls.

The experience of menarche, the first menstrual period marking the maturation of the female adolescent body (49), is significantly marked with fear and distress. The UNICEF Zimbabwe Formative Research found that the negative experience of menarche was connected to emotional confusion about this new bodily experience. Additionally, there was fear in soiling of one's clothes (24). As a result, girls reported losing confidence, that displayed as lower interaction and having poor concentration in school, ultimately leading to school absenteeism. Overall statistics indicated that over 60% of schoolgirls in both rural and urban areas had received MHM information, however, there was a clear lack of adequacy in this education *(explored further under Knowledge)*. Studies from LMICs showed that adolescent girls are often ill-prepared about menarche and don't fully understand the biological process, making it a stressful experience of confusion, pain and shame (48,50–55). In a South African focus group study, women recounted how menarche was a distressing experience which they had not been told about (56). They alluded to their region (KwaZulu Natal) having cultural taboos in discussions around sexuality and fertility between mothers and daughters. In Zimbabwe, similar to other SSA countries, menstruation has been socially constructed as shameful, disgusting and polluting (32,57,58). Menstrual shame is associated with sensitivity around female reproduction and sexuality, taboo subjects (48). A qualitative study that analysed Zimbabwean and South African women experience's with a vaginal ring for HIV prevention found menstrual shame to be quite significant amongst the women (57). Women expressed emotions of shame, disgust and embarrassment in relation to their menses which they considered 'dirty' and 'unclean'. The visibility of menstrual blood triggered most of these sentiments, illustrating menstrual stigma, which refers to the manner in which menstruating women internalise the "stigmatization of menstrual blood as a substance, and menstruation as a stigmatized state"(57). What is evident, both girls and women experience this alike. The feelings of guilt, fear and powerlessness around menstruation, transcend across women of all ages (57).

Confidence is perceived as sense of freedom and empowerment that women and girls have during their menstruation, allowing them to freely engage in social activities and travel without anxiety about their period (10). Having choice of menstrual materials was seen to improve self-esteem, with Zimbabwean girls being more confident when using pads as it minimised accidents and experiences of embarrassment (50) A Kenyan study found that in the few cases that girls described positive experiences, it was related to access to sanitary wear, the ability in keeping their menstruation private and having positive support (51). In Zimbabwe, negative experiences in soiling of clothing , or starting the first period led to a loss of confidence (24,32). This further manifests in reduced concentration levels in schools, low self-esteem and feelings of insecurity.

Individual menstrual factors such as premenstrual syndrome (PMS) is experienced by nearly 75% of menstruating women (46). It's a condition that consists of physical and emotional symptoms that occur 1-2 weeks before menstruation. A qualitative study done in Zimbabwe through the Stockholm Environment Institute (SEI), found that PMS i.e. acne, fatigue and moodiness, caused of low self-esteem, insecurity and shame (59). Girls also had pain so severe that they would be unable to walk, stand up, lacking appetite and vomiting. Girls expressed not knowing which medication to take, being unable to afford it or finding it ineffective enough to manage their pain The Kunashe Foundation Survey (KFS) found that 493 women out of the 500+ surveyed, experienced menstrual pain with 67% of them rating that pain level 3 or more out of 5 (60). In Zimbabwe the experience of menstrual pain, known as *jeko*, has been normalised to be expected. Regional studies found Menstrual pain discomfort to result in increased anxiety, lack of confidence, and absenteeism from school, work or social activities (34,47,50,51).

Menstrual practices are varied based on context, personal preference, available resources, economic or education status (52,61). They are connected with cultural and religious beliefs, leading to norms that are often restrictive and barriers to good menstrual hygiene practices (52). These social-influenced views leads to experiences of isolation, avoidance and an internalised perception of menstruation as unpleasant or "physical and spiritual contamination" (41). In Zimbabwe, good MHH practices are hindered by cultural taboos, limitations and unhygienic practices that increased health risks to women and girls especially in rural settings (32). For example, in fear of being exposed, girls and women dried their cloths and underwear under their beds (50,62), which predisposed them to infection.

Containment of one's period is an important aspect of the menstrual experience. Zimbabwean schoolgirls reported fear of soiling or having a foul smell (associated with poor hygiene practices) hindered them from fully focusing on studies (50,59). Such exposure left them distressed and further shamed by fellow classmates when exposed (24). Some girls reported washing twice a day to get rid of the smell of menstruation. This ensured that their menstruation was kept a secret to avoid attention and humiliation. In regional studies, loss of containment by leakage or dropping of sanitary products, was associated with feelings of fear, confusion and shame (61,63,64). Containment was about maintaining secrecy (56,63,65), with one study expressing it as "dangerous" for men and young children to sees signs of menses (65) . These experiences reflect menstrual shame that appears when blood is publicly visible, demonstrating a failure in 'menstrual etiquette'(4,58).

Vulnerable Populations

There are vulnerable groups that encounter unique menstrual experiences. These include the homeless, people with HIV (PLHIV), people with disabilities, women in prisons and transmen. Marginalised women and girls i.e. the homeless, PLHIV often face multiple layers of exclusion that impact their daily lives (66). Homeless women and girls are often challenged in accessing hygienic sanitary materials, water and wash facilities (66). Though anecdotal evidence, Sanitary Aid Zimbabwe reported some homeless girls resorted to sniffing glue (chemical drug inhalants) to minimise menstrual pain through intoxication (30). HIV infections are disproportionately higher amongst girls and women in Zimbabwe with young women (15-24) for one-third of new infections in 2018 (27). It is realised that PLHIV face double stigma when it came to MHH. Activists have reported that women and girls perceive that their blood as always infectious, causing a reluctance to talk about menstruation(67).

UNICEF Zimbabwe reported girls with disabilities face menstrual challenges because they required assistance to adequately manage their menses (24). They were most affected in mainstream schools due to inaccessible sanitation facilities. It was reported 60% of Zimbabwe schools visited had no disability friendly toilets or wash facilities. Disability carries stigma like menstruation and thus, it is high likely that people with disabilities faces layers of discrimination when they are menstruating, varying based on level or type of impairment (46). Furthermore, inaccessibility hinders school attendance for girls with disabilities (68).

Women in Zimbabwean prisons encounter MHH challenges, related to insufficient sanitary supplies, poor hygiene and sanitation (69). Women have described using pieces of blankets and prison uniform fabrics. It was reported that sanitary wear was freely distributed by local NGOs to address this need. Moreover, women expressed health concerns due to lack of running water, functional toilets and inadequate provision of soap and detergent (69). Studies have found unhygienic disposal of used sanitary pads in Zimbabwean and other Southern African female prisons alike (70,71).

In many countries, there's marginalisation of people who differ based on their gender identity as trans, intersex of non-binary who face stigma, violence and exclusion that hinders their access to essential health and services. Transgender men have barriers to WASH facilities and services, especially toilets. Academic literature hasn't explored MHH and gender identity in the African context but there's been anecdotal news articles and reports. At the 2018 UNFPA MHM symposium, a Zimbabwean transgender man activist expressed,
"There are very few sanitary-ware option for the trans community. In Zimbabwe, you can't find a gender-neutral toilet. You get told you're in the wrong bathroom. And if you enter the male bathroom, there are no cubicles or sanitary bins." (67).

