School of Public Health and Family Medicine
Isikolo Sempilo Yoluntu kunye Namayeza Osapho
Departement Openbare Gesondheid en Huisartskunde

UNIVERSITY OF CAPE TOWN
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An exploratory qualitative study of menstrual hygiene management among adult women of reproductive ages from an under-resourced community in Cape Town, South Africa.

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Ncube Semkelisiwe

Supervisor: Lucia Knight.

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Abstract

Background: Poor menstrual hygiene management can result in health concerns for women, particularly in low-and-middle-income countries. The evidence for the lived menstruation experiences of adult women of reproductive ages is limited. This study sought to understand the menstrual hygiene management experiences of adult women from an under-resourced community in Cape Town in South Africa.

Methods: In this exploratory qualitative research design, qualitative in-depth interviews were conducted using a semi-structured interview guide with 10 women aged 25 and 49 and three key informants namely a maternal health nurse and two community health care workers. The study occurred over a period of three months and all participants were purposively selected using a homogenous sampling strategy and key informants were purposively sampled using an intensive sampling strategy. Data was manually analysed using Braune & Clarke (2016) thematic data analysis and coding was done deductively and inductively to look for emergent codes. Findings were organized around a conceptual framework developed to map the distal and proximal factors affecting girls and women menstrual hygiene management in LMICs.

Results: Women menstrual experiences were shaped by their socio-cultural context and resource limitations. The main findings include psychological impacts of poor menstrual hygiene management namely shame, discomfort, culminating in feelings of powerlessness, loss of confidence, increased anxiety, and negative perceptions of menstruation. Physical health challenges related to compromised menstrual hygiene including skin irritation and rashes, increased risk of reproductive tract infections. Financial challenges culminating in poor access to and use of pain relief medication and use of substandard sanitary materials. Poor menstrual hygiene management also led to environmental pollution caused by disposal of sanitary materials and in day-to-day activities, poor menstrual hygiene led to avoidance of sexual activities and public places, reduced performance, and participation at work.

Conclusion: Adult women from an under-resourced community in Cape Town experience poor menstrual hygiene management affecting their physical and psychological health.

Recommendations: There is need for health education about menstruation, improved access to resources and health services required for proper MHM and further research and programming among adult populations.

Key words: menstrual hygiene management, menstruation, periods, adult women, physical and psychological health, menorrhagia, dysmenorrhea.

Table of Contents

PART A: RESEARCH PROTOCOL

Background

Poor menstrual hygiene management can result in health concerns for women, particularly in low- and middle-income countries (LMICs).[1,2] This results from using unclean sanitary pads, infrequent pad changes, unsafe disposal of used sanitary materials, and lack of hygienic practices such as improper hand washing after changing sanitary towels.[3] For women to achieve proper menstrual hygiene management, they should have access to clean and safe materials (sanitary products), change these materials in privacy as often as desired, and have access to safe disposal means.[4] Sanitary products can be reusable or disposable and include cloth towels, commercial sanitary pads, tampons, menstrual cups, tissues, and sometimes, tree leaves.[3] Regardless of the differences in general, all products require good hygiene related to access to water and sanitation as well as a private safe space to change it regularly. However, this is not always possible in LMICs.

Cloths are reusable and washable, but they must be dried in the sunlight after being washed and stored in a clean place to avoid contamination.[3] While some consider them safe because they do not contain the chemicals in commercial sanitary pads, they risk being unhygienic and require washing in private spaces.[3] Commercial sanitary pads may also take a long time to decompose.[3] Like tampons, commercial sanitary pads also require proper disposal as they cannot be flushed down in toilets but are considered hygienic as they do not require washing and drying. Tampons generate much waste; like menstrual cups, they require high hygiene standards during insertion and removal.[3] Menstrual cups represent a considerable cost-saving alternative over time compared to other materials. Still, their initial cost can be prohibitive to many potential users and require access to private spaces and water for cleaning.[5] Tissues and leaves are often considered unhygienic because they are not designed to collect menstrual blood as they lose strength when wet or are not always absorbent. All sanitary materials must be adequately and hygienically disposed of to avoid posing health hazards to women and other people.[3,6]

In LMICs, proper waste disposal is often still lacking in many areas, and women dispose of their sanitary pads and tampons in domestic solid waste, garbage bins, or bucket toilets. In urban areas, women often dispose of menstrual materials by flushing them into toilets.[3] These disposal methods clog sewage pipelines causing sewage backflow and the potential of menstrual waste in rivers or other water sources, resulting in a severe health hazard to people.[4,7] Lack of access to safe and hygienic spaces may mean women need to use bushes or open spaces

to change and dispose of sanitary products that may increase their risk of sexual assault, exposure to violence, and exploitation.[8–11] In addition, coping with periods in poorly resourced settings adds to the stress faced by women during menstruation as they do not have safe and clean spaces to change the materials used to collect period blood.[12,13] There are other physical health impacts associated with poor menstrual hygiene management.

Unhygienic improper use may also cause genital discomfort, irritation, bruising, and increasing susceptibility to reproductive tract infections like bacterial vaginosis and urinary tract infections.[4,9] This potentially exposes women to higher risks of adverse pregnancy outcomes, acquisition of sexually transmitted infections, and development of pelvic inflammatory diseases.[9] These physical health impacts, together with impacts on wellbeing, can be faced by menstruating women.[8,9] These impacts on poor menstrual hygiene management, together with other factors affecting menstrual hygiene management may prompt women to seek medical care from community health care workers and maternal health nurses, identified as key informants in this study. Managing menstruation in contexts where cultural and religious beliefs associate a menstrual flow with being dirty or polluted may create challenging menstrual experiences. For example, women may be restricted and excluded from daily activities such as cooking, working, and eating certain foods.[10,14,15] Managing menstruation in these cases involves concealing menstrual status, potentially leaving women feeling stigmatized and isolated, and with decreased self-esteem and confidence.[14,16] The physical repercussions of poor management of menstruation results in stress and emotional challenges as women in these contexts feel pressured and stressed about dealing with blood and smell during their periods.[13]

Challenging menstruation and menstrual hygiene management experiences may force women to choose to regulate their menstruation using injectables or oral contraceptives to avoid serious side effects of menstruation and for enhanced quality of life.[17] By 2003, the contraceptive prevalence in South Africa was almost 65%, and injectable contraception was the most popular method for most women.[17] These long-acting hormonal methods, such as depot-medroxyprogesterone acetate (DMPA) and norethisterone enanthate (NET-EN) may produce changes in the menstruation cycle and menstruation patterns such as causing irregularities in the menstruation cycle, extended periods of light bleeding and temporal amenorrhea.[17] Women may manage their menstruation using injectables or oral contraceptives to avoid serious side effects and enhance their quality of life.[18,19]

The importance of using safe and clean materials, access to adequate water and private sanitation facilities, and appropriate menstrual waste disposal have been highlighted as contributing to comprehensive menstrual hygiene management among women in LMICs.[20] Research evidence on the lack of access to water, sanitation, and sanitary products for menstrual hygiene management is mostly from studies conducted among adolescent girls and young women (AGYW) within LMICs and, most often, in school environments. In the case of adult women, existing knowledge predominantly comes from quantitative research conducted in rural areas of LMICs.[21] The term adult women in this study, is used to refer to and differentiate older women between 25 and 49 years of age from young women aged between 19 and 24 years. The result of these studies show that adult women also face sanitation concerns such as poor access to safely managed and basic water and sanitation facilities and a challenging socio-cultural context characterized by taboos and stigma.[10,21] While these finding indicate that adult women experience similar menstruation challenges like those faced by AGYW, no recent qualitative study have explored adult women's menstrual hygiene management experiences. In South Africa, despite many adult women from historically disadvantaged communities having limited access to safe and hygienic sanitary products, proper water and sanitation facilities, and functional waste collection and disposal systems, they have received minimal attention in research.[22] While the issues of menstrual hygiene faced by AGYW are valid, adult women in an African context should not be overlooked because they often play the role of educators and points of reference for AGYW as well as making up a large proportion of the menstruating population.[23,24] Existing knowledge also predominantly comes from quantitative research, and qualitative research, as proposed here, will provide a deeper understanding of women's lived experiences of menstrual management in LMICs.[25]

In a nutshell, the challenges adult women face in managing menstruation are under-researched, and their impacts on their sexual, physical, psychological health, and psychosocial well-being are little understood and deserve further exploration. Understanding their lived menstrual hygiene management experiences and realities will allow for targeted and appropriate interventions to support improved menstrual hygiene management in this population. Better menstrual hygiene management among women in under-resourced communities will ensure equitable sanitary access and improved reproductive, physical, and psychological health and well-being. It will also potentially enable women to participate fully in their work and

education by bypassing the barriers that poor menstruation hygiene management presents for women's participation in employment and education.[1]

Rationale

Menstrual hygiene management is essential for healthy and dignified menstruation, which is a natural and routine occurrence among girls and women.[6] Managing menstruation with adequate dignity is critical for improving girls' and women's reproductive health and sanitary dignity, which, among women from under-resourced communities of South Africa, is still lacking.[6] The Sanitary Dignity Framework of South Africa calls for recognizing women's menstrual hygiene needs to improve sanitary dignity.[6] This call is supported by a large body of qualitative research that has focused on adolescent and young women's menstrual experiences and emphasizes the need for health practitioners and policymakers to attend to menstrual hygiene management challenges to improve women's experiences of menstruation, menstrual management experiences and by extension facilitate their dignity.[1,25] Exploring the experiences of adult women, often understudied within an urban, poorly resourced South African context, will add necessary information to this existing body of knowledge.

Better menstrual hygiene management also relates to gender equality. Menstruation is a crucial driver of gender inequality and disempowerment of women as it poses barriers to women's ability to engage in education, work environment, and enjoyment of other human rights.[26] Improving menstrual hygiene management is therefore vital for realizing and working towards the achievement of Sustainable Development Goal 3, which calls for the promotion of women's physical health and psycho-social well-being, 5 (1) on the elimination of all forms of discrimination against all women and 5 (c) suggesting the need to take measures towards the promotion of gender equality and women empowerment and 6, on access to clean water and sanitation.[26]

The selected study population has a low-income status and could have limited access to water and sanitation facilities because of their location. The relations between under-resourced contexts and menstrual hygiene management have been established among AGYW. Still, there needs to be more evidence of the impact on adult women in these contexts. The existing research knowledge gap about menstrual hygiene management experiences of adult women from under-resourced communities has been emphasized. It is, therefore, essential to conduct qualitative research to understand what women from this context go through to cope with their

periods. This may help direct and devise interventions to respond to the challenges they face during their periods.

Research Aim and Objectives

This study aims to understand the menstrual hygiene management of adult women of reproductive ages (25-49) from an under-resourced community in Cape Town, South Africa. The objectives of this study are as follows:

1. To understand women's experiences of menstrual hygiene management
2. To explore what women, think are the impacts of menstruation on their health and well-being.
3. To find out what key informants perceive to be women's experience of menstrual hygiene management.

Literature Review

In this section, a brief literature review of the study is provided. In this review, four key themes emerged from the literature. These are 1) knowledge about menstruation and managing it; 2) Contraception knowledge, access, and use; 3) factors influencing menstrual hygiene management; 4) the impacts of menstrual practices on health and well-being.

Knowledge about menstruation and managing it

Studies conducted among adolescent girls in urban and rural areas indicate that one of the critical drivers of menstrual hygiene management is having correct biological and practical information about menstruation.[24,27] For example, a cross-sectional study conducted with 100 adolescents aged between 10 and 19 living in an urban slum in India assessed the knowledge, beliefs, and source of information regarding menstruation. This study found out that more than three-quarters of the adolescent girls were unaware of the scientific and physiological process of menstruation, had no idea of the organ from where bleeding occurs, and had obtained information about menstruation from their mothers, of which just less than half were illiterate and had primary education.[24]

A review of studies conducted in rural areas of India found that lack of knowledge about menstruation, as described above, results in poor management of menstrual blood and contributes to shaming and stigmatizing women during their menstruation.[3] For example, girls from rural schools were reusing damp cloth pads and did not know the health impacts of doing so. Neglected sex education from school curriculums in this context left girls with incomplete,

inaccurate, or little information about menstruation leading to poor personal and menstrual hygiene practices.[3] This further contributed to girls being teased and taunted with hurtful nicknames when they soiled their school uniforms.[3] Results from a qualitative study conducted among migrant women also report that having little or no pre-menarche education results in poor management of menstruation and may contribute towards shaming of women during menstruation because they may internalize incorrect information and interpretations that portray menstruation as unclean and polluted.[14]

Two qualitative studies conducted in South Africa, one among university students aged between 20 and 27 and the other among women between 18 and 35, argue that the knowledge level about menstruation plays a role in the physical management of menstruation.[15,28] The first study analyzed and synthesized data from two research projects conducted in the Eastern and Western Cape among the ama-Xhosa ethnic group. Most of the participants felt unprepared for menarche leading to feelings of confusion, shock, and fear during menstruation.[15] The second study was conducted in Durban and used in-depth interviews and photovoice methods with 21 women in participatory workshops. It reports that most participants remember the onset of menarche as a confusing time due to a lack of information and preparation for menarche.[28]

Similar results were reported by a mixed method study conducted in 10 schools in Sedibeng District in Gauteng with 500 girls aged between 16 and 22 years, eight educators, and seven focus group discussions incorporating male and female students.[29] This study's result adds that the knowledge level around the menstrual processes can positively or negatively shape girls' experiences of menarche.[29] For example, female learners who provided an incorrect understanding of menstruation associated menstruation with the release of dirty blood and blood coming from ovaries leading to feelings of sadness, and those who provided correct information about menstruation conveyed excitement about the menstruation process.[29]