Gendered Context (A Cross-Cutting Theme)

In many cultures, regular menstruation is viewed to signify good health and fertility, and is deeply connected to what is the female experience. Such similarities are found in Zimbabwe. Femininity is related to beauty, freshness, cleanliness but in contrast, menstruation is linked to dirtiness, bloodiness and bad smell (46). A similar paradox exists in Malawi where women believe in the healing properties of menstrual blood but still consider menstruation disgusting and shameful (65). In Zimbabwe, the indigenous belief is that menstrual blood ruins traditional medicines and is defiling of rituals(72). Menstrual stigma is deeply gendered and manifests internally in women and girls, hence the shame, the need for containment and perpetuation of menstrual silencing by women.

3.2: Socio-cultural and Resource-limiting factors influencing MHH for Zimbabwean girls and young women in Zimbabwe

This sub-chapter looks to analyse the socio-cultural and physical environments that shape the menstrual experiences of girls and women.

Social Support

In Zimbabwe, menstruating girls and women sometimes lacked in the support that they required from people in their lives- at home, in school, in workplace, and in their communities (41). A study in rural Masvingo, found that girls approached their mothers or female relatives about menstruation, with mother-daughter relationships being important to this regard (24,32). If a mother was uninviting, girls tended to then seek support from friends. UNICEF Formative Research found in their focus group, girls would encourage and support each other in sharing on their experiences, which was reflective of sincere care amongst peers. It was mentioned how as peers and friends they would find solidarity in episodes of "blood leakages, period pain or discomfort". Some boys were seen to share in sympathy with the girls, as one participant shared an encounter when she had accidentally soiled herself:
"My friend [a boy] used a jersey to cover me and walked to the school health teacher"
This is in contrast to the previous accounts of boys teasing and bullying girls about their menses. It was argued by the girls, that boys having better understanding of menstruation could make them more supportive.
The study indicated that girls received support from their school in urban (54.6%) and rural (59.6%) areas (24). Girls cited female friends, senior women teachers, class teachers and school health teachers as sources of support. They provided sanitary materials, information, counselling, and protection from bullying. Other girls reported (45% urban and 40.6% rural) not receiving any support from the school (24). There was also no support from the community where menstrual restrictions and prohibitions were enforced. *Health worker support will be addressed under the health systems environment section*.

Behavioural Expectations

There are certain behavioural expectations within the menstrual experiences. These are either imposed by others or by self. Zimbabwean studies indicated during menstruation, girls and women are not permitted to touch animals, get close to water points, prepare or touch food or shake hands with men when greeting them (24,32,34,50,73). Sex is prohibited as it was seen to be harmful to both engaging parties (24,57,73). They were excluded from religious rituals as they were considered ritually "unclean" during their menses. There were beliefs that menstruation weakens congregations or the prophetic power of religious leaders resulting in girls and women being inhibited from entering places of worship or having pastors lay hands over them (24). This was predominantly observed in rural areas more than urban areas, with the apostolic faith sect being the main driver. Cultural practices such as *Komba*, a rite of initiation for adolescent girls of the VaRemba people, taught girls to maintain menstrual secrecy and to observe certain restrictions during menstruation (73). In some country regions unspecified, menstruating women had food restrictions, particularly dairy products, eggs, salty foods, cold food, and tea (24,32). The reasoning was that these foods increased pain of menstrual flow. In Binga region, menstruating girls and women were not allowed to eat mice as this would

infertility. Slaughtering of an animal was considered taboo as the menstrual blood would contaminate the spirit of the deceased animal (24). Studies from Malawi, Zambia, Kenya had similar imposed restrictions in religious practices, male interaction and food (54,55,65,74). What is observable is that behavioural expectations restrict activities and hindered full participation in daily public life.

There were behavioural expectations on bathing, with girls reporting being told not to bath in warm or hot water, to wash only the bottom half of the body and to not use soap (24). There were prohibitions on bathing in the river forcing them to seek other water areas (24). These limitations lead to poor, unsafe MH practices that negatively influence the menstrual experience of girls and women as they strive for containment to prevent shame and humiliation. This additionally impacts on the physical and psychological health.

Knowledge

In Zimbabwe, when assessed for menstruation knowledge and understanding, 82% urban in-school girls and 77.9% rural in-school girls knew about menstruation (24). Periods were understood by 94.4% of out-of-school girls (98.3% in urban areas and 90.7% in rural areas). However, literature suggested that girls in LMICs have inadequate knowledge of menstruation (biology) and limited understanding of menarche (52,53,75). This was related to cultural hinderances that perpetuated false information and the taboo culture that prevented girls avoiding or prevented from discussing with their mothers. Zimbabwe studies supported this. Focus group discussions in a Zimbabwe study showed that despite having basic knowledge of menstruation, girls still had some inaccurate information regarding menstruation, with a knowledge gap being observed in the understanding of menstrual physiology (24). An example, was girls from rural schools who understood “menstruation as a breaking of the egg that causes a women to bleed through the vagina”

In the SNV study teachers and adults mentioned that talking openly about menstruation made people uncomfortable, especially young girls (31).It was a topic that was perceived to be private because it was a religious/cultural taboo, which did not involve men. In Ndlovu et al. women reported menstruation being a private issue that was rarely discussed due to cultural/religious beliefs (32).

UNICEF Formative Research reported over 60% of girls in schools received information on MHM with much of this information being provided before menarche (24), indicating that there is access to MHM knowledge. Parents, siblings, friends and teachers were sources of information, in addition to resources, comfort or help in fulfilling menstrual tasks (10). Urban girls reported to receive the information from their school and their mothers more than their rural counterparts. Rural girls were more likely to receive menstrual information from relatives i.e. aunts, friends and school health clubs (24). Out-of-school girls received MHM from their mothers or teachers (before leaving school). Majority of the information received by both in-and out-of-school girls in rural and urban areas, was centred around what menstruation biology and menstrual practices (24). Both girls and boys require access to accurate, clear menstrual health information and education. UNICEF findings mentioned some boys received MHM information as late as 18 years, though some received it earlier (unclarified) in primary school. Figures were unclarified. Teachers were noted as the most common source of information for boys, however additional sources included friends, brothers, other girls in schools, parents, or the community health nurse when visiting the school (24) .

Physical Environment

Water is essential to the management of menstruation for handwashing, bathing, washing of reusable pads/cloths or menstrual cups (30). As of 2019, 77% of Zimbabweans used improved sources of drinking water, with 97% in urban areas and 68% in rural areas (23) according to ZIMSTATS. On the contrary, CARE International found that urban areas continued to have water challenges from limited water supply (12 hours) and aged infrastructure (25). Despite this, urban women surveyed, reported having good access to water (60). However, those facing lack of access to water, also had challenges in disposing of sanitary products and washing of hands. This was related to the fact that some Zimbabwean cultures believe in washing disposal of sanitary wear before throwing it away (24,60). Rural communities still faced water access issues, with one account sharing girls can walk up 5 km to source water (24,58,60).UNICEF Formative Research found that functional water sources were available in most schools in both rural (21 out of 25) and urban areas (18 out of 24) (24). However, it was noted that water access challenges did exist and were often associated with poor location and geographical environments. Rural schools had difficulties in lack of electricity, dry boreholes and lack of own water source, and urban schools experienced power shortages that limited water access.

Regional studies indicated that sanitation issues in poor toilet function and infrastructure affected how girls managed their menses (50,54,76). A study found that in eight LMICs (6 were SSA countries),lack of access to a toilet and hand washing facilities added to the inequality of safe and sufficient MHM conditions (77). Zimbabwe similar to many other LMICs, faces challenges in waste collection systems which can lead to exposure risks (78). Zimbabwe studies on schools reported poor sanitation facilities (24,50), such as in Masvingo 23% of school toilets were not working and only 51% of schools with toilets were rated as ‘good’(31).

The KFS Survey found that 40.7% of women in urban areas struggled in accessing privacy in disposal of their menstrual materials, a factor that is related to lack of proper infrastructure for MHM (60). Another study had 77% of schoolgirls in both urban and rural areas reporting there were no separate changing rooms for girls to change their sanitary wear (24). Zimbabwean schools visited in a survey study had only 62% had waste disposal facilities and 65% of girls reported to be disposing of their menstrual product by throwing it in latrine holes (50). Varying methods of sanitary wear disposal is outlined in the Masvingo study are show in Figure 4. Studies suggest that this is often related to a need for discretion and cultural beliefs (78). In urban settings such as Kwekwe, school girls would carry their used products home to avoid male general workers the responsibility of cleaning (or disposing) menstrual blood (24). Having one’s menstrual blood seen by others could expose the individual to bewitchment, hence burning the materials to avoid this (24,32,78). This was a predominant belief in the rural areas.

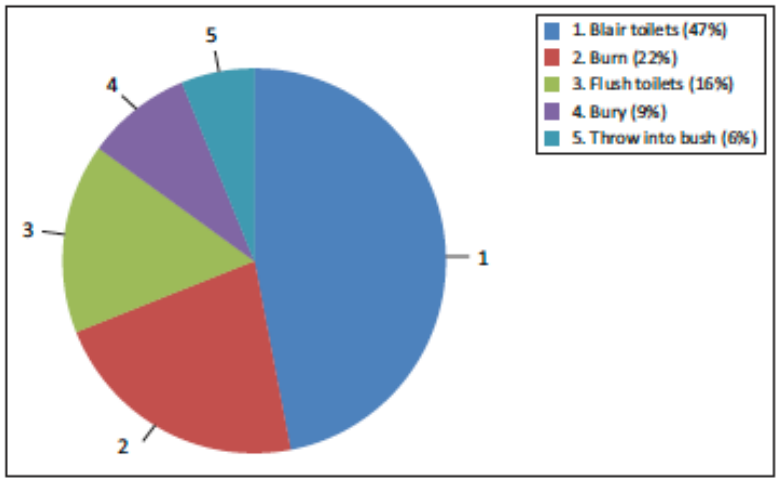

Figure 4: Methods of Disposal(32)

Economic Environment

In this review, a theme that stood out significantly was the lack of availability or affordability of menstrual products for most women due to the existing economic challenges in Zimbabwe. Zimbabwean girls in- and out-of-school often faced difficulties in managing their menses due to shortage and insufficient sanitary materials (24). Research showed that girls and women based in peri-urban and rural areas were resorting to unconventional materials to secure their cloths from soiling their uniforms (24,50,74). It was reported that because of abject poverty, girls used pieces of cloth that they would share with their mothers (31). Another study revealed 70% of women used rags and cloths and 53% of women reported reusing their home products due to unavailability (62).

It was found that supermarkets was the source most sanitary products for urban (61.1%) and rural (55.4%) rural girls (24). Other sources included other shops and tuckshops. Availability in shops was based on movement of certain brands, stock and cost, with high price not available in small rural stores. The absence of local manufacturing of menstrual pads connects with unavailability. It was found that cotton wool was generally more expensive as a result of the country having only 2-3 cotton wool distributors, who subcontract the manufacturing (80). The processing itself had been affected by low cotton production as well as limited raw materials and chemicals, which required scarce foreign currency (24). Zimbabwean girls and women have faced further availability challenges in 2020 with the closure of shops, shortages and exponential price increases of sanitary products (25).

Unavailability can lead girls and women into unfavourable situations in need of money to purchase menstrual supplies. Two studies based in rural Kenya found that girls were engaging in transactional sex for money to buy menstrual products or relying on sexual partners for sanitary pads (63,81). There was no literature evidence to give perspective in the Zimbabwean context, however a 2019 news article by Sanitary Aid Zimbabwe reported homeless adolescent girls using transactional sex as a means to get money for period materials (82).

In the KFS study over two-thirds of women expressed having at least one occasion within the last 3 months that they didn't have enough funds to buy sanitary ware (60). The study also indicated the cost of period products varied dependent on the source, and their analysis indicated to a packet of locally manufactured sanitary wear costing an equivalent of US$1 as of 2017. However, the Zimbabwean market is concentrated with imports mainly from South Africa of which, an average

packet of pads would cost US$5 translating to at least US$10 per month on pads when using at least 15 pads per month (60). More recent 2020 figures estimated sanitary pads to cost an equivalent of US$1.50 to $2 per piece (24). A struggling economy which had a recorded inflation rate of 557.21% in 2020 (83) has posed additional challenges for 78% of Zimbabwean adolescent girls and women in who are in employment (22).

Health Systems Environment

This section was about focusing on the role of the health sector in MHM and how it is an antecedent to the experiences of girls and women. The health sector has been a source of MHM information through school health programmes, peer education and out of school hygiene education programmes, though with limitations related to finance and human resources (24,32).Within the UNICEF Formative Research, The Ministry of Health and Child Care (MOHCC) district and provincial officers reflected that the extent of their engagement was more of clinical support, that the teaching of MHM was the responsibilities of teachers as part of the curriculum mandate or school health coordinators (15). In Masvingo, focus group participants reported that though health facilities were accessible, fear of stigma prevented the girls from visiting them. It was also mentioned that these facilities did not provide any MHM information (32). A systematic review on menstrual experiences in LMICs, found healthcare workers to be rarely mentioned and when so, being considered as unsupportive (10). Studies from some LMICs, found there was a lack of health clinics that focused on reproductive health, that clinic health workers often had inadequate training to determine a diagnosis, were unable to respond questions on menstrual irregularities or did not provide sufficient service delivery (36,41,84). Of those that do receive care, women are provided with traditional or modern remedies from family, friends rather than a health worker(41). An interesting find was how some women experienced shame about their menstrual blood, even in the presence of female health workers in a clinical setting (56). It was suggested that the socio-cultural view of the female reproductive anatomy and physiology was deemed private and taboo, made women feel embarrassed in “exposing themselves” to health professionals and impacted their SRH negatively.