Evidence from these studies suggests the importance of knowledge about menstruation in understanding how girls and women manage their periods. It also suggests that mothers and adult women from LMICs may have limited biological knowledge about menstruation. The knowledge gap emphasizes the need to explore adult women lived menstrual hygiene management experiences to add to this current understanding.[30]

Effects of contraception use on menstruation

Globally, the knowledge and use of contraceptives are being encouraged to protect women from unplanned pregnancies.[17] Given the many technologies available and influenced by social

contexts, some women may choose to eliminate monthly menstruation or suppress it using hormonal birth control methods such as oral pills, implants, intrauterine devices, and injectables.[17,31] Many contraceptive methods produce changes in the menstruation cycle, and given that menstruation itself is positioned differently across women of reproductive ages, understanding the effects of contraception use on menstruation may be necessary for understanding women's menstrual experiences and menstrual hygiene management.[31,32]

Using contraceptives on their own as a method of protecting women from unwanted pregnancies may impact their menstrual cycle and pattern. A longitudinal study conducted among 48 women participating in 6 focus-group discussions and between the ages of 30-39 in Egypt had participants describing their experiences using intrauterine devices, hormonal implants, and three-month injectables.[32] Implants and injectables may cause irregularities in the menstruation cycle, including extended periods of light bleeding, increased bleeding, and temporal amenorrhea leading to discontinuation of contraceptive use prompting women to seek medical care and advice from community health care workers or maternal health nurses in nearby health care facilities.[32] In a review by Johnston-Robledo and Stubbs (2013), similar findings were reported as some women choose not to use contraception because of concerns about the health impacts of hormonal contraceptives.[31] This evidence tells us that while women of reproductive age may engage in contraceptives to avoid unwanted pregnancies, some may choose not to use contraception due to concerns about the health impacts of contraception on menstruation patterns and quality of life.[18,31]

In addition to the above, a questionnaire-based survey conducted among 2572 female university students in three European countries with participants aged between 18 and 28 years evaluated attitudes toward contraception and opinion on the importance of menstruation. The study reported that more than half of the participants were more inclined to use contraception to manage periods, especially on special occasions, traveling, or holidays.[18] Similar results were reported in a review of qualitative studies, books, and films, adding that approximately half of the Canadian women interviewed engaged in menstrual suppression for convenience, body management and aesthetics.[31] The results from the questionnaire-based survey conducted in three European countries and a survey conducted with 103 female undergraduate students to investigate women's knowledge about and attitudes towards medical suppression of menstruation both argue that women choose to have fewer periods as a way of avoiding severe complaints associated with menstruation like pains, feeling bothered and shameful.[18,19] This evidence suggests the need to understand contraception usage among older women and how

these may influence their menstrual experiences and hygiene management. The current research seeks to find out how women from under-resourced communities manage their periods. Considering that women selected for this study may be using contraception, it is crucial to understand the effects of contraceptives on their menstruation and menstrual hygiene management.

Factors influencing menstrual hygiene management

There are many factors identified as having an influence on menstrual hygiene management across cultures and within LMICs. Two overarching factors identified in the literature are the socio-cultural context and resource limitations.

Socio-contextual factors

Socio-contextual factors include social attitudes/norms, cultural beliefs, and practices that influence menstrual experiences and menstrual hygiene management.[24] Traditions, practices, and superstitions around menstruation in African contexts influence the choice of sanitary materials used and attitudes towards menstruation.[14,33,34]

A review of 75 studies from LMICs reported that cultural beliefs around virginity testing and fertility hamper the use of insertable products like tampons and menstrual cups.[34] Although trial studies conducted in South Africa reported positive feedback about insertables, the use of these products is influenced by cultural beliefs, which contribute to girls avoiding using these sanitary products and preferring non-insertables such as sanitary cloths and commercial pads.[35]

A qualitative research study conducted among 20 Xhosa-speaking undergraduate and postgraduate students between the ages of 20 and 27 at two universities in South Africa reports that certain cultural traditions influence attitudes toward menstruation.[15] This study revealed that cultural rituals such as *inkciyo*, a virginity testing ritual that involves physical examination of the vaginal area to determine if the hymen is intact and *intonjane*, a female rite of passage which is performed at menarche involving seclusion of girls for eight days, body painting to symbolize contact with ancestral spirits and celebration of the onset of womanhood influences attitudes towards menstruation.[15] Participants reported feelings of excitement and embarrassment during these ritual celebrations because, firstly, rituals are marked with celebrations of the onset of womanhood and include receiving gifts from family members. Secondly, these rituals are performed in public and include being taught about how to avoid soiling clothes, concealing blood from men and how to behave as a woman and these make

women feel embarrassed.[15] This study reveals that menstruation is a celebration among ama-Xhosa people in South Africa; however, prevailing cultural messages and beliefs position menstruation as something to be kept hidden.[15]

A mixed-method study conducted with 255 undergraduate women aged between 19 and 21 from two historically disadvantaged universities also reports different attitudes and experiences regarding menstruation.[33] More than half of the participants described menstruation as debilitating and bothersome. The significant attitudinal differences among participants were related to race, with Black African and Coloured women reporting greater endorsement of menstruation as a debilitating event that cannot be anticipated and predicted compared to white women.[35] In addition, the quantitative component of this study revealed that endorsement of menstruation as a debilitating event tend to be more likely among women from low socio-economic neighbourhoods compared to those from economically well-off neighbourhoods.[35]

Taboos involving food, those related to religion and limited discussion about menstruation with men influence the experience of menstruation among ama-Xhosa women in South Africa.[15] For example, during menstruation, girls and women are not allowed to participate in religious activities or food preparation because they are considered dirty. This notion is echoed by a qualitative study where 84 in-depth interviews and 16 focus group discussion with 85 participants was conducted among migrant adolescents and women who had settled in Australia or Canada.[14] The study reports that while menstruation is celebrated through rituals, it is marked with containment, silencing, and concealment through taboos related to food and religion, as identified in the South African context.[14] This evidence reveals that cultural beliefs around menstruation may also influence adult women particularly taboos related to food and participation in religious activities during menstruation. This evidence also emphasizes the importance of context in understanding menstrual hygiene management.

Resource limitations and their relation to menstrual hygiene practices

Resources and access to resources can influence menstrual hygiene management practices in LMIC contexts. These include sanitary products, water, sanitation, and disposal facilities.

Sanitary products

A cross-sectional observational study conducted in India, a study conducted in a workplace setting in LMICs, and a recent commentary on menstrual hygiene management all argue that there is a relationship between access to sanitary products and menstrual hygiene

practices.[8,27,36] For example, these studies point out that girls and women from low-income families often find it difficult to purchase sanitary products that are considered safe and hygienic like commercial pads encouraging unhygienic menstrual practices. Better access to sanitary materials supports better menstrual hygiene management and minimizes the use of unhygienic and unsafe materials like cloth pads and tissue papers.[8,27,36] Use of cloths pads, which are often easily available, can encourage unhygienic practices if they are re-used without proper washing and drying.[37] A systematic review of published literature on menstrual hygiene management in resource-poor countries reported that girls attending rural and public schools tend to use old cloths, wool, and tissue papers to manage their menstruation.[38] A community-based cross-sectional study conducted in an urban slum in India provides similar results stating that about two-thirds of girls in urban slums prefer using commercial pads compared to less than a third who used old household cotton and new cloth pads from the market.[24]

In South Africa, commercial sanitary pads, though available in many shops, are expensive and non-reusable, like tampons.[37] A box of tampons cost about R40.00 making them not easily accessible by many women.[39] Menstrual cups are a result of new technology and an alternative to sanitary pads and tampons because they are deemed sustainable, practical and a cost-effective alternative where sanitation conditions are not good.[3,40] However, if we look at its retail price of R265, menstrual cups may only be affordable to some women living in urban settings as suggested in previous studies.[41] This evidence tells us about the influence of product availability and affordability in menstrual hygiene management. Adult women sampled for this study are of a low-income status and they may be earning less and thus have limited access to sanitary products. We have limited knowledge about how they manage their menstruation, and this study might help us understand their menstrual hygiene management given their socio-economic status and context.

Water, sanitation, and disposal facilities

A review of qualitative literature conducted in LMICs, a quantitative evaluation of the relationship between women's access to sanitation at home and their experience of menstrual hygiene management conducted in Nigeria with women between the ages of 15-49, and a qualitative study conducted in India with women aged between 18 and 75 years evaluating the relationship between women's access to sanitation facilities at home and their experiences of menstrual hygiene management among other issues all argue that water and sanitation facilities influence women's choices for menstrual management.[10,20,34] For example, women with access

to safely managed or basic facilities had higher odds of changing their menstrual management materials in the facility, and the availability of facilities promoted frequent hand washing compared to women with poor access to sanitation facilities, who use their sleeping areas for menstrual management.[10,20,42] Availability of safe, private, and clean facilities is associated with safe and dignified menstruation, helping to reduce the chances of infections, and enabling menstruating women to have sanitary dignity.[7,21,34]

Sanitary dignity refers to the preservation and maintenance of girls and women's self-esteem during menstruation.[6] Sanitary dignity may be lacking in under-resourced communities in South Africa and to achieve it, women should have a clean and reliable supply of water and clean, safe, and private toilets to hygienically dispose of used menstrual products. This evidence shows the importance of access to and availability of water and sanitation facilities in managing menstruation. In the selected study context, there has been limited research that explores how lack of water and sanitation facilities, for example, influences women's menstrual hygiene management. This study may add to the evidence provided by previous researchers and inform us on how women living in resource-limited settings manage their periods as this might help in responding to the needs of women in such contexts.

Impacts of menstrual hygiene practices on health and wellbeing

Many studies argue that menstrual hygiene practices and menstruation impact girls and women's physical and psychological health, and well-being.

Physical health impacts

Results from the previously cited literature review exploring women and girls' experience of menstruation in LMICs, the commentary on the management of menstruation in workplace settings in LMICs, and the qualitative study conducted in India all point out that the use of unhygienic cloth towel creates abnormally moist conditions in the vulva-vaginal area, promoting opportunistic infections.[8,10,16] For example, the use of sanitary products that are considered unhygienic such as tissue papers and damp cloth pads, not adequately washed and dried may lead to chaffed skin, discomfort, and risk of infections.[8,16,36] A case-control study with 486 participants conducted in India found out that women using re-usable pads were more likely to have symptoms of urogenital infections or be diagnosed with at least one urogenital infection such as bacterial vaginosis than women using disposable pads. [9]

Psychological health impacts

A mixed methods study conducted in Gauteng schools and qualitative research conducted in rural in India revealed that having limited knowledge about menstruation and inadequate access to water and sanitation facilities becomes a source of stress, anxiety, and worry among school-going girls.[10,43] A review of qualitative research conducted in LMICs, which included studies conducted in South Africa, seeking to explore the safe disposal of menstrual waste indicates that girls and women experience feelings of psychological stress and anxiety during their periods as they think about their safety and privacy when they want to change sanitary products or dispose of them.[34]

Impacts on well-being

A qualitative study from the Eastern and Western Cape, as well as the qualitative study of historically disadvantaged South African university students and an exploratory qualitative study conducted of learners from urban Cape Town, reported that feelings of isolation, stigmatization, exclusion from daily activities and poor school performance and attendance were a result of menstruation-related concerns.[15,35,44] Stigmatization and exclusion from participation in activities may be a result of taboos and rituals associated with menstruation.[15] Restricted movement and participation were also reported in two studies conducted in India, the first was a qualitative research study which included both adolescent and adult women between the ages of 18 and 75 years and a review article of qualitative studies on menstrual hygiene, practices and challenges faced by women and girls from developing countries.[3,10] Feeling of shame, dirty and being polluted during menstruation leads to concealment of menstruation and this was found among women from both rural and urban areas.[3,15] The evidence provided suggest that there are huge impacts of poor menstrual hygiene management among adolescents, and these may be common among adults. There is therefore a need to explore women's lived experiences to find out how their menstrual hygiene management experiences influence their health and well-being.