There was no literature on the health policy on MHH within Zimbabwe. What is existed was the School Health Policy released in 2018 gave framework of reference to guide implementation of a number of health related interventions in regards to the wellbeing of learners in schools, which addressed WASH, sexual and reproductive health matters (24).

Gendered Context

In the Masvingo study women reported that men were not engaged in MHM and that such responsibility lay solely on women (32). They further elaborated that gender inequalities were rife in the community with women and girls having no power to make decisions, having limited access to and control over resources. This created challenges for them in management of menstrual matters as men would rather prioritise matters that concern them or the broader family (32). In some parts of the Zimbabwe, MHH is considered a “female affair”, thus excluding men from related discussions (24). However, restrictions are deep-seated in gender relations of men having control over women . Men find it difficult to prioritise menstrual hygiene during household resource allocation due to the social stigma (79) and poor menstrual understanding. The gender inequality extends further into community and national policy level, where women and girls’ voices are often unheard and absent in leadership (24). Many of the challenges girls in Zimbabwe face around MHH are closely connected to biased social norms that become more pronounced during and after puberty. Gender discrimination exist in adolescence as unequal chore burdens; caretaking, exclusion from school, work or decision making; child marriage, sexual and domestic violence; and restrictions on reproductive choices (85).

3.3: Interventions

In this section of the results findings, MHH interventions were researched and categorized into 5 subsections to address the spectrum of MHH needs that Zimbabwean girls and women as analysed in the previous two sections.

Socio-cultural Interventions

MHH Education and Knowledge

Menstrual education for girls and the wider community is imperative to address discrimination and stigma and to create a climate that is supportive of women and girls (86). It's hypothesized that better comprehension of MHH improves hygiene practices, self-efficacy, and lowers anxiety and shame (87). Studies showed that educational interventions have a positive impact on awareness and menstrual practices of girls (87,88). In 2018, The WASH UP! Girl Talk initiative project was started to address a knowledge deficit in adolescent health and MH education amongst pre-adolescent and, adolescent boys and girls in Zimbabwe (89). A study to evaluate its impact found that the programs increased student knowledge on puberty and menstruation. Part of the effectiveness of the initiative as an MHM intervention was the consideration of local context by using the Shona language and activities to present information in a way that is practical and appropriate to the students.

A Bangladeshi interventions study on implementation school-based MHH education focusing on knowledge, beliefs, behaviours and disorders and restrictions (90). The findings revealed there was substantial improvement in good menstrual practices (28.8% vs 60.1%), increased knowledge (51% vs 84%) and, reduction in menstrual disorders (78.6% vs 59.6%) and psychological symptoms. These results were in keeping with other relevant studies (91,92). However, there were no significant differences with religious and household restrictions, similar to an interventions study in India (93). indicating that the cultural taboos are still widespread. Bangladeshi women and girls experience similar needs of period poverty, social taboos and poor MHH knowledge as identified in Zimbabwe.

Several interventions on MHH have proposed that school activities on health education and hygiene promotion increased access and use of disposal sanitary pads, encouraged frequent changing of pads or advised disposal of used reusable cloths after a few months of use (47,53,75,78,88,91). If centred around school programs only, these educational interventions may fail to reach out-of-school girls, women, and people from vulnerable populations (85).

Mass media and other media channels are found to impactful in dispelling myths and destigmatizing menstrual taboos (85). In India, the P&G "Touch the Pickle" campaign geared towards challenging restrictions on menstruating women and girls, encouraged women to open discuss about menstruation and had 2.9 million people pledge to "touch the pickle jar" (85). A Bangladeshi study looked at the possibilities of media intervention in MHM and found that was a positive association between exposure to these interventions and women making use of modern MH materials, having better information and awareness (94). These gains were contingent on level of education, access to mobile phones, socio-economic status and geographical location. This gives possible applicability of media interventions i.e. MHM awareness in mass media, mobile phone text messages, internet, in Zimbabwe. The DHS 2015 informs that 87% of Zimbabwean households own a mobile phone and phone-based interventions are feasible, with the increased use of phones to facilitate health information and service delivery (95,96). However, internet based interventions risk causing inequity since internet access is not freely available or affordable (96).

There were no intervention studies found in the literature search that focused on improving the MHH knowledge and education of adult women. Many programs remain geared towards adolescents and pre-pubescent children.

Community Engagement

Male engagement has an important role in MHM interventions. Research in Zimbabwe indicated that men tend to control the decision-making and resources for a household, in which MHH resources were not prioritised(32,79). In rural India, a WaterAid and Vastalya MHM and WASH program engaged men and boys by involving them in focus groups to engage in dialogue, providing IEC resources and sensitising them to gender, MHM and WASH issues (97).Male builders were involved in development of incinerators and toilets. Male teachers engaged in the training and awareness session in schools. The male involvement had a positive outcome with men and boys seeing themselves as change agents, and supporters to women. This translated to men and boys changing their own attitudes about menstruation, challenging social stigma, household budgeting for MH products and infrastructure support in schools and homes for MHM. Zimbabwe is a deeply patriarchal society like India, giving the possibility that such an intervention can be successfully applied to the country context. Both countries a challenged by period poverty and menstruation stigma. However, traditional views on menstruation and male involvement could differ between the countries.

Shifting social taboos on menstruation is challenging as observed in Nepal. The country has a religious and cultural tradition *chhaupadi*, which entails of women being banished to a shed with imposed restrictions (98). A Nepalese study found that addressing menstrual taboos requires multi-level, multisectoral interventions with an emphasis on community mobilisation of traditional leaders, local women's groups and community members (99). Without this involvement previous interventions had failed as community stakeholders were reluctant to participate, limiting the longevity of the programmes. Similarly community engagement is needed for transforming menstrual taboo in Zimbabwe as indicated here.

Resource-related Interventions

MHM Products

Studies from Uganda and Ghana have shown the provision period products is positively associated with improved school attendance and life chances for girls and young women (100,101). It was of note that products, as well as having WASH facilities, privacy and disposal facilities were needed to attain adequate MHM. An Ethiopian study found positive impact on school attendance when girls were provided with MHH kits (two underwear and four reusable pads) and education booklet (102). Furthermore, the study showed it was feasible to carry a large scale intervention in a resource limited setting, within a timely fashion, making it applicable in the Zimbabwean rural setting.

Provision of menstrual cups and disposal pads for school girls was associated with lower STI risk in a study in Western Kenya (103). They hypothesized this was in connection with the reduced level of transactional sex as girls had met their need for menstrual products. Additionally the study suggested that cups lowered rates of bacterial vaginosis, a risk factor that increases STI and HIV infection and

transmission. This indicates that the menstrual cup is a useful product in integrating MH and SRH benefits.

Duet, a cervical barrier device for contraception and STI prevention was explored as a potential low-cost menstrual cup in pilot study in Zimbabwe (62). It was found to being viable option because it was potentially low cost, easy to clean and served additional purposes. The challenges were women's fear for partner disapproval, difficulty in removal and cultural sensitivity around insertion for sexually naïve young women. Several other studies have shown that young women and girls in Zimbabwe tended to prefer reusable pads than menstrual cups because they feared the latter would cause pain on insertion, stretch out their vaginas and would 'take their virginity' (34,60,79). Virginity holds cultural value in Zimbabwe. Preference for the reusable pad was based on that it was viewed easier to clean, and dried discreetly (34). An additional challenge to menstrual cup usage was lack of facilities for hygiene and privacy to change (79). Studies from Malawi and India found that challenges with reusable sanitary pads included sourcing suitable material, inability to have suitable washing and drying facilities (74).

Sanitary pads can be locally or regionally produced through small or medium sized social enterprises, that aim for high quality and affordability for low income consumers. They may lack on reliability and scale of distribution in their countries of operation (85). In rural Uganda AFRIpads, a reusable, reduced cost sanitary pad produced by a social enterprise, had favourable ratings when compared to existing improvised methods , as they were seen as more reliable in preventing soiling, easier to change and less disgusting to wash (86,104). AFRIpads also educated local women and girls on how to make their own reusable pads. Similar projects exist in Kenya (Huri International) and Sierra Leone (OneGirl). Such projects are applicable in Zimbabwe and serve as an avenue to include and empower women and people from socio-economically disadvantaged backgrounds.

A recent Indian study showed wide feasibility and acceptability of banana fibre based sanitary pad , which is reusable, biodegradable and made from a sustainable raw material (105). This was an alternative from cotton due to abundant availability of banana plants, ease of production and manufacturing. Reusable pads offer great flexibility in terms of usage and are economically and environmentally sustainable in the long term. In the context of the COVID-19 lockdown, these pads meet women and girls' needs by their reusability. The challenge faced in the Zimbabwean context is that banana plant are not indigenous or grown on a large scale within the country.

WASH

There was a lack of literature investigating the effect of improved WASH facilities that was relevant to MHH. In review, a Kenyan study was found that looked at the impact of a school-based water treatment, hygiene and sanitation programme (106). Findings suggested that WASH interventions were effective in reducing the gender disparity, in which girls were more affected by poor WASH conditions. Though it was not clearly shown how the girls benefited from the interventions. A 2016 systematic review reported that no studies have trialled how MHM is supported by improvements to WASH or other infrastructure (87,107).

Healthcare Systems Interventions

Integration of MHH and sexual and reproductive health (SRH) can serve as MHH intervention. PSI Zimbabwe is working with the MOHCC to implement an integrated MH and an adolescent sexual reproductive health (SRH) program that focuses on mass and digital media campaign with a focus on prevention of unintended pregnancy, HIV awareness menstrual body literacy and MH social awareness to reduce stigmatisation (108). The program also includes MH and SRH awareness raising activities, distribution of a MH manual distribution of menstrual cups. Results thus far, indicated there was increased uptake of modern contraception and PreP amongst adolescent girls (5-19 years) through these socio-behavioural change interventions. There was no mention of the impact on MHH.

Education initiatives can function through healthcare interventions (109). Studies found that having a school nurse improves girls' menstrual and reproductive health (110). Community health initiatives were mentioned in grey literature such as, the Kasiisi Project in Uganda training community health workers mentoring girls on MHH, STIs, and ways to prevent pregnancy (85). The Wezesha Vijana Project in Kenya has utilised peer educators to improve girls knowledge and self-confidence. Such initiatives also aid in ensuring out-of-school girls and young women can be reached (85). No peer-reviewed literature was found to support this an intervention.

Policy and Financial Interventions

To address period poverty, addressing financial challenges is seen as potential intervention. Currently in Kenya, a cluster-randomised trial is being conducted to assess whether cash transfers (in addition to a menstrual cup) can improve girl's health, school equity and life chance as hypothesised (111). In practice, cash and voucher assistance has been utilised in humanitarian settings as an inclusive to MHM Kits (112). PLAN International distributed them in Indonesia, Central African Republic in 2018. UNFPA distributed MHM kits through mobile money in Congo. Review of Oxfam programs found that cash programs were more likely to aid to restoring dignity in displaced populations but there was little evidence to verify purchase of hygiene products with the cash (113,114). There downside with this intervention is that it maintains a benefactor/beneficiary relationship . Without sufficient literature to examine the impact of cash transfers on MHH, it's difficult to postulate how applicable it would be as an intervention to Zimbabwe.

National menstrual health guidelines can direct strategic implementation and action at community level to build MH, as evident in India, Kenya, Ethiopia, South Africa and Uganda, countries that have invested in a collaborative process to create national guidelines to standardize and develop the baseline goal for improved MHH practices, menstrual material supply and waste disposal (78,85,115).

In 2020, the Zimbabwe government legislated provision of free sanitary materials in schools through the Education Amendment Act and included a budgetary allocation (116). However, according to anecdotal news evidence the sanitary pads distributed were of poor quality and many school girls were unaware of their availability (38). Great strides have been made globally in provision of free menstrual product in countries such as Scotland, New Zealand and England (117–120). In New York, USA a bill was introduced that required schools, prisons and homeless shelters to provide menstrual products (121). Research studies are still yet to investigate the impact of these policies.

Removal of taxes on MH products has been considered as a policy intervention to improve accessibility to and affordability of MH products by removing the economic-related inequalities (77). The

Zimbabwean Government removed duty and VAT in Statutory Instrument 264 of 2018, lasting for a period of 1 December 2018 to 30 November 2019 (9,30). A WASH UNITED Report on period tax found that there was no price reduction as the inflation rate caused many of the prices to rise once again. Research has shown that a price reduction is possible but not expected (9). See Figure 5 which indicates countries with period tax and effect.

Country	Date of Tax reduction	Type of tax	Effect
USA, New Jersey	2005	Sales Tax	Prices reduced
Australia	2019	GST	Prices reduced
Tanzania	2018-2019	VAT	No / no uniform reduction*
Kenya	2004 2017	GST Import duty raw materials	No information available
India	2018	GST	No reduction*
South Africa	2019	GST	No reliable information available
Bangladesh	2019	Import duty raw materials	No information available
Zimbabwe	2018	Import duty	No reduction*
Germany	2020	VAT	Prices reduced
UK	2001	VAT	No information available

Figure 5: Overview of Countries with Period Tax (9)

4: Discussion

In this chapter the findings will be reflected upon and analysed in how they connect and exist the wider landscape of MHH in the Zimbabwean context. The structure is based on the objectives, providing a short summary with critical analysis and reflections.