In a nutshell, four major themes that were identified from literature review suggesting that more research on menstrual hygiene management experiences among adolescent girls than women have been done in LMICs. There seems to be limited information about the knowledge levels of menstruation, understanding how women's knowledge of; access to and use of contraception influence menstruation patterns and factors that influences menstrual practices and how these menstrual practices are perceived to influence health and wellbeing among adult women. Exploring this will add to the existing knowledge presented and may potentially help in

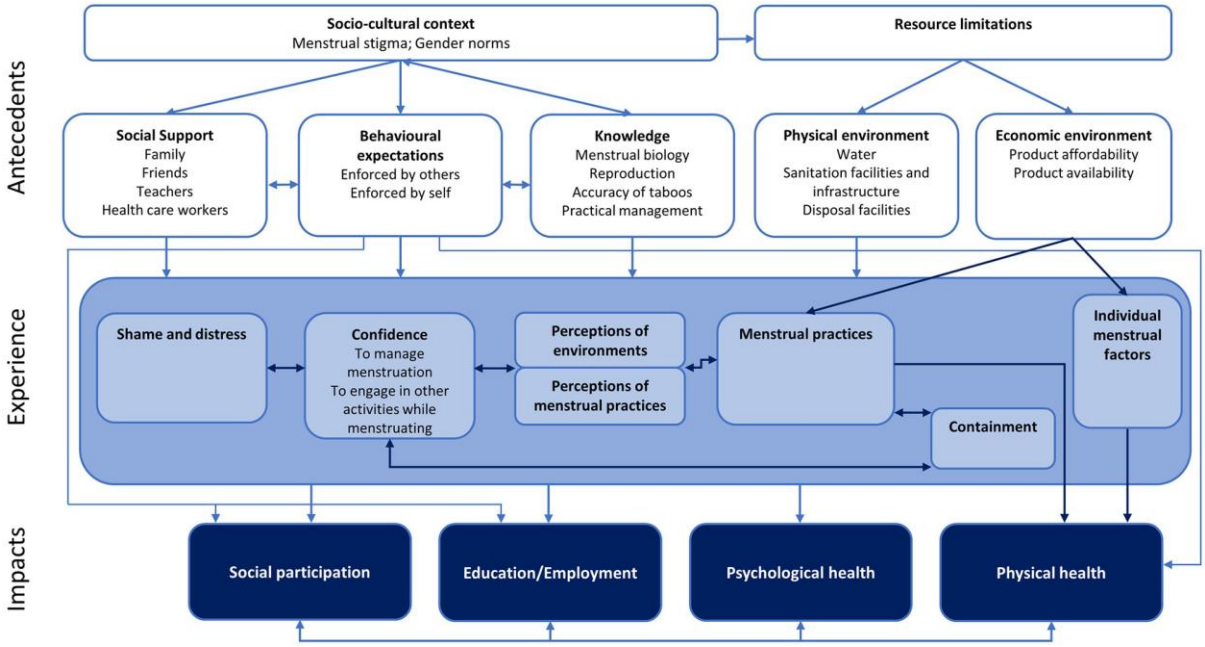
devising interventions to respond to the menstrual needs of adult women from under-resourced communities.

Conceptual framework

Understanding menstruation experiences in general, among women in LMICs includes a need to understand all components of menstrual hygiene management and menstruation.[45] The integrated model of menstrual experiences is a conceptual framework designed from a literature review of qualitative studies that focused on girls and women's menstrual experiences in LMICs, with most reviewed studies coming from sub-Saharan Africa.[25] The model identifies two overarching factors, socio-cultural context, and resource limitation as contributing factors to menstrual hygiene management experiences among women.[25] Socio-cultural context includes social support from family and friends, behavioural expectations from others and from self, and knowledge about practical management.[25] Resource limitations include physical environment such as water, sanitation facilities, and infrastructure while economic environment includes the availability and affordability of sanitary products.[25] These influence how women experience and manage menstruation which consequently influences their physical and psychological health among other issues. [25] For example, the physical environment determines the menstrual practices of women while behavioural expectations influence women's confidence in managing menstruation and engaging in other activities as shown in the diagram below. [25] These overarching factors as depicted in the conceptual framework diagram below, will be used as guide in data analysis and provide a context in which to understand this research.

The conceptual model has been selected because it incorporates menstrual hygiene management in explaining women's menstrual experiences. The model links with the research aim because it offers a more detailed depiction of what comprehensive and or adequate menstrual hygiene management should entail. For example, it does not only focus on the availability of menstrual hygiene management materials but incorporates all components of menstrual hygiene management. The model is also widely used across research in LMICs to understand the different aspects of menstruation and can be used to provide recommendations and areas of intervention and programming for menstrual hygiene management.[25] Furthermore, the model offers a directional pathway for future studies and for program and policy development seeking to improve women's health and well-being.[25] The conceptual framework will therefore be used as a guiding and organizational tool to provide order for the study results,

discussion of findings, and in examining the assumptions and methods in relation to new evidence.[46]



Methodology

Research design

An exploratory qualitative design will be used in this study. The method has been selected for this study because the researcher seeks to explore and gain insights into women's lived experiences of menstrual hygiene management. Exploratory research designs are suitable for studies focusing on under-researched phenomena.[47] In this case, this study aims to explore the menstrual management experiences of adult women who are largely neglected in previous research.[1]

Study setting

This study will be conducted in Khayelitsha, a township lying 19km east of Wynberg and 25km southeast of Cape Town.[48] This study site is one of the areas where Mpower, a project that provides menstrual cups to girls and women from disadvantaged communities, works. Operated by New Moon Trust, a registered Public Beneficiary Organisation (PBO), the Mpower project has established relationships with schools and the community of Khayelitsha, among other places. The project provides menstrual cups to girls and women, trains girls on how to use menstrual cup use, and provides information about the benefits of menstrual cup use over other sanitary products. Khayelitsha township was established in 1983 to

accommodate informal settlement dwellers and was built on the principle of racial segregation that the apartheid government of South Africa executed.[49,50] The population is predominantly Black African and isiXhosa-speaking, constituting about 99% of nearly 400 000 total population per the 2011 census.[51] This township has been selected as the study setting because most of the population from which the study sample will be selected is of low-income status, the township is under-resourced, which aligns with the research aim. For example, about 47% of the houses are formal dwellings, 46% are informal dwellings or shacks that are not in the backyard, and about 9% are informal dwellings or shacks in the backyard.[51]

Regarding water infrastructure, about 35% of the population have access to piped water inside their dwelling, while 28% have access to communal water sources inside their yard.[51] Approximately 9% of households get piped water from a water point more than 200 metres away from their yard, and nearly 1% of the population do not have access to water.[51] Also, about 72% of the population have flush toilets connected to the sewerage system, while the rest use chemical, pit, and bucket toilets. The flush toilets are communally owned and serviced by the City of Cape Town, and other toilets are serviced by contractors three times a week or as agreed with the community.[49] Unemployment rate stood at 38,32% in 2011, and the majority receive a monthly household income ranging between R1601 to R3200.[51] Refuse removal is done by the local authorities and private companies at least once a week, but 11% of the population use the communal refuse dump, while others either use their refuse dumps or have no rubbish disposal systems.[51]

Population and sampling

Population

In this study, the research population will comprise women living in an under-resourced community of Cape Town. Inclusion criteria will be being female, residing in Khayelitsha, between the ages of 25 and 49 and experiencing menstruation. In addition, these women should be linked to Mpower Cup are not currently receiving menstrual cups. Women in this age group are selected because they form part of women within the reproductive ages whose menstrual hygiene management is under-researched in LMICs Compared to AGYW.[52] AGYW aged 24 years and below, those who do not live in Khayelitsha, those currently receiving menstrual cups from Mpower Cup, and women who are using contraception methods and because of that, are not menstruating, will be excluded from this research study. For the key informants, participants who possess knowledge about menstrual hygiene management such as health

workers who engage with women's health issues in a clinic or community health workers involved in water, sanitation, and hygiene program in the community will be included in this study. People without knowledge about menstrual hygiene management, those from and affiliated with organizations working within communities providing sanitary products to girls and women will be excluded as key informants of this research study.

Sampling

Purposive sampling will be used to select a total primary sample of 10 participants, with an additional three key informants selected using a homogenous sampling strategy. A small sample size is selected because this is a small-scale exploratory qualitative study for a mini thesis. Purposive sampling is a non-probability sampling method involving the deliberate selection of a sample to show features of the sampled population.[53] In this case, the homogenous strategy will allow the researcher to choose participants who are all females and experiencing menstruation. They should all come from an under-resourced community and have never received any sanitary material from MPower, an organization that provides menstrual cups to women in poor communities in Cape Town. Purposive sampling techniques allow the researcher to study a small subset of a larger population because studying the entire population is impossible.[53] It also enables the researcher to have a detailed exploration and understanding of the experiences of participants and by using a homogenous sampling strategy, the researcher will be able to select participants with similar features and be able to describe and understand them in depth.[46,53]

Key informants for this study will be selected purposively using an intensive sampling strategy. This strategy allows researchers to select a few well-informed people who can add different perspectives on the phenomenon under study.[46] In this case, the key informants will be used to provide a different, insightful, and reality-based perspective on women's experiences of menstrual hygiene management.[46] Key informants should possess thorough knowledge about menstrual hygiene management and can be health workers who engage with women's health issues in a clinic, community health workers who are involved in water, sanitation, and hygiene programs in the community, or health providers who work on menstrual hygiene management programs.

Recruitment

Recruitment of study participants will occur by accessing the community through MPower and its partner non-governmental organizations situated in and working within Khayelitsha. The

researcher will be introduced to the community by the partner organizations and will visit the site where potential participants are. This will allow the researcher to have informal conversations with potential study participants and this allows initial sampling of participants based on the apparent readiness of individuals willing to address the research issues.[46] The key informants will be identified by the researcher when visiting the community and using their alignment with the sampling criteria.

Data collection

Data collection will be done using semi-structured in-depth interviews with participants and with key informants. In-depth interviews are selected for this research because they allow researchers to create a one-on-one relationship with respondents and be able to collect thoughtful reflections from individuals.[46] In addition, the phenomenon under study is sensitive and data collection would be most suited collected in a private and intimate space that encourages the participant to share their subjective experiences while protecting their privacy.[46] The researcher will conduct the in-depth interviews, interviews will be conducted in English with key informants, and for participants who prefer using their local language, isiXhosa, an interpreter will be used. The interviews will be conducted in the participants' homes and with key informants, interviews will be conducted in their place of work. The researcher will use an interview schedule to guide the interview process and interviews with participants will focus on understanding what women do when they get their periods. The interview guide, which will be pilot tested, will be developed using open-ended and generic questions about periods and question development will be guided by the research aim and objectives. With key informants, the interviews will explore what their perceptions are on how women cope with their periods. Before the interview commences, the researcher will allow participants to read the consent form and ask questions if they have any. Each participant will be interviewed once for a session no longer than 30 minutes and the researcher will ask for consent to record the interview session.

Data management: use and protection of research data

As soon as the interview ends, the researcher will make some field notes and together with the audio recordings, these will be uploaded onto a password-protected computer. All files will be appropriately labelled using dates and interviewee information such as pseudo name to ensure manageable retrieval. Data will be translated, anonymized, and transcribed into a Microsoft Word format for analysis, and backup copies of all files will be made and kept in a password-protected computer. All signed consent forms will be kept in a safe and locked cupboard and

once the study has been completed, the data will be kept on a password-protected computer for 5 years. A knowledge dissemination event will take place with partners of this research after the study write-up, submission, and marking process are completed.

Data analysis

Thematic data analysis, a six-step process method of systematically identifying, organizing, and offering insight into the patterns across the data will be used.[54] This method is selected because it is flexible, allowing researchers to view data differently and helps in understanding participants' shared meanings and experiences.[54] Thematic data analysis is selected because it aligns with the research aim of seeking to explore menstrual hygiene management experiences among women. The method will enable the researcher to make meaning of experiences across a data set.[54] It will also enable the researcher to identify commonalities and differences, and assist in identifying and organizing data into codes and themes as they align with the theoretical framework and the research aim.[54] In applying the thematic data analysis method, the researcher will start by familiarization with the data and this step will be done by reading and re-reading transcripts to understand what participants shared and look for the meaning within their words.[54]

This step will be followed by generating initial codes and this will involve creating some notes or memos, reflecting on what participants shared to capture emergent understanding of the dataset. [55] This is done to generate codes across the dataset and involves collating data relevant to each code. The researcher will write down short and descriptive words that assign meaning to a part of the data. These codes will be related to the research aim and this process will be done deductively and inductively to look for emergent codes. Inductive coding means that codes will be derived as they emerge from the data and coding will be done manually.[55] The coding process will begin with low-level codes to higher-level codes which will be related to and aligned with the research aim.[55] The last phase of coding will make meaningful and clear connections to the conceptual framework and research aim, and this will be done iteratively until the researcher is content about the codes derived.[55]

The third step of searching for themes will involve assembling all codes into potential themes and gathering all data relevant to each potential theme.[55] The fourth step of reviewing themes is when the researcher will check whether themes identified in the previous step work in relation to the coded extracts and the entire dataset.[55] This will be followed by defining and naming themes will involve analysis of potential themes identified and identifying clear

definitions and names of each theme. This will be followed by the last step of producing the report where the researcher will do the final analysis by choosing compelling extract examples and writing a scholarly report of the analysis process.[55] The researcher will use the adopted conceptual framework to organize identified themes under appropriate categories or key concepts of the framework and to provide order for the study results.