4.1 Experiences and Needs

In addressing the MHH experiences and needs of women and girls, what was evident was the experience of shame and how it resonated through the other experiences. The lack of preparation for menarche, signified the start of the difficult menstrual journey that many girls and women experience during their reproductive life. They experienced fear and confusion from not fully understanding what is happening to their bodies. Poor comprehension was a result of taboo and silencing around menstruation. Feelings of distress were also triggered by bullying and mocking from other children, especially boys. The societal stigma of menstruation meant it was difficult for girls to approach their mothers or teachers to ask about it and get help. This connects to social support as a factor that influences the internal and the external experience in terms of guidance on menstrual understanding and practices. Survey studies of women gave similar account of shame and anxiety during their first period. This continued to underpin their perspective of menstruation, which was to see it as 'dirty and unclean'. This aligns with the cultural and traditional menstrual beliefs that exist in Zimbabwe and many other African countries.

Zimbabwean girls experienced low confidence which was related to a lack of adequate sanitary products that could contain and manage their menstruation. The lack of availability, which was analysed further as an economic environment factor, affected menstrual practices. Thus, when girls had choice of products, that made them feel safe and secure, and their confidence levels increased. There was limited literature that addressed perceptions of menstrual practice or the environment of menstrual practices. What was evident is that girls and women viewed menstrual practices through the lens they had been socialised to. Menstruation was private matter and it was shameful to have your menses known. The fear of social shaming and embarrassment guided these practices. This led to girls ensuring their contained their menses, washing and drying their cloths indoors privately, bathing multiple times to rid of any smell. Containment was about observing menstrual etiquette and respectability which are centred around gender norms. The idea of menstruation being deeply feminine yet unacceptable to discuss or observe, is quite contradictory. This analysis was exemplified by how certain Zimbabwean cultures honour the start of menstruation as a sign of womanhood, yet continually shroud it in secrecy, shame and cultural guilt. It was identifiable that menstruation is a gendered experience ignored in patriarchal societies such as Zimbabwe. Individual menstrual factors of menstrual pain and discomfort were common, yet in Zimbabwean culture it is to be expected and normalised, oppressing women through pain. It would be worth exploring the extent on which dysmenorrhoea effects on social and psychological outcomes of girls and women in Zimbabwe.

4.2 Socio-cultural and Resource-related Factors

The experiences of an adolescent girl or woman are often shaped by their physical and socio-cultural environment. The review findings indicated how the antecedent factors influenced menstrual experiences. The social and gender norms that overarched the socio-cultural environment were not investigated individually as it was realised that they ran as common thread through the factors. Social context and gender expectations dictated on MHH practices, behaviour and use of resources. Adequate, accurate menstrual knowledge was found to be lacking for many girls. Studies informed that girls had basic knowledge but the quality of the knowledge was in question as false beliefs were still rife. Sources of information (who simultaneously turned to be sources of social support) were mothers, female teachers, relatives and friends. However, the accuracy of information was not elaborated upon in review. There were no studies that investigated the knowledge and understanding of adult women or men. It could be considered that poor menstrual knowledge amongst adolescents is also reflective of poor societal understanding of menstruation. Furthermore, one would question how accessible information is- could there be gate-keeping of information determined on cultural and religious grouping? This was undetermined due to lack of evidence on this. These are important considerations when education interventions are implemented. Findings showed that giving education in a manner tailored to the context had better outcomes e.g. Girl Talk project. Literacy levels, language barriers need to be taken into account when creating education interventions in Zimbabwe.

Cultural beliefs that menstruation was unclean and polluting, isolated menstruating girls and women. They also perpetuated social stigma. Behavioural expectations were found to be deeply entrenched with social and gender norms. The patriarchal structure gives male dominance the power to establish restrictions through traditional or religious reasoning. An example is menstruating girls and women being unpermitted to have male contact in some areas of the country. These expectations created shame and fear within girls and young women. Interestingly, perpetuation of stigmatising cultural norms and restrictions was also enforced by women themselves. Women appeared as custodians of menstruation information and practices as men did not involve themselves nor were permitted to regarding menstruation.

Resource-related factors considerably influenced experiences in Zimbabwe. WASH-related challenges were a by-product of poor and dilapidated existing infrastructure and systems. Insufficient WASH resources and disposal facilities led to poor menstrual practices. Literature focused more on the situation in schools and how it affected girls' school attendance. The lack of locks or female-friendly toilets caused negative menstrual experiences because it hindered girls ability to manage their menses in privacy and hygienically. WASH infrastructure in schools was inaccessible to girls with disabilities and impacted on their experience. Disposal mechanisms were determined by the absence of adequate facilities and cultural beliefs. Girls feared having soiled products seen, as this was socially unaccepted and could expose them to witchcraft. Beliefs centred around witchcraft conveyed to negative consequences on their reproduction e.g. infertility. It is worth exploring if these beliefs were tools in reinforcing behavioural expectations regarding menstruation. More literature was needed to shed light on the experience of women and vulnerable groups as it related to WASH in areas other than schools such as homes, workplace and public spaces.

Period poverty was a significant challenge in Zimbabwe. The current economic situation impacted women and girls' access to menstrual products. Availability and affordability were interconnected by economic circumstances of the girls and women. Shortages in stores related to location, preference of brand and cost. The economic climate of the country had affected local production, which too fuelled shortages. Women and girls in both rural and urban areas often used unconventional materials to manage their menses as result of unaffordability (32,79). Vulnerable population such as women in

prisons and the homeless struggled with availability of resources as a consequence of their social circumstances (69). This is a matter that is under-researched and overlooked in Zimbabwe and the international context. Policy interventions for free provision of products in Scotland and New York State have included vulnerable groups. In Zimbabwe this is a difficult undertake when anecdotal evidence identified government failure in the distribution of free disposable pads in schools. Though with good intention, better inter-ministerial and inter-sectoral collaboration is needed to make the efforts more wide-spread and effective. In addition to socio-economic conditions, unequal gender relations further compounded the issue of period poverty. Men as heads of household often failed to prioritise budgeting for sanitary products. This could be related to poor understanding of MHH needs amongst men as a consequence of taboo culture and social views. It does indicate the lack of decision-making power that most women and girls have in their homes but in community and society at large. This also points out how gender inequity impacts on the health and wellbeing of women and girls.

4.3 Interventions

The findings were based on interventions that addressed menstrual needs: knowledge, community engagement, menstrual products, WASH, health systems and policy. The education interventions were quite essential because their impact translated into better MHM practices, improved psychological and physical health. It fits as one part to the puzzle of solving MHH challenges.
It was evident single component interventions would not suffice but multisectoral interventions were needed to fully address MHH needs. Community engagement was key as many of the negative experiences and resource issues were connected to the underlying thread of social and gender norms. Male involvement plays a powerful role as presented in India, where shifting male views on menstruation served to aid in dismantling menstrual taboos and garner support for other MHH interventions. Educating boys and men on MHH gives an opportunity for transformation that can impact on multiple levels of society and over generations.

The neglect in addressing needs based on overlapping identities affects the feasibility and sustainability of interventions. This was evident in case studies that investigated the impact of menstrual product interventions. In Zimbabwe preference is menstrual product influenced by age, marital status and social expectations, e.g., preferring pads over tampons to ensure virginity remains intact. A common interlink in these factors was that women and girls had to consider how products integrated with their life in the midst of gender expectations. Though, the economic situation might be a barrier, igniting a new industry that creates reusable pads has great impact on affordability, availability and environmental outcome, as observed in Uganda, Kenya. It is an opportunity for a gender-transformative approach that can advance gender development.

Health sector serves as a great avenue for interventions by integrating them with other relevant services. It gives a platform of MHH awareness and can have wider reach in educating women who are often excluded in education interventions. In consideration of vulnerable groups, MHH interventions also serve as a portal of entry for them to receive SRH information and services, and WASH through integration of programs. Additionally choosing the menstrual cup had benefits that positively impacted on SRH as shown in Kenya. This is supported by findings from Zimbabwe that identified the Duet as menstrual cup that worked as contraceptive. This has applicability on a larger scale if the target is older women, who often are overlooked in MHH.

There were intervention gaps identified in WASH, which hasn't been fully explored in concern to MHH. Adequate WASH is needed to achieve improved MHH practices not only the provision of products. As much as national policy can push for free products, the environment in which women and girls manage their menses has to be considered. This is an aspect that has not been regarded by the Zimbabwean government. Looking at most existing intervention studies from other countries, emphasis exists on

providing segmented solutions of information or products. However, there is a lack of evidence in approaches that tackle multilevel elements of MHH.

Further exploration is needed on dismantling of menstrual stigma. This would require addressing the gender norms and inequities that permeate through Zimbabwean tradition and culture. This angles in a larger scale towards social and behavioural interventions with outcomes that can potentially ripple into other gender issues such as gender-based violence, child marriages and adolescent pregnancy. It requires a gender-transformative approach or a human-rights approach that brings gender and social equity at the forefront.

4.4 Final Reflections and Limitations

The literature search yielded limited peer reviewed articles in the Zimbabwean context. The largest body of evidence on MHH was based on mostly qualitative studies and a limited set of quantitative studies. A significant portion of survey studies found were done local NGOs and development agencies such as UNICEF. Much of the literature on experiences, related factors and some interventions were based on self-reports. This made the findings susceptible to recall and participant bias. This is in consideration of the silent taboo culture that surrounds menstruation , which could have hindered some participants from speaking forthright and openly. Being that the participants were mostly adolescent girls, they may have provided information that they felt was agreeable to the researchers.

Furthermore, journal articles and grey literature predominantly focused on school girls, socio-cultural aspects and resource restraints. There was a literature deficit on out-of-school girls, adult women and vulnerable population groups. With several studies of MHM in schools and rural community, there is still is limited research on urban areas, the workplace or religious environments. This limitation means that various experiences were unaccounted for or under-researched.

The analytical framework used was sufficient in that it covered the main aspects of menstrual experiences. It related well to the context of Zimbabwe and met the first two objectives stated. However, the framework needed to be broadened in context to gender being all-embracing. The influence of health systems on the menstrual experience warranted exploration. The adaptations made allowed for wider evaluation. The addition of an over-arching gendered context gave opportunity to dig deeper into gender relations and give insight to aspects possibly overlooked. This framework would be more applicable to future studies in its adaptation, reflecting a larger picture experiences and antecedent factors. Moreover, intersectionality is important to include in analysis as it comes across in final reflection. It furthers examines experiences and needs more inclusively.

5: Conclusion

The main objective this thesis set to investigate the factors affecting MHH experiences and needs of girls and young women in Zimbabwe and to analyse how interventions might address their need. It was found that many girls and women have negative menstrual experiences as a result of unmet needs. Social stigma around menstruation is prevalent and is a manifestation of ingrained cultural/religious beliefs and traditions existing in Zimbabwe. The taboo culture not only creates shame but silences dialogue around menstruation. The socio-cultural context influences resource limitations as exemplified in the economic environment. This thesis furthermore highlighted how gender is cross-cutting theme through experiences, needs and interventions. Gender inequity is embedded in the stigma that women and girls face, as well as in resource limitations. Indeed, the deep patriarchal system that exists in culture and religion perpetuates this discrimination by not prioritising a health issue that is considered a woman's issue only.

Period poverty is a major challenge in Zimbabwe, a country still facing socio-economic hardships. In the context of COVID-19, the economic difficulties have intensified leaving a more dire situation. Period poverty is merely but a symptom of the many public health problems that exist in Zimbabwe. It sheds light to matters of poor WASH access and infrastructure, inadequate health systems and other related SRH needs. Though efforts have been made to ease the burden of period poverty, Zimbabwe still has much work to do in terms of legislation and policy to tackle MHH needs. Lack of prioritisation of MHH policy shows how overlooked MHH is.

The thesis identified existing interventions in LMICs that have been successful in tackling unmet MHH needs. Many of them appear applicable to Zimbabwe in context of economic and social development. This thesis gave insight that there is still much to be understood in the gender and social relation to menstruation. May this paper serve as aid to facilitating further interest and change to improve menstruation for the millions of Zimbabwean girls and women.

6: Recommendations

These are some of the following recommendations that have been considered to address MHH needs in Zimbabwe for adolescent girls and women, with attention to:

1. **Schools**
   The school curriculum needs to include comprehensive MHH education for both girls and boys. It is important the education also provides a gendered lens on MHH to facilitate a less stigmatizing learning environment for girls. Teachers need to be adequately trained about menstruation and sensitivity around menstruation to better support their students. Emergency sanitary supplies such as period products, clean underwear and pain medication should be made available to girls in school settings. These can be arranged through engagement with development agencies and/or Ministry of Education.

2. **Community leaders and groups**
   Communities play a significant role in shaping and reinforcing gender and social norms. Having effective community engagement can help shift attitudes and beliefs that drive menstrual stigma and shame, which underpin poor MHH outcomes. Community members are key influencers and gatekeepers whose engagement can influence MHH. A supportive environment can be created by having spaces for community intergenerational and gender-transformative dialogue. Community based networks and groups can be useful as channels to disseminate MHH education for women and girls, and the male community too.

3. **Private Sector**
   The local manufacturing industry can be revitalised through government support of a cotton value chain that will not only create jobs but increase availability of organic, locally produced period products. Effective distribution systems need to be utilised to improve reach to remote area. Mobile phone service providers can use their platform to spread MHH awareness messages.

4. **Civil Society Organisations (CSOs)**
   CSOs can engage in multisectoral collaboration actions with government, private donors, development agencies and social enterprises, i.e. public-private partnership, interagency coordination committees to strengthen intervention programmes, policies geared for education, awareness and resources improvement.

5. **Advocates**
   Advocacy as an intervention serves a purpose to promote policy change, transformation of social and gender norms or influence funding decisions. There are international commitments to which Zimbabwe has adhered to. Advocates can hold government accountable to the legal and international structures. Advocates can use their platforms to raise MHH awareness to dismantle social stigma, encourage inclusiveness of vulnerable groups and garner public and government support for better MHH. Online platforms and media channels can be utilised to this regard.