Rigour

To ensure rigor in sampling, the researcher will develop familiarity with the research context by visiting the study site and providing a thick description of the study setting and the participants.[46] An appropriate criterion for the selection of the sample will be used and the researcher will keep notes about the process of recruitment and report any changes that might occur.[46] In the data collection stage, the researcher will ensure rigor by having a prolonged engagement with the literature and participants under study, having sufficient time to understand the phenomenon in context, and collecting their own data.[56] This will help achieve the credibility or trustworthiness of the research. The researcher will be using two data sources to ensure comprehensiveness of the data collected and this triangulation will ensure rigor in the data collection phase.[57] Notes on the data collection process will be made and supervision sessions will be used to debrief about data collection events.[46]

In the data analysis stage, providing a clear account of the procedure used and an audit trail that other researchers can follow will ensure transparency of the research.[56] During the coding process, the researcher will request a colleague to examine the code and check whether the codes created relate to extracted data. The researcher will also keep a reflexive journal of the research process to ensure the confirmability and credibility of the research.[57] The journal will include reflections on how the researcher and the research process shaped the collected data, reflection about prior assumptions and experiences of the researcher, and their personal and intellectual biases as a female researcher and a social worker. This will help in increasing the researcher's self-awareness and enhance the credibility of the findings.[46,56,57] The researcher will also declare their theoretical position by highlighting their background in the write-up and reading literature before and during data analysis. A theoretical framework will be used as a guide during data analysis in the interpretation of research findings, the researcher will ensure rigor by declaring the study's limitations and assumptions they had and further recommendations for future researchers will be provided.[46]

Ethical considerations

Participants will be provided with adequate information about the research for them to understand what is being asked of them to provide informed consent.[46] They will be asked to freely agree to be part of the study and requested to sign consent forms that will be provided to them. Voluntary participation will be ensured by avoiding coercion of participants and explaining the right to withdraw from the study.[46] Anonymity and confidentiality of participants will be preserved by not revealing their names and identity in the data collection, analysis, and reporting of study findings.[46] Privacy and confidentiality of the interview environment will be ensured by conducting interviews in private and quiet places where the participant will feel safe.[46] Participants' identities will not be shared with people outside the research process to ensure confidentiality. Data safety will be ensured by keeping all signed consent forms in a password-protected computer and participants will be compensated for their time and effort in participating with refreshments. In-depth interviews may evoke traumatic experiences and are intrusive, to prevent harm and ensure safety, referrals for psychological distress and emotional harm will be made as required and appropriate to local NGOs (Non-government organisations) or primary health care services.[46] Permission to conduct the study will be sought first from the Health Research Committee of UCT (University of Cape Town), and there is a need for a letter from the university to prove that the research is for academic purposes.[46]

References

1. Elledge, M. F., Muralidharan, A., Parker, A., Ravndal, K. T., Siddiqui, M., Toolaram, A. P., & Woodward, K. P. (2018). Menstrual hygiene management and waste disposal in low- and

middle-income countries—a review of the literature. In *International Journal of Environmental Research and Public Health, 15 (*11). MDPI AG. https://doi.org/10.3390/ijerph15112562

2. Kuhlmann, A. S., Henry, K., & Lewis Wall, L. (2017). Menstrual hygiene management in resource-poor countries. Number 6 Obstetrical and gynecological survey, *72* (5): 356-376. www.obgynsurvey.com|356

3. Kaur, R., Kaur, K., & Kaur, R. (2018). Menstrual Hygiene, Management, and Waste Disposal: Practices and Challenges Faced by Girls/Women of Developing Countries. In *Journal of Environmental and Public Health, 2018* (17309640): pp. 1–10). https://doi.org/10.1155/2018/1730964

4. Sommer, M., Chandraratna, S., Cavill, S., Mahon, T., & Phillips-Howard, P. (2016). Managing menstruation in the workplace: An overlooked issue in low- and middle-income countries. In *International Journal for Equity in Health, 15* (1). BioMed Central Ltd. https://doi.org/10.1186/s12939-016-0379-8

5. Beksinska, M. E., Smit, J., Greener, R., Todd, C. S., Lee, M. T., Maphumulo, V., & Hoffmann, V. (2015). Acceptability and Performance of the Menstrual Cup in South Africa: A Randomized Crossover Trial Comparing the Menstrual Cup to Tampons or Sanitary Pads. *Journal of Women's Health*, *24*(2): 151–158. https://doi.org/10.1089/jwh.2014.5021

6. Department of Women, Youth and People living with Disabilities. The Republic of South Africa. (2019). *Sanitary Dignity Framework.*

7. Caruso, B. A., Clasen, T. F., Hadley, C., Yount, K. M., Haardörfer, R., Rout, M., Dasmohapatra, M., & Cooper, H. L. F. (2017). Understanding and defining sanitation insecurity: Women's gendered experiences of urination, defecation and menstruation in rural Odisha, India. *BMJ Global Health*, *2*(4). https://doi.org/10.1136/bmjgh-2017-000414

8. Sommer, M., Chandraratna, S., Cavill, S., Mahon, T., & Phillips-Howard, P. (2016). Managing menstruation in the workplace: An overlooked issue in low- and middle-income countries. In *International Journal for Equity in Health, 15* (86): 1–5. BioMed Central Ltd. https://doi.org/10.1186/s12939-016-0379-8

9. Das, P., Baker, K. K., Dutta, A., Swain, T., Sahoo, S., Das, B. S., Panda, B., Nayak, A., Bara, M., Bilung, B., Mishra, P. R., Panigrahi, P., Cairncross, S., & Torondel, B. (2015). Menstrual

hygiene practices, WASH access and the risk of urogenital infection in women from Odisha, India. *PLoS ONE*, *10*(6): 1–16. https://doi.org/10.1371/journal.pone.0130777

10. Caruso, B. A., Clasen, T. F., Hadley, C., Yount, K. M., Haardörfer, R., Rout, M., Dasmohapatra, M., & Cooper, H. L. F. (2017). Understanding and defining sanitation insecurity: Women's gendered experiences of urination, defecation and menstruation in rural Odisha, India. *BMJ Global Health*, *2*(e000414): 1–12. https://doi.org/10.1136/bmjgh-2017-000414

11. Schmitt, M. L., Clatworthy, D., Ratnayake, R., Klaesener-Metzner, N., Roesch, E., Wheeler, E., & Sommer, M. (2017). Understanding the menstrual hygiene management challenges facing displaced girls and women: Findings from qualitative assessments in Myanmar and Lebanon. *Conflict and Health*, *11*(1): 1–11. https://doi.org/10.1186/s13031-017-0121-1

12. Crankshaw, T. L., Strauss, M., Gumede, B., Shannon, A. K., Melendez-Torres, G. J., Hennegan, J., Mchugh, M. C., Das, P., Baker, K. K., Dutta, A., Swain, T., Sahoo, S., Das, B. S., Panda, B., Nayak, A., Bara, M., Bilung, B., Mishra, P. R., Panigrahi, P., … Adelman, S. (2017). The menstruation experience: attitude dimensions among south african students. *International Journal of Environmental Research and Public Health*, *27*(1), 1–8. https://doi.org/10.1080/14330237.2016.1250428

13. Phillips-Howard, Penelope. A., Caruso, B., Torondel, B., Zulaika, G., Sahin, M., & Sommer, M. (2016). Menstrual hygiene management among adolescent schoolgirls in low-and middle-income countries: research priorities. *Global Health Action*, 1–7. https://doi.org/10.3402/gha.v9.33032

14. Hawkey, A. J., Ussher, J. M., & Perz, J. (2020). The Palgrave Handbook of Critical Menstruation Studies. In *The Palgrave Handbook of Critical Menstruation Studies*. Springer Singapore. https://doi.org/10.1007/978-981-15-0614-7

15. Padmanabhanunni, A., Jaffer, L., & Steenkamp, J. (2018). Menstruation experiences of South African women belonging to the ama-Xhosa ethnic group. *Culture, Health, and Sexuality*, *20*(6), 704–714. https://doi.org/10.1080/13691058.2017.1371335

16. Hennegan, J., Shannon, A. K., Rubli, J., Schwab, K. J., & Melendez-Torres, G. J. (2019). Women's and girls' experiences of menstruation in low-and middle-income countries: A systematic review and qualitative metasynthesis. *PLoS Medicine*, *16*(5): 1–40. https://doi.org/10.1371/journal.pmed.1002803

17. Chersich, M. F., Wabiri, N., Risher, K., Shisana, O., Celentanp, D., Rehle, T., Evans, M., & Rees, H. (2017). Contraception coverage and methods used among women in South Africa: A national household survey. *The South African Medical Journal*, *107*(4): 307–314. http://www.samj.org.za/index.php/samj/article/view/11856/8015

18. Szűcs, M., Bitó, T., Csíkos, C., Párducz Szöllősi, A., Furau, C., Blidaru, I., Kapamadzija, A., Sedlecky, K., & Bártfai, G. (2017). Knowledge and attitudes of female university students on menstrual cycle and contraception. *Journal of Obstetrics and Gynaecology*, *37*(2): 210–214. https://doi.org/10.1080/01443615.2016.1229279

19. Johnston-Robledo, I., Ball, M., Lauta, K., & Zekoll, A. (2008). To Bleed or Not to Bleed: Young Women's Attitudes Toward Menstrual Suppression. *Sex Roles*, *38*(3), 59–75. https://doi.org/10.1300/J013V38N03_05

20. Hennegan, J., Zimmerman, L., Shannon, A. K., Exum, N. G., Olaolorun, F., Omoluabi, E., & Schwab, K. J. (2018). The relationship between household sanitation and women's experience of menstrual hygiene: Findings from a cross-sectional survey in Kaduna state, Nigeria. *International Journal of Environmental Research and Public Health*, *15*(5). https://doi.org/10.3390/ijerph15050905

21. Hennegan, J., Zimmerman, L., Shannon, A. K., Exum, N. G., Olaolorun, F., Omoluabi, E., & Schwab, K. J. (2018). The relationship between household sanitation and women's experience of menstrual hygiene: Findings from a cross-sectional survey in Kaduna state, Nigeria. *International Journal of Environmental Research and Public Health*, *15*(5). https://doi.org/10.3390/ijerph15050905

22. Padmanabhanunni, A., Jaffer, L., & Steenkamp, J. (2018). Menstruation experiences of South African women belonging to the ama-Xhosa ethnic group. *Culture, Health, and Sexuality*, *20*(6): 704–714. https://doi.org/10.1080/13691058.2017.1371335

23. Hawkey, A. J., Ussher, J. M., & Perz, J. (2020). "I Treat My Daughters Not Like My Mother Treated Me": Migrant and Refugee Women's Constructions and Experiences of Menarche and Menstruation. In *The Palgrave Handbook of Critical Menstruation Studies* (pp. 99–113). Springer Singapore. https://doi.org/10.1007/978-981-15-0614-7_10

24. Deshpande, T., Patil, S., Gharai, S., Patil, S., & Durgawale, P. (2018). Menstrual hygiene among adolescent girls – A study from urban slum area. *Journal of Family Medicine and Primary Care*, *7*(6): 1439. https://doi.org/10.4103/JFMPC.JFMPC_80_18

25. Hennegan, J., Shannon, A. K., Rubli, J., Schwab, K. J., & Melendez-Torres, G. J. (2019). Women's and girls' experiences of menstruation in low-and middle-income countries: A systematic review and qualitative metasynthesis. *PLoS Medicine*, *16*(5). https://doi.org/10.1371/journal.pmed.1002803

26. United Nations. (2015). *70/1. Transforming our world: the 2030 Agenda for Sustainable Development Transforming our world: the 2030 Agenda for Sustainable Development Preamble*.

27. Hennegan, J., Winkler, I. T., Bobel, C., Keiser, D., Hampton, J., Larsson, G., Chandra-Mouli, V., Plesons, M., & Mahon, T. (2021). Menstrual health: a definition for policy, practice, and research. *Sexual and Reproductive Health Matters*, *29*(1): 1–8. https://doi.org/10.1080/26410397.2021.1911618

28. Scorgie, F., Foster, J., Stadler, J., Phiri, T., Hoppenjans, L., Rees, H., & Muller, N. (2016). Bitten By Shyness": Menstrual Hygiene Management, Sanitation, and the Quest for Privacy in South Africa. *Medical Anthropology*, *35*(2), 161–176. https://doi.org/10.1080/01459740.2015.1094067

29. Crankshaw, T. L., Strauss, M., & Gumede, B. (2020). Menstrual health management and schooling experience amongst female learners in Gauteng, South Africa: A mixed method study. *Reproductive Health*, *17*(1). https://doi.org/10.1186/s12978-020-0896-1

30. Schmitt, M. L., Clatworthy, D., Ratnayake, R., Klaesener-Metzner, N., Roesch, E., Wheeler, E., & Sommer, M. (2017). Understanding the menstrual hygiene management challenges facing displaced girls and women: Findings from qualitative assessments in Myanmar and Lebanon. *Conflict and Health*, *11*(1): 1–11. https://doi.org/10.1186/s13031-017-0121-1

31. Johnston-Robledo, I., & Stubbs, M. L. (2013). Positioning Periods: Menstruation in Social Context: An Introduction to a Special Issue. *Sex Roles*, *68*(1–2): 1–8. https://doi.org/10.1007/s11199-012-0206-7

32. Tolley, E., Loza, S., Kafafi, L., & Cummings, S. (2005). The Impact of Menstrual Side Effects on Contraceptive Discontinuation: Findings from a Longitudinal Study in Cairo, Egypt | Guttmacher Institute. *International Perspectives on Sexual and Reproductive Health*, *31*(1): 15–23. https://www.guttmacher.org/journals/ipsrh/2005/03/impact-menstrual-side-effects-contraceptive-discontinuation-findings

33. Padmanabhanunni, A., & Fennie, T. (2017). The menstruation experience: attitude dimensions among south african students. *Journal of Psychology in Africa*, *27*(1): 54–60. https://doi.org/10.1080/14330237.2016.1250428

34. Elledge, M. F., Muralidharan, A., Parker, A., Ravndal, K. T., Siddiqui, M., Toolaram, A. P., & Woodward, K. P. (2018). Menstrual hygiene management and waste disposal in low- and middle-income countries—a review of the literature. *International Journal of Environmental Research and Public Health*, *15*(2562): 1–20. https://doi.org/10.3390/ijerph15112562

35. Padmanabhanunni, A., & Fennie, T. (2017). The menstruation experience: attitude dimensions among south african students. *Journal of Psychology in Africa*, *27*(1): 54–60. https://doi.org/10.1080/14330237.2016.1250428

36. Caruso, B. A., Clasen, T. F., Hadley, C., Yount, K. M., Haardörfer, R., Rout, M., Dasmohapatra, M., & Cooper, H. L. F. (2017). Understanding and defining sanitation insecurity: Women's gendered experiences of urination, defecation and menstruation in rural Odisha, India. *BMJ Global Health*, *2*(4). https://doi.org/10.1136/bmjgh-2017-000414

37. van Eijk, M. A., Sivakami, M., Bora Thakkar, M., Bauman, A., Laserson, K. F., Coates, S., Phillips-Howard, P. A., & van Eijk, A. M. (2016). Menstrual hygiene management among adolescent girls in India: a systematic review and meta-analysis. *British Medical Journal*, *6*(e010290): 1–12. https://doi.org/10.1136/bmjopen-2015-010290

38. Kuhlmann, A. S., Henry, K., & Lewis Wall, L. (2017). Menstrual hygiene management in resource-poor countries. *Obstetrical and Gynecological Survey*, *72*(6): 356–376. www.obgynsurvey.com|356

39. Beksinska, M., Smit, J., Greener, R., Maphumulo, V., & Mabude, Z. (2015). Swimming upstream: Why sanitation, hygiene and water are so important to mothers and their daughters. *South African Medical Journal*, *105*(5): 331–331. https://doi.org/10.2471/BLT.10.080077

40. Beksinska, M., Smit, J., Greener, R., Maphumulo, V., & Mabude, Z. (2015). Better menstrual management options for adolescents needed in South Africa: What about the menstrual cup? *South African Medical Journal*, *105*(5): 331. https://doi.org/10.7196/SAMJ.9205

41. Kaur, R., Kaur, K., & Kaur, R. (2018). *Menstrual Hygiene, Management, and Waste Disposal: Practices and Challenges Faced by Girls/Women of Developing Countries*. https://doi.org/10.1155/2018/1730964

42. Elledge, M. F., Muralidharan, A., Parker, A., Ravndal, K. T., Siddiqui, M., Toolaram, A. P., & Woodward, K. P. (2018). Menstrual hygiene management and waste disposal in low- and middle-income countries—a review of the literature. *International Journal of Environmental Research and Public Health*, *15*(11). https://doi.org/10.3390/ijerph15112562

43. Crankshaw, T. L., Strauss, M., & Gumede, B. (2020). Menstrual health management and schooling experience amongst female learners in Gauteng, South Africa: A mixed method study. *Reproductive Health*, *17*(1). https://doi.org/10.1186/s12978-020-0896-1

44. Chirambo, T. (2019). *An exploration of menstruation hygiene management among high school learners: The case of Fezeka High School, Gugulethu.* [Master's Dissertation]. University of Cape Town.

45. Shannon, A. K., Melendez-Torres, G. J., & Hennegan, J. (2021). How do women and girls experience menstrual health interventions in low- and middle-income countries? Insights from a systematic review and qualitative metasynthesis. *Culture, Health, and Sexuality*, *23*(5): 624–643. https://doi.org/10.1080/13691058.2020.1718758

46. Ulin, P. R., Robinson, E. T., & Tolley, E. E. (2005). *Qualitative Methods in Public Health: A field guide for applied research*. Jossey-Bass.

47. de Vos, A., Strydom, H., Fouche, C., & Delport, R. (2005). *Research at grassroots for the social sciences and human service professionals* (3rd ed.). Van Schaik .

48. South African History Online. (2019). *Khayelitsha Township*. https://www.sahistory.org.za/place/khayelitsha-township

49. City of Cape Town. (2022). *Water and sanitation services in informal settlements*. https://www.capetown.gov.za/Family%20and%20home/Residential-utility-services/Residential-water-and-sanitation-services/Water-and-sanitation-services-in-informal-settlements#section-docs

50. Nqadini, M. P. (2000). *Development challenges in Khayelitsha: An analysis of related issues* [Stellenbosch University]. https://scholar.sun.ac.za/handle/10019.1/51684

51. Strategic Development Information and GIS Department. (2013). *City of Cape Town-2011 Census Suburb Khayelitsha*.

52. Padmanabhanunni, A., & Fennie, T. (2017). The menstruation experience: attitude dimensions among south african students. *Journal of Psychology in Africa*, *27*(1): 54–60. https://doi.org/10.1080/14330237.2016.1250428

53. Ritchie, Jane., & Lewis, J. (2003). *Qualitative research practice: A guide for social science students and researchers*. Sage Publications.

54. Braun, V., & Clarke, V. (2012, December). *(PDF) Thematic analysis.* https://www.researchgate.net/publication/269930410_Thematic_analysis

55. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

56. Green, J., & Thorogood, N. (2018). *Qualitative Methods for Health Research* (pp. 173–200). Sage.

57. Mays, N., & Pope, C. (2000). Qualitative research in health care Assessing quality in qualitative research. *BMJ VOLUME*, *320*. https://doi.org/10.1136/bmj.320.7226.50

PART B: Journal Manuscript

Target journal: BMC Women's Health

Abstract

Background: Poor menstrual hygiene management can result in health concerns for women, particularly in low-and-middle-income countries. The evidence for the lived menstruation experiences of adult women of reproductive ages is limited. This study sought to understand the menstrual hygiene management experiences of adult women from an under-resourced community in Cape Town in South Africa.

Methods: In this exploratory qualitative research design, qualitative in-depth interviews were conducted using a semi-structured interview guide with 10 women aged 25 and 49 and three key informants namely a maternal health nurse and two community health care workers. The study occurred over a period of three months and all participants were purposively selected using a homogenous sampling strategy and key informants were purposively sampled using an intensive sampling strategy. Data was manually analysed using Braune & Clarke (2016) thematic data analysis and coding was done deductively and inductively to look for emergent codes. Findings were organized around a conceptual framework developed to map the distal and proximal factors affecting girls and women menstrual hygiene management in LMICs.

Results: Women menstrual experiences were shaped by their socio-cultural context and resource limitations. The main findings include psychological impacts of poor menstrual hygiene management namely shame, discomfort, culminating in feelings of powerlessness, loss of confidence, increased anxiety, and negative perceptions of menstruation. Physical health challenges related to compromised menstrual hygiene including skin irritation and rashes, increased risk of reproductive tract infections. Financial challenges culminating in poor access to and use of pain relief medication and use of substandard sanitary materials. Poor menstrual hygiene management also led to environmental pollution caused by disposal of sanitary materials and in day-to-day activities, poor menstrual hygiene led to avoidance of sexual activities and public places, reduced performance, and participation at work.

Conclusion: Adult women from an under-resourced community in Cape Town experience poor menstrual hygiene management affecting their physical and psychological health.

Recommendations: There is need for health education about menstruation, improved access to resources and health services required for proper MHM and further research and programming among adult populations.

Key words: menstrual hygiene management, menstruation, periods, adult women, physical and psychological health, menorrhagia, dysmenorrhea.

Background

Poor menstrual hygiene management can result in health concerns for women, particularly in low- and middle-income countries (LMICs).[1–3] This results from using unclean sanitary pads, infrequent pad changes, unsafe disposal of materials, and lack of hygienic practices such as improper hand washing.[3] For women to achieve proper menstrual hygiene management, they should have access to clean and safe materials (sanitary products), change these materials in privacy as often as desired, and have access to safe disposal means.[4] Sanitary products can be reusable or disposable and include cloth towels, commercial sanitary pads, tampons, menstrual cups, tissues, and sometimes, tree leaves.[3] Regardless of the differences in general, all products require good hygiene related to access to water and sanitation as well as a private safe space to change it regularly. However, this is not always possible in LMICs.

Research evidence on the lack of access to water, sanitation, and sanitary products for menstrual hygiene management is mostly from studies conducted among adolescent girls and young women (AGYW) within LMICs and, most often, in school environments.[21,58,59] Lack of access to safe and hygienic spaces may mean AGYW need to use bushes or open spaces to change and dispose of sanitary products, which may increase their risk of sexual assault, exposure to violence, and exploitation.[8–10] Unhygienic improper use may also cause genital discomfort, irritation, bruising, and increased susceptibility to reproductive tract infections like bacterial vaginosis and urinary tract infections.[4,9] This potentially exposes women to higher risks of adverse pregnancy outcomes, acquisition of sexually transmitted infections, and development of pelvic inflammatory diseases.[9]

Managing menstruation in contexts where cultural and religious beliefs associate a menstrual flow with being dirty or polluted may create challenging menstrual experiences. For example, by compromising hygienic menstrual practices, women are compelled to conceal and contain menstrual blood and odour, potentially leaving them feeling stigmatized, isolated, and with decreased self-esteem and confidence.[10,14–16] The physical repercussions of poor management of menstruation results in stress and emotional challenges as women in these contexts feel pressured and stressed about dealing with blood and smell during their periods.[13]

Challenging menstruation and menstrual hygiene management experiences may force women to choose to regulate their menstruation using injectables or oral contraceptives to avoid serious side effects of menstruation and for enhanced quality of life.[18,19] In South Africa, contraceptive prevalence was almost 65% by 2003, and injectable contraceptives were the most popular

method for most women.[17] These long-acting hormonal methods may change the menstruation cycle and patterns by causing irregularities, extended periods of light bleeding, and temporal amenorrhea, which many prompt women to seek medical care and advice from community health care workers or maternal health nurses, included in this study as key informants .[17–19]

In the case of adult women, existing knowledge predominantly comes from quantitative research conducted in rural areas of LMICs.[9,16,21] Research evidence from these studies Research evidence from quantitative research conducted in rural areas of LMICs show that adult women also face sanitation concerns such as poor access to safely managed and basic water and sanitation facilities and a challenging socio-cultural context characterized by taboos and stigma.[10,21] show that adult women also face sanitation concerns such as poor access to safely managed and basic water and sanitation facilities and a challenging socio-cultural context characterized by taboos and stigma.[10,21] The term adult women in this study, is used to refer to and differentiate older women between 25 and 49 years of age from young women aged between 19 and 24 years. Adult women's menstrual practices and experiences have been largely neglected in qualitative research in favour of AGYW.[5] In South Africa, despite many adult women from historically disadvantaged urban communities having limited access to safe and hygienic sanitary products, proper water, and sanitation facilities, they have received minimal attention in research.[22] Adult women's experience in this context should not be overlooked. They often play the role of educators and points of reference for AGYW, making up a large proportion of the menstruating population.[23,24] Qualitative research, as proposed here, will provide a deeper understanding of women's lived experiences of menstrual management within a low-income community in Cape Town, Western Cape. In addition, this paper will explore women's perceptions of the impacts of menstruation on their physical and psychological health and well-being.

Methods

Study setting

This study was conducted in Khayelitsha, a township southeast of Cape Town.[48] The population is predominantly Black African and isiXhosa-speaking.[51] This township was selected because the population is mostly of low-income status, and the township is under-resourced, aligning with the research aim. The communities have mostly informal dwellings, limited access to internal piped water, and poor access to internal flushing toilets.[51,60]

Study design and methods

An exploratory qualitative study was selected for this study because the researcher sought to explore and gain insights into women's lived experiences of menstrual hygiene management.

Sample and recruitment

Ten women between the ages of 25 and 49 were purposively sampled using a homogenous sampling strategy. The sample included women from Kuyasa and Site C section of Khayelitsha. Three key informants were purposively sampled and included two community health workers (CHWs) and a maternal health nurse from a local clinic. A small sample size is selected because this is a small-scale exploratory qualitative study for a mini thesis. Purposive sampling methods ensured variation across age and living conditions while ensuring the researcher got a detailed exploration and understanding of participants' experiences. Women living in Khayelitsha were approached in their homes and invited to participate in this study. The purpose of the study was explained, and full informed consent was received. The study included key informants who knew about menstrual hygiene management, such as a nurse from the women's health department in a local clinic.

Data collection

Data collection occurred for three months from September 2022. All interviews were conducted in a confidential and safe setting, one-on-one in participants' homes and key informants' places of work. An interview guide was used, it consisted of open-ended and generic questions about periods, women's experiences of and the practicalities of menstruation and the most significant challenges they face with menstruation. The development of the interview guide was guided by the research aim and objectives. A translator was available for participants who preferred answering questions in isiXhosa. Interviews were audio-recorded with notetaking to capture non-verbal responses. The Health Research Ethics Committee of the University of Cape Town approved all study procedures.

Data analysis

Translated, anonymized, and transcribed data was reviewed by the interviewer to check for accuracy. Clarke's (2012) six-step process of thematic data analysis method was used to manually analyse data by coding the transcripts.[61] The first step, familiarization, occurred as the researcher read each transcript and then added initial codes in the second step. The third step, coding, was guided by the research aim and objectives and occurred deductively and inductively to look for emergent codes, following an iterative process. This was followed by a

fourth step of assembling related codes into potential themes then themes were defined and named in the fifth step. Named themes were then organized into appropriate categories or key concepts of the adopted conceptual framework which was used as a guiding and organizational tool in providing order for the study results.

Rigour

To ensure rigour, familiarity with the research context, the use of an appropriate criterion for selecting the sample occurred in the sampling phase. In the data collection phase, prolonged engagement with literature and using two data sources ensured the comprehensiveness of collected data and triangulation. A traceable audit trail of how the data were collected and analysed is documented, and the supervisor did a peer review of codes and the codebook. In addition, a reflexive journal that ensures the confirmability and credibility of the research were used while a conceptual framework, illustrated in Figure 1 below, guided the data analysis process.

The conceptual framework: An integrated model of menstrual experience

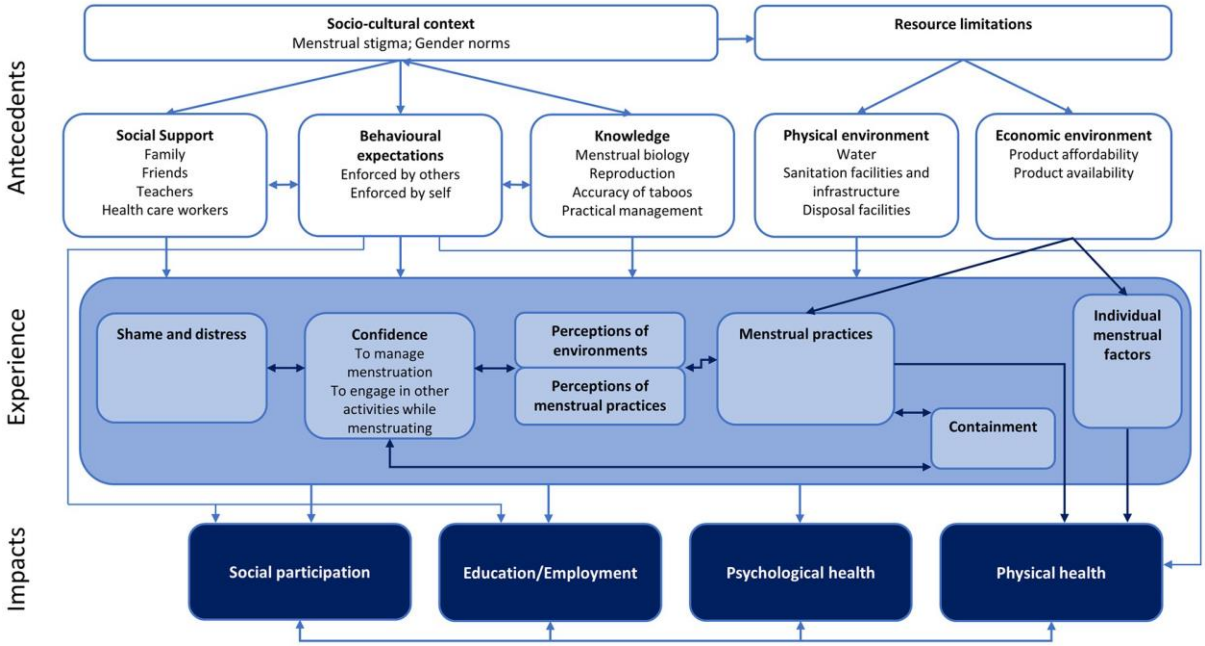


Figure 1: The integrated model of menstrual experience. Arrows show directional and bidirectional relationships between themes.[16]

The integrated model of menstrual experience conceptual framework was developed to map the distal and proximal antecedents of women's and girls' menstrual experiences in LMICs.[16] The framework showed that while menstrual experiences are complex and multifaceted across

LMICs, there are consistent factors that contribute to menstrual experiences.[16] The socio-cultural context characterized by menstrual stigma and gender norms influences experiences by limiting knowledge about menstruation and social support and shaping internalised and externally enforced behavioural norms.[16] Negative construction of menstruation as 'dirty' and a secret limits open discussions about menstruation, reducing access to accurate information and the ability to seek support.[16] Restrictive gender norms like expectations of female propriety and gender roles reduce resource access, movement outside the home, and participation in activities during menstruation.[16] Resource limitations in the physical environment such as inadequate infrastructure to support menstruation and an economic environment restricting access to affordable menstrual materials shape menstrual experiences. [16]

Menstrual experiences have multiple components including menstrual practices, women's perception of menstrual practice and environment, and individual-level menstrual factors are by the individual confidence to manage menstruation, confidence also includes self-efficacy and perceived agency and the containment of menstruation. Finally, experiences include shame and distress.[16]

Components of menstrual experiences are interlinked and negatively impact women's and girls' physical and psychological health, reduce their confidence to partake in daily activities, and influence social participation and well-being as well as work and education.[16]

Results

Of the ten women included, nine were unemployed and with low levels of education. They lived in informal, semi-formal, or formal housing in Khayelitsha, Cape Town. Most participants had access to communally owned water points and sanitation facilities inside their property. Two participants had access to internally piped water and lived in formal Reconstruction and Development Programme (RDP) houses. The first part of the results section provides an overview of factors shaping menstrual experiences, identified as antecedents in Figure 1 above. In the second section, the themes relating to the general lived menstruation experiences followed by menstrual hygiene management experiences are organised according to the experiences within the conceptual framework and then described in relation to research objectives.

Factors shaping menstrual experiences

Socio-cultural context

The socio-cultural context characterized by menstrual stigma and restrictive gender norms shape menstrual experiences by affecting knowledge on menstruation related issues, influence the kind of social support women may receive and women's behaviours during menstruation.

In line with the framework, there was menstrual stigma identified by the women in this study. They felt that others perceived menstruation to be dirty and messy.

> *It's [menstruation] not clean because when you are on your periods its messy.* ***(*P5, 33-year-old)**

As suggested by the conceptual framework, these menstrual stigmas may explain the behavioural expectations and the level of knowledge about menstruation women in this study have.

For instance, self-imposed behavioural expectations such as concealing menstrual status by washing and wrapping used sanitary pads and avoidance of sexual activities may potentially be related to menstrual stigma.

> *If I visit my boyfriend then I get into my period I am afraid I will mess the blankets, so I make sure I cover up and let him not see anything. I also afraid I may get pregnant so, I will choose not to visit him and avoid him, and yaa, I will miss having fun with him during that time [menstruation]. I miss on having fun.* **(P8, 34-year-old)**

Some women questioned the origin of menstruation, while others described menstrual pains and cramps as resulting from a dirty womb and uterus, such that menstruation ensures release of dirty blood and cleaning of the womb.

> *… I used to use Red Disprin to help manage the pain and reduce the flow. But that things [menstrual pains] happen on their own, but I think that it's because of the problem with one's womb, if it's dirty it will give you problems, I am not sure, I think that's the reason for the pain* **(P1, 37-year-old).**

This limited knowledge about menstrual biology could also impact practical management such as women thinking that tampons can get stuck and that disprins reduce blood flow.

> *Yhoo, I'm scared of tampons. I feel like it might get stuck and not come out [laughing] yoo no I really scared of it. (***P6, 26-year-old***)*

The women in this study reported gender norms that included expectations that women should avoid contact with male partners during menstruation.

> *You can't have sex when you are on your periods, or just playing close to a man, even you, you will feel that when you are on your periods you don't feel free and comfortable as a woman. That's how it is. (***P4, 40-year-old***).*

A CHW also echoed similar sentiments when she said:

> *I think It [menstruation] disgusts them….they spread or talk about negative things related to blood, I don't know why but it's something they reject from women and they reject that part. Yes, few men will have sex with their person [female partner] while they are on their periods but it's not common at all or it's not something that is usual.* ***(KI 2, CHW)***

As suggested by the framework, there are taboos around menstruation, such as that having sex during menstruation causes abdominal pains.

> *Because I used to have sex when I was on my periods. So that's why sometimes I felt like some pains down there, abdominal pains and some sorts [silence], I didn't know that I am not supposed to have sex during that time. Some people used to say it's not right having sex while on your periods, it's a no-no. (***P10, 33-year-old).**

Resource limitations

Lack of resources such as water, sanitation and disposal facilities in the physical environment and lack of finances to purchase preferred, safe, and better-quality sanitary products and medication shape menstrual hygiene management experiences.

In this study, , available water and sanitation infrastructure are considered unsafe, and women often lack privacy because toilets and washing resources are shared. This means that women resorted to changing materials and washing inside their houses using buckets.

> *I ask him [brother] to leave and tell him I want to wash and that's all. Its better if I change inside the room than go the toilets outside, there, there is no privacy, inside the house is better…* ***(*****P8, 34-year-old**).

There is poor access to internally piped water as women rely on a shared piped water source to fetch water for bathing.

> *We take our water from the tape outside there [pointing outside the house], that's the tap we all use, it [water] comes out cold and you fetch it with your bucket or whatever*

> *you have and bring it to your house, boil it and then go with it [water] there [pointing outside the house] to bath or you do it [bath] in your bedroom*. (**P9, 25-year-old**).

In addition, women in this study have limited access to sanitary products leading to use of cheap, low-quality, products that may be unsafe and unsuitable for the conditions they live in.

> *Yoo [silence], I think they [sanitary pads] are easy to use but I do not always get them, I normally can use cloths and other stuff you see, tissues sometimes, but I prefer them [sanitary pads], but you see, I can only get those cheaper and very thin one that I can afford to buy at Shoprite. (***P9, 25-year-old).**

Women also rely on shared rubbish bins outside their yards to dispose of used materials while others flush in toilets. Poor waste collection and sewage backflow caused by flushed sanitary pads result in environmental pollution.

> *[laughing], once used I flush them [sanitary pads], … I flush them down the toilet. Yes, I know I am one of the people who clogs the sewage system, but I do not have any other options. (***P10, 33-year-old**).

A CHC added that while women from formal settlements use shared bins and some have access to flush toilets, those in informal settlements, without bins, dump pads close to their houses, leaving the environment littered with menstrual waste.

> *No, the condition [of living] can be number one because there are informal settlements around our houses which were just recently built, there are no bins there so they [women] will have a plastic bag and if they [women] do not have [bins] they will just throw it [used sanitary pad] out near the house because there is no proper waste collection, …others put them [used sanitary pads] in the bins nearby. Others just throw them [used sanitary pads] away all over or just anywhere because sometimes you see them [used sanitary pads] laying around….(***KI2, CHW).**

Women in this study experience menstrual stigma, restrictive gender norms, and taboos associated with menstruation. They manage menstruation in conditions with limited access to safe and good quality sanitary products, with shared water and sanitation facilities reducing privacy and safety. Poor menstrual waste disposal systems such as flushing pads and disposing of pads in dumping sites near their homes cause sewage spillages and environmental pollution.

The following sections present six themes related to women's lived menstruation experiences, followed by seven themes related to women's menstrual hygiene management experiences, and lastly, three themes related to the health impacts of menstruation and menstrual hygiene management on women. Refer to a full table of themes in the appendices section.

Lived menstruation experiences

In this section, a description of women's lived menstruation experiences is provided which are organised following the menstrual experiences themes of key concepts of the adopted conceptual framework.

Shame and distress

This is about being worried and afraid of the perceived significant burden created by menstruation and includes positive feelings of menstruating, expressed as an affirmation of womanhood or health.

Theme 1: Mixed feelings associated with menstruation

Different women identified a mixture of feelings about menstruation. One participant expressed how her heavy bleeding made her feel scared about menstruation.

> *Yhuu, it is getting the big clots [blood clots] because I used to bleed very heavily and then they would come, the huge clots are just a scary thing and are painful. They make me feel so scared when am on my periods* (**P10, 33-year-old)**

A CHW supported this idea of fear because of women not knowing what is happening to them.

Another woman expressed feeling uncomfortable during her menstruation.

> *Also, when you are on your periods you don't feel free and comfortable.* (**P4, 40-year-old).**

Another woman expressed that she feels good and free after her menses and therefore believes that menstruation is good for her health:

> *It's a good thing to go on your periods because when you don't go on your periods you don't feel well until you start getting the pains and you know your periods are coming and afterwards you feel free, and they are good for our health.* (**P3, 47-year-old**).

Women in this study have different feelings associated with menstruation. Some feel scared and uncomfortable during menstruation, while others feel good and free after having their

menses as they associate menstruation with good health. This may suggest that women may feel differently about menstruation.

Perceptions of menstruation

This is about what women thought about menstruation and these shaped menstrual practices adopted for menstruation and menstrual hygiene management.

Theme 2: Differing perceptions of menstruation

Women perceive the process of menstruation differently and negative perceptions of menstruation were expressed by a number of participants, who felt that menstruation affected them physically and emotionally.

> *I don't think it's good at all because I don't really like having periods at all…The bleeding and feeling tired most of the time and moody all of the time. (***P5, 38-year-old)**.

Another participant thought:

> *Then sometimes going on your periods is boring because it's not nice. I always make sure that I have pads.* (**P9, 25-year-old**).

Others like the women quoted in the previous theme felt more positively about menstruation and that it was good for one's health.

Individual-level menstrual factors

These were individual menstruation variations such as physical symptoms, menstruation abnormalities, and access to and use of pain relief shaping individual women's menstrual experiences.

Theme 3: Menstrual abnormalities or disorders

The general experiences of menstruation described by women included a range of things they may have classified as menstrual abnormalities or disorders. Some women reported experiencing menorrhagia or excessive bleeding during their menstruation so much that they equated it to having a miscarriage because of the heavy flow.

> *There are times when I go on my periods, and it be like I am having a miscarriage and I can see that the flow (menstrual flow) is very heavy and then the clots come out. So, I*

> *can change a pad like 4 times a day or 1 after the other and feel that the pad is getting full again.* (**P1, 37-year -old**).

Physical symptoms of dysmenorrhea are experienced by women and are seen as a problem whose solution, in some women, is unknown as reiterated below:

> *It's the pains. The period pains are the problem, and I don't know what can help me or what I can use to make them better. Because once I get them are very severe. (***P7, 30-year-old).**

In addition, women experience irregular bleeding such as having periods twice in a month and on different dates as described by one participant:

> *My periods are not regular. Cause I can be on my period on the 15 ,5 or month end of that month. They* [periods] *are not regular. There are times that I can be on periods twice a month with period pains or no periods pains. Sometimes I can go on the* 15^{Th} *and sometimes on the first day of the month or towards the end of the month.* (**P1, 37-year-old).**

Overall, women in this study experienced menstruation differently, some experience heavy and irregular bleeding, and others experience menstrual pains all of which make management potentially more challenging and complex and at least the experience unpleasant.

Theme 4: Access to and use of pain remedies

Women had access to and used different pain relief remedies to cope with menstruation. One woman identified the use of painkillers such as Nurofen as helpful.

> *Once I drink them [Nurofen], I become better and once I drink them [Nurofen] those period pains go away.* (**P8, 34-year-old**).

Other women rely on home remedies such as drinking water to ease period pains and thus experience easier less painful menstruation:

> *What I do is like drink hot water to feel better when the pains are too much. It will make me sleep and wake up feeling a bit better.* (**P5, 38-year-old**).

Another woman spoke about drinking vinegar to feel better.

> *I do feel the pain but once I use the vinegar, I drink it and I feel better. (***P7, 30-year-old).**

Women in this study had access to and used different pain relief remedies to reduce menstrual pains and improve menstruation.

Menstrual Practices

These were choices and behaviours women engage in to regulate menstrual bleeding and improve menstruation experiences.

Theme 5: Individual choices for regulating menstruation

Women made a range of choices to regulate their menstruation. Most participants used contraceptives, ranging from combined oral contraceptive pills (COCP), injectable long-acting reversible contraceptives (LARC), and implants. The bulk of these women used hormonal contraceptives such as injectables and implants. They indicated that the long-acting injectables reduce menstruation days and pain, and they feel better using them.

> *I don't know, cause when I use them [injectable], I start becoming better. The pains [cramps] become less, and I now only go [bleed] for just one day in a month [**giggles].** Its better now with the needle [injectable], it was difficult before it. (***P7, 30-year-old).**

> Another participant reported that using an implant meant she can skip her menstruation: *Maybe the good things [about the implant] is that sometimes I don't go on my periods*. (**P9, 25-year-old).**

A CHW also reiterated that some women may choose to use contraceptives to stop their menstruation rather than to prevent unwanted pregnancies.

> *So, some ladies will go for contraception specifically to stop menstruation and not because they want to prevent anything [pregnancy]. Because you'll find out that some are not even dating but they want to use contraceptives because they want to stop the blood. (***KI 2, CHW).**

Another woman in the study however indicated something different, she associated not having her period with lower back pain and therefore decided to stop her contraceptive.

> *When I was using the injection [*contraceptive], *I used to not go on my periods, and I started having lower back pain and then I thought let me stop this thing* [contraceptive]. *After I stopped using it* [contraceptive], *that's when I started going on my periods well, no pains or anything*. (**P1, 37-year-old**).

A maternal health nurse from a local clinic reinforced this choice of stopping contraceptive use to get periods.

The choice to use hormonal contraceptives to regulate menstruation contributes to different experiences among women. While the bulk of women in this study preferred using contraceptives to reduce menstrual pains, cramps, and bleeding days, others choose to stop contraceptive use to get periods.

Theme 6: Contrasting perceptions of menstrual practices

Two contrasting perceptions of menstrual practices were expressed by women with some supporting the choice of hormonal contraceptives use for menstruation regulation as reliable because:

> *I don't know, cause when I use them [*injectable*], I start becoming better. The pains become less, and I now only go for just one day in a month [**giggles].** It's better now, than before I took the needle [*injectable*], it was difficult*. (**P7, 30-year-old).**

On the contrary, another woman expressed her disappointment about contraceptives not stopping her periods when she said:

> *It [*injectable*] does not work for me in the sense that other people who are on the needle it stops their periods, they don't get periods anymore but me I still go on my periods and on the other hand even if I take my oracle pills* [combined oral contraceptive*], I will still be on my periods*. (**P6, 26-year-old woman).**

Overall, women have different perceptions of the individual choices they make to regulate menstruation. Some perceive the choices as reliable because menstruation becomes better while others are disappointed due to perceived contraceptive's failure to regulate menstruation.

Menstrual hygiene management experiences

These were women's experiences of menstrual hygiene management and included the type of menstrual materials used, whether these materials are clean and safe, are changed in privacy and as often as possible, are disposed of safely and properly with proper hand washing. As per the framework, hygienic and effective management of menstrual blood lies at the centre of menstrual experiences and is shaped by resource limitations.[16]

Individual menstrual factors

Theme 1: Characteristics of sanitary products used

The type of sanitary products used by women seemed to influence their menstrual hygiene management experiences. Most women used sanitary pads because they feel they absorb blood better and are disposable.

> *…I think pads are better because they can catch the blood and when its full you simply take it off, throw it away after washing. That's why I choose pads. (***P1, 37-year-old)**.

Others felt that certain products were most comfortable than others and therefore preferable.

> *So, the fabric [of Kotex pads] it's much better than using the Always [a brand of pad] one. Its [Kotex] softer than the Always one because they [Always pads] have plastic-like thing on top which absorbs the blood whereby it makes your vagina itchy sometimes so by using Kotex you feel comfortable, and you don't feel like the pad is dragging out the blood (***P5, 38-year-old).**

Furthermore, another woman suggested that pads are safer than tampons as their use does not involve painful insertion.

> *I think they [pads] are the safest one for me more than tampon because you do not insert them [pads]. I feel like when you insert a tampon it causes itchiness and its painful, pads are not like that.* (**P10, 33-year-old).**

Two women in this study used sanitary cloths for menstrual hygiene management however the product was unsatisfactory, resulting in overflow and possible soiled garments.

> *Because with the cloth [*sanitary cloth*], it gets full easily and when it gets wet it stains your clothes and becomes messy. There are times when I start my period but not have any pads and I use the cloth for that moment and then I see that no, I am going to need pads because the cloth is light and will overflow because it can't handle blood***. (P1, 37-yearold).**

Overall, women in this study preferred sanitary pads to any other option with two using cloths. The use of sanitary products is determined by whether women see the product as safe, comfortable, or easy to use and dispose of. Sanitary cloths are not preferred because of their inability to absorb menstrual blood.

Theme 2: Unequal economic access to sanitary products

Despite the bulk of women relying on sanitary pads for menstrual hygiene management, their access varied, and this was largely related to *cost*, some women rely on cheap products because of a shortage of funds:

> *I use all kinds [of sanitary pads] from time to time. I buy the ones which are cheap, and I can afford at the time because I don't work. I just buy the ones that will be cheap at that time. (***P3, 47-year-old).**

Using sanitary cloths as presented in the previous theme was also related to cost.

> *And if I don't have the money for the cheap ones [pads], I take any cloth that I have, fold it, and use it. That's what I do. I will use it till I finish. (***P3, 47-year-old).**

Women, therefore, have different menstrual hygiene management experiences as their economic situation can affect access to sanitary products.

Menstrual practices

Theme 3: Ways of maintaining hygiene during menstruation

Participants identified many ways to remain clean during their menstruation.

> *Like when I change, I boil the water, put it in a bucket and remove the pad first, put it on the floor and sit on the bucket to wash my private parts* [genitals] *and then when I am done, I change it. Then take the used one and throw it away.* **(P9, 25-year-old).**

All women reported that frequent pad changes maintain hygiene during menstruation.

> *I change them [sanitary pads*] *here at home inside the house. I normally change them* [*sanitary pads*] *like 4 times a day. Sometimes when I feel that it is full, I will wash* [*take a bath*] *and then change it.* **(P2, 32-year-old).**

Two women revealed that bathing is dependent on their menstrual flow.

> *No, sometimes I do wash and sometimes don't wash, depends on my flow* [menstrual flow]. **(P7, 30-year-old).**

One participant reported that wiping herself instead of bathing fully ensures that she is clean and that this was prompted by using shared sanitation facilities and living in houses that lacked privacy.

> *You see here, you can't be going to those bathrooms [pointing outside]to wash all day, I don't know, for how many times when you are at home. Even if you wanted [to bath], someone may be using the bathroom or here [inside the house] as you see, I live with people, others come and go, you saw the machine [laundry machine] outside, people come and I will not have the space to bath, I will just wipe quickly, and I am done.* (**P1, 37-year-old).**

Means to maintain hygiene during menstruation varied depending on the intensity of menstrual blood flow. It appears as if women's personal expectations of menstrual etiquette determine regularity and type of washing and it is related to access to sanitation facilities.

Theme 4: A long process of changing materials and disposing of them

Changing and disposing of menstrual products was often a long and complex process. The process started with removing the used pad and depending on hygiene choices, bathing may occur.

> *If I see that the pad is full, I then take it off, wash* [*taking a bath*] *myself and then put on a new one. That's what I do.* (**P5, 38-year-old).**

It was interesting to note that after washing themselves used pads were reported to be washed by all women.

> *…when I am done washing, I change the pad then I wash the pad in the water I just bathed in…*(**P6, 26-year-old**).

Pads were then wrapped and disposed of in bins situated outside their houses. One woman also reported flushing the pad down the toilet and the other throwing them way outside.

The process of changing pads followed by women in this study is long and was described similarly even when being changed outside their homes.

Confidence

This is related to one's ability to manage menstruation, perform other tasks at home or at work, and freedom to travel to places outside the home. Confidence in this study was interlinked with what the framework identified as social participation, employment, and education and therefore are all presented as one. Confidence levels influence menstrual hygiene practices and health.

Theme 5: Reduced confidence to manage menstruation and engage in other activities

Women described how women did not feel confident to manage menstruation particularly while wearing certain types of clothes.

> *But it [period] does [affect] somehow, like the way you dress for example if its hot outside I can't wear a short skirt because I'm the one that's on her periods. I must wear comfortable cloths and have tights underneath the jean I am wearing. (***P6, 26-year-old).**

Women also expressed how difficult it was to carry out daily tasks due to severe menstrual pains:

> *Because once I get them [menstrual pains] are very severe. It becomes difficult for me to hold my child or do anything. (***P7, 30-year-old).**

Women also experience reduced confidence, expressed as a lack of a sense of freedom and empowerment to travel to places outside of home:

> *…The bad thing about having periods is that for example if I was planning on going somewhere and then I see that I am on my periods ready to go somewhere and then I get my period then I don't feel too comfortable around people because I just don't feel comfortable.* (**P5, 38-year-old**).

All women experienced reduced confidence and expressed poor self-efficacy to achieve a pleasurable sexual life and social participation.

> *I can say maybe the way they [periods] affect my health is that they [periods]can stop me from having sex with my partner because if you do you can fall pregnant, they affect my enjoyment and when you want to go and have fun with others.* (P**8, 34-year-old**).

One woman experienced reduced confidence, expressed as reduced concentration and participation at work.

> *If I get my periods and I am at work, I don't work very well because most of the time I have to make sure that I am clean, before I get up from a chair, I need to make sure that my chair is clean, or I didn't mess on my pants.* **(P5, 38-year-old).**

Overall, menstruation reduced women's confidence to engage in different activities and limited women's sense of freedom and empowerment to move outside their homes. Reduced confidence to concentrate at work may influence performance and in the long term, potentially

affect quality of work and income. Reduced confidence to enjoy a pleasurable sexual life may reduce women's quality of a pleasurable sexual life and well-being.

Containment

This was about managing leakages, keeping materials in place, and minimizing detectable odour during menstruation.

Theme 6: Strategies to contain menstrual blood leakages and odour

These are ways devised by women to contain menstrual blood and conceal menstrual status by avoiding soiling outer garments and odour. One participant reported that she wears two sanitary pads to avoid leakages and or soiling outer garments. Another woman reporting washing more than normal.

> *Yes, there is a smell normally. I mean you can smell the blood so that's why I must take a bath maybe 2-3 times a day. In the morning, afternoon and before I go to bed so that I don't smell blood.* (**P5, 38-year-old).**

The washing of pads is another way to contain and limit smells.

Perceptions of environment

This was about what women thought about the privacy and safety of available water and sanitation facilities for menstrual hygiene management.

Theme 7: Adequacy of the environment

The physical environment in which they manage their menstruation is perceived as inadequate, with a lack of privacy in communal toilets leading to the use of rooms to change sanitary materials.

One participant expressed how it is better for her to change menstrual materials inside their house than use available toilets as they lack privacy:

> *Its better if I change inside the room than go to the toilets outside, there, there is no privacy there. Inside the house its better, I ask him to leave and he[brother] leaves.* ***(*P8, 34-year-old)**

One participant, who used the bucket system, expressed the inadequacy of the environment by highlighting the unsafety of buckets for menstrual hygiene management.

> *I think the worst I have experienced is when the clots are coming out because they come out so painfully, and imagine you have your bucket in here and you must fix yourself fast over that bucket quick, quick, I don't think it's even safe. And even when you pee, we use a bucket because we don't have toilets around. (**P1, 37-year-old)***

Another participant expressed frustration about the lack of internally piped warm water for bathing, which is a challenge for better menstrual hygiene.

> *For me I think it's this thing of having to go out there[outside] to take water, as you see in here, this whole house does not have piped water, not having it [water] in here make it [changing pad and bathing] a struggle for me to have to go queue for the water and then think of boiling it[water], then you can bath. It's tiring but that's all we have here. (**P9**,* **25-year-old**).

Overall, the physical environment in which women live is perceived as inadequate because of a lack of proper water and sanitation facilities, and lack of privacy and safety in available facilities. This may suggest that menstrual hygiene management for women from different physical environments may be different depending on the privacy and safety of the physical environment.

Impacts of menstrual hygiene practices on health and wellbeing

These were the impacts of women's lived menstruation and menstrual hygiene management experiences on their health and well-being. As suggested by the framework, impacts are linked to behaviours women engage in to maintain menstrual hygiene and are influenced by negative menstruation experiences.

On physical health

Theme 1: Skin rashes, irritations, and increased risk of reproductive tract infections

All interviewed participants reported that pad wetness may cause skin irritations such as rashes and itchiness.

> *It's boring to always to have to be wearing a pad and sometimes the pad irritates your vagina skin, and you get a rash, and you are always wet. So, it's not a nice or comfortable feeling.* **(P6, 26-year-old)**.

A CHW reiterated this and that the type of sanitary pads used during menstruation may increase women's susceptibility to reproductive tract infections.

> *It's infections and sometimes you might think you have an STI but it's an infection because of the materials they use [for menstruation]. Some have perfumes, scented or unscented perfumes and some don't know if it has that effect of causing irritation… (***KI2, CHW).**

Adult women's menstrual hygiene management practices and experience of menstruation may contribute to poor physical health outcomes.

Theme 2: Exposure to an unhygienic environment with serious health hazards

Resource limitations at home, as presented earlier in the results section may expose women to an unhygienic environment due to sewage overflow, and uncollected and dumped menstrual waste. Dumping sites and sewer backflow can be potential breeding places for flies, mosquitoes, germs, and pathogenic microbes harmful to women's health. One participant, who disposed of sanitary pads by flushing them, revealed that she is among the many people contributing to sewage backflow.

> *Yes, I know I am one of the people who clog the sewage system, but I do not have any other options. (***P10, 33-year-old**).

The CHW added that dumped menstrual waste pollutes the environment.

> *…there are no bins there so they [women] will have a plastic bag and if they [women] do not have [bins] they will just throw it [used sanitary pad] out near the house because there is no proper waste collection, …others put them [used sanitary pads] in the bins nearby and others just throw them [used sanitary pads] away all over or just anywhere because sometimes you see them [used sanitary pads] laying around….(***KI2, CHW).**

Exposure to unhygienic environments with serious environmental health hazards could potentially lead to the risk of infectious and parasitic diseases detrimental to women's and other people's physical health.

On psychological health

Theme 3: Increased anxiety and stress

All interviewed women expressed that poor access to sanitary products increases anxiety and stress before and during menstruation.

> *And in my case, I go on my periods for a full week and not just 3 days in a month. So, I must always buy pads and know that I have the money to buy pads all the time. (***P6, 26-year-old).**

In addition, feelings of powerlessness about being able to address dysmenorrhea presented a psychological impact on women.

> *It's the pains. The period pains are the problem, and I don't know what can help me or what I can use to make them better.* **(P7, 30-year-old).**

Lack of control and financial capacity in relation to menstruation could cause stress and anxiety.

Described in relation to research objectives, the first section on factors shaping menstrual experiences and all themes related to women's menstrual and menstrual hygiene management experiences provides an understanding of women's lived experiences of menstrual hygiene management and indicates the challenging menstrual hygiene experiences and menstrual practices related to access to sanitary materials, water, sanitation and disposal facilities, pain management and attitudes towards menstruation. Perceptions expressed indicates that women think that menstruation affect their physical and psychological health and wellbeing.

Discussion

There were mixed feelings associated with menstruation, leading to different perceptions of menstruation and menstrual practices of women in this study. These feelings and perceptions influenced women's psychological health and reduced their confidence to manage menstruation and engage in other activities. The reduced confidence then influenced the practices of containment of menstrual blood leakages and odor.

Other negative factors that affected women's menstrual experiences included menstrual abnormalities. In addition, not being able to afford safer sanitary products due to economic situations affected their ability to purchase preferred products. Using unsafe sanitary products then led to skin irritations and rashes, exposing women to risks of reproductive tract infections.

Menstrual practices adopted by women in this study included choices to regulate menstruation with injectable contraceptives, which were perceived differently by women depending on the impact of the contraceptive on their menses. Other practices included different ways of maintaining hygiene and disposing of used materials, but almost all women followed a

similarly long process of changing pads. All these practices affected women's psychological and physical health and were linked to resource limitations.

Poor access to water, sanitation, and disposal facilities required for hygienic menstrual practices and safer disposal made women think that their environment was inadequate to provide safety and privacy. Poor waste disposal causes sewer backflow leading to environmental pollution that may increase women's exposure to infectious and parasitic diseases.

The first set of findings relates to shame and distress, where mixed feelings about menstruation were expressed. For instance, women expressed fear, shame, and discomfort during their periods, and these feelings emanated from limited knowledge about biology related to menstruation. Shame and distress may be potentially linked to psychological health impacts, such as feelings of powerlessness to address menstrual cramps and increased anxiety. This finding adds crucial new knowledge about adult women's menstruation experiences and is consistent with previous research findings reporting on shame and distress experienced by menstruating women.[8,10,14,16,35,62]

Feelings expressed towards menstruation, as mentioned above, then influence perceptions of menstruation and menstrual practices.[16] According to the conceptual framework, perceiving that menstruation is bad is influenced by existing menstrual stigma and gender norms.[16] This is consistent with previous research, which identified socio-cultural contexts as an overarching factor that shaped negative perceptions of menstruation among women from socio- and-economically deprived communities.[16,35]

The second set of findings relates to confidence, which according to the conceptual framework, is influenced by feelings and perceptions of menstruation.[16] Women in this study indicated that they struggled to perform household duties, avoided sexual activities and public places, and had reduced concentration and performance at work during menstruation. Reduced confidence in managing menstruation is influenced by menstrual stigma and gender norms and directly affects containment.[15,16,35] This may explain containment strategies adopted by women in this study, such as wearing two pads and taking multiple baths to wash away the blood smell. This is consistent with previous research, which indicated that attitudes towards menstruation contributed to the failure to successfully contain menstrual blood, which led to feelings of personal failure, menstrual shame, embarrassment, and distress.[14,35]

The third set of findings relates to individual-level menstrual factors such as having menstrual abnormalities and poor access to and use of pain relief in creating challenging menstruation experiences for women. Other individual factors shaping menstrual hygiene management experiences included limited finances, which affected access to sanitary pads and characteristics of sanitary products used. The attributes of sanitary products used may explain impacts on physical health like skin rashes and irritations, as suggested by the conceptual framework adopted in this study.[16] This is consistent with previous research, which indicated that challenging menstrual experiences and poor menstrual hygiene management practices of individual women could affect their physical health.[3,8–10,15,16,34,38]

The fourth set of findings relates to menstrual choices women in this study make to regulate menstruation. For example, using injectable contraceptives improves some women's experiences of menstruation and is perceived as reliable. In contrast, those who complained about contraceptives' impact on their menstruation patterns perceived the choice as unreliable. This finding is consistent with what previous researchers have indicated on contraception use and menstruation.[32]

Other practices were undertaken to maintain hygiene during menstruation. These practices were influenced by their access to water, sanitation, and disposal system as propounded by the conceptual framework.[16] For instance, the lack of internally piped, warm water for bathing and proper sanitation facilities forced women in this study to wash or wipe their genitals using buckets and use the house for bathing and changing pads.

Furthermore, poor menstrual waste disposal methods available for women in this study, such as having shared bins or not having bins, meant that some women had to wash used and disposable pads. In contrast, others dumped or flushed them in toilets. Flushing sanitary pads clog the sewage drainage, cause sewer backflow, and, together with dumped menstrual waste, cause environmental pollution, which may expose women to an increased risk of infectious and parasitic diseases, as indicated by previous research.[3] All these adopted menstrual practices, shaped by resource limitations, may explain their increased anxiety and feelings of powerlessness associated with menstruation and is consistent with previous research.[8,10,16,21,34,63]

Women in this study perceive their physical and economic environment as inadequate for proper menstrual hygiene management. Firstly, the absence of internally piped warm water for bathing frustrated women's efforts to remain hygienic during menstruation and may

compromise their privacy and safety, as speculated by the framework. Secondly, women's economic situation also affected their ability to purchase products they preferred, and the use of poor quality and unsafe materials affected their physical health, as identified in this study. Lack of privacy and safety may reduce women's confidence to manage menstruation, increase their fear, worry about menstrual hygiene management, and therefore reduce their sanitary dignity, a key component of the menstrual hygiene management. These findings are consistent with previous research emphasizing improved access to proper water and sanitation infrastructure and safe menstrual hygiene management materials to improve sanitary dignity.[3,8,16,29,34,38,64]

Discussed in relation to research objectives, findings indicate that women's experience of menstrual hygiene management is influenced by socio-cultural and economic factors. There are negative experiences of menstrual hygiene management with various adopted menstrual practices related to access to sanitary materials, water, sanitation and disposal facilities and pain management. Women also have negative attitudes towards menstruation leading to psychological impacts namely shame, discomfort, culminating in feelings of powerlessness, loss of confidence, increased anxiety, and negative perceptions of menstruation. Physical health challenges related to compromised menstrual hygiene including skin irritation, rashes and increased risk of reproductive tract infections. Poor menstrual hygiene management also led to environmental pollution caused by disposal of sanitary materials and in day-to-day activities, poor menstrual hygiene led to avoidance of sexual activities and public places, reduced performance, and participation at work.

Limitations

The use of a small sample size, influenced by the small-scale and exploratory qualitative design is a potential limitation of this study and using a slightly larger sample size would have probably given different results. In addition, using a homogenous sampling strategy, that only allowing selection of female participants for an in-depth understanding of women's lived experiences could be another potential limitation. While insights from key informants with knowledge on menstrual hygiene and health were used for triangulation, participants' partners or spouses could have provided different perceptions on the impacts of menstruation on women's physical and psychological health and well-being. This study may not reflect the experiences of menstrual hygiene management in rural settings as data collection was predominantly done in an urban context, recommendations for future research in a rural setting

is provided. Nevertheless, these results provide useful insights into women's lived experiences on menstrual hygiene management in an under-resourced urban community.

Conclusion

The results of this exploratory qualitative research provide an understanding of women's lived experiences of menstrual hygiene management by highlighting the context in which they manage menstruation and the negative experiences, menstrual practices related to access to materials, water, pain management and attitudes towards menstruation. This study has established that women face challenging menstruation and menstrual hygiene management experiences and indicated the continued stress and emotional challenges women face due to menstrual stigma. The following recommendations for practice, policy, and research may be considered.

There is a need to create an enabling socio-cultural environment for menstruating women. This can be done through health education on menstruation to improve men, boys, and women's menstrual knowledge and challenge existing myths and taboos, need for public health policies addressing socio-cultural context as a crucial social determinant of women's health. Secondly, there is an urgent need to improve access to resources such as water, sanitation and disposal infrastructure and safer and suitable sanitary products to enable proper menstrual hygiene management and ensure a healthy and dignified menstruation. These efforts could contribute towards the promotion of women's physical health and psycho-social well-being, gender empowerment and equality, and access to clean water and sanitation, as indicated in the UN's 2030's Sustainable Development Goals 3, 5, and 6.[65]

There is a need for improvement of access to health care services to help women experience menstruation better. For women living in an urban setting with already increased access to hormonal contraceptives, as indicated by previous research and as seen in this study, the finding calls for urgent health education on contraceptive use and its influence on menstruation.[17] Lastly, there is a continued need for further research and programming among this population, comprising a large proportion of the menstruating women population and playing the role of educators and points of reference for AGYW. Future researchers should consider exploring these women's menstrual hygiene management experiences in rural settings where antecedents of menstrual experiences may be more complex than in an urban environment. For the field of public health, the findings of this study emphasize the need for prioritization of menstrual

health as an integral component of sexual and reproductive health programs and a human right issue fundamental to equality, human rights, and dignity of menstruation women.[6,66]

References

1. Elledge, M. F., Muralidharan, A., Parker, A., Ravndal, K. T., Siddiqui, M., Toolaram, A. P., & Woodward, K. P. (2018). Menstrual hygiene management and waste disposal in low-and middle-income countries—a review of the literature. In *International Journal of Environmental Research and Public Health*, *15*(11). https://doi.org/10.3390/ijerph15112562

2. Kuhlmann, A. S., Henry, K., & Lewis Wall, L. (2017). Menstrual hygiene management in resource-poor countries. Number 6 Obstetrical and gynecological survey, *72* (5): 356-376. www.obgynsurvey.com|356

3. Kaur, R., Kaur, K., & Kaur, R. (2018). Menstrual Hygiene, Management, and Waste Disposal: Practices and Challenges Faced by Girls/Women of Developing Countries. In *Journal of Environmental and Public Health, 2018,* (1730964):1–10. https://doi.org/10.1155/2018/1730964

4. Sommer, M., Chandraratna, S., Cavill, S., Mahon, T., & Phillips-Howard, P. (2016). Managing menstruation in the workplace: An overlooked issue in low- and middle-income countries. In *International Journal for Equity in Health, 15* (1). BioMed Central Ltd. https://doi.org/10.1186/s12939-016-0379-8

5. Hennegan, J., Zimmerman, L., Shannon, A. K., Exum, N. G., Olaolorun, F., Omoluabi, E., & Schwab, K. J. (2018). The relationship between household sanitation and women's experience of menstrual hygiene: Findings from a cross-sectional survey in Kaduna state, Nigeria. *International Journal of Environmental Research and Public Health*, *15* (5). https://doi.org/10.3390/ijerph15050905

6. Crankshaw, T. L., Strauss, M., & Gumede, B. (2020). Menstrual health management and schooling experience amongst female learners in Gauteng, South Africa: A mixed method study. *Reproductive Health*, *17*(48): 1–15. https://doi.org/10.1186/s12978-020-0896-1

7. Sebastian, A., Hoffman, V., & Adelman, S. (2013). Menstrual management in low-income countries: needs and trends. *Waterlines*, *32*(2), 135–153.

8. Sommer, M., Chandraratna, S., Cavill, S., Mahon, T., & Phillips-Howard, P. (2016). Managing menstruation in the workplace