6. **Health Sector**

   Health clinics can be a great source of youth-friendly MHH information and resources. Training and capacity building of health staff is recommended to adequately manage of menstrual disorders. Medical fees could be subsidized for those with menstrual pain disorders. Integration of MHH services with SRH, maternal health and mental health services could be further explored. For more attention and mechanisms to be set in place to address needs, MHH policy is needed. In the review, health policy interconnects with the socio-cultural and resource-limited environment. It can be an enforcing tool for improved WASH facilities and infrastructure, increased availability of menstrual supplies, and menstrual health awareness for out-of-school girls and women.

7. **Policymakers and Government**

   Zimbabwe has an adequate legislative framework that can address MHH. An example is the Education Amendment Act, under which government is required to ensure safe water and toilets in schools to promote good MHH practices. Legislation must be enacted to provide accessibility across diverse levels of state, programmes and agencies through a Menstrual Equity Act. Gender equitable frameworks need to be implemented by government to ensure safety and support of women through policymaking.

8. **Researchers**

   Investment in research with to attention of various life courses: pre-pubertal, pubertal and premenopausal. Quantitative and qualitative studies are needed to further explore the influence of intersectionality i.e. socio-economic status, education, geography, disability on the experiences of those who menstruate in Zimbabwe. This will serve as evidence based information to guide design of government strategy and cost-effective, interventional programmes.

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Annexes

Annex 1: Search Strategy

Sources Database and search engines: VU Library, PubMed, Google, Google Scholar, Scopus, Semantic Scholar **Institutional; and Government Websites:** MoHCC, ZIMSTATS, WHO, UNICEF, UNFPFA, CARE, PLAN, Research Gate, Guttmacher Institute, WaterAid, World Bank **Literature:** Published peer reviewed, grey literature and news release websites **Delimiters:** English Language, published between 2006 and 2021, focused on Zimbabwe, SSA countries, LMICs				
Principle Search Key Words	**Principle Key words**	**Additional Key words**	**Additional Key words varied in combination**	**Prioritised Literature**
'menstruation' OR 'menstrual hygiene' OR 'menstrual health' AND 'Zimbabwe' OR 'Sub-Sahara Africa' OR 'Sub-Saharan Africa' OR 'Southern Africa' OR 'low and middle income countries '	'experiences' 'needs' OR 'determinants' OR 'gaps' OR 'challenges' OR 'factors'	'adolescent girls' OR 'adolescents' OR 'young women' OR 'women'	'pain' 'practices' 'support' 'education' 'knowledge' 'period poverty' 'menstrual products' 'MHM' 'sanitary wear' 'menstrual cup' 'reusable pads' 'culture' 'beliefs' 'gender' 'girls with disabilities' 'HIV' 'prisons' 'transgender' 'stigma' 'restrictions 'WASH' 'climate change' 'health systems' 'health sector' 'interventions' 'strategies' 'policy' 'advocacy' 'integration'	Peer reviewed papers from Zimbabwe, regional countries then LMICs. Papers describing experiences, factors and interventions impact

Annex 2: Original Conceptual Framework

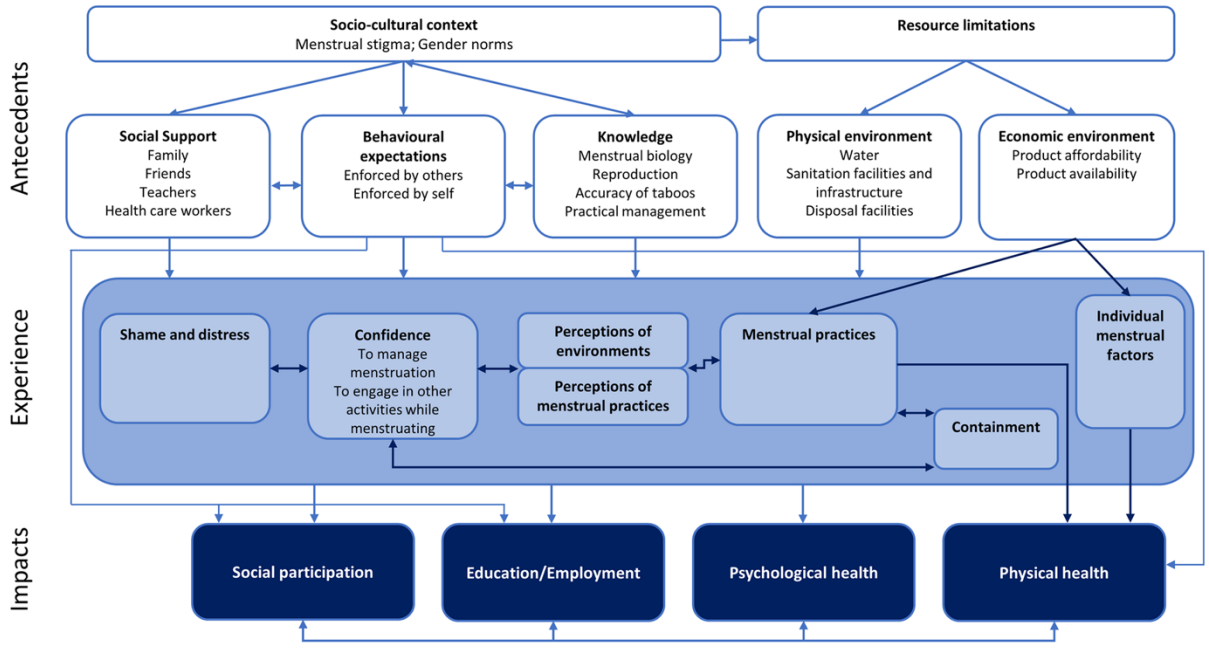

Figure 6: Integrated Model of Menstrual Experiences (original) (10)

Annex 3: Various Menstrual Materials Used

Figure 7: Various Menstrual Materials used in Resource-Limited Environments (122)

Annex 3: Various Menstrual Products

FIGURE 1: Types of sanitary products used by women during menstruation are (a) reusable cloth pads (https://www.etsy.com/market/cloth_menstrual_pads); (b) commercial sanitary pads (http://topyaps.com/things-girl-must-know-about-sanitary-pads); (c) tampons (http://www.womensvoices.org/tag/tampons/); (d) pads made from banana fibre (https://saathipads.com/); (e) sea sponges used as sanitary material (https://www.pinterest.com/pin/194640015120225878/); (f) pads made up of water hyacinth (https://www.ecouterre.com/jani-a-biodegradable-sanitary-napkin-made-from-water-hyacinth/); (g) menstrual cup (http://rubycup.com/blog/how-to-clean-the-suction-holes-of-your-menstrual-cup/); (h) pads made from wool (https://www.pinterest.com/pin/198088083583361670/); (i) reusable tampons (http://natural-parentsnetwork.com/reusable-menstrual-products/).

Figure 8: Various Menstrual Products Used (52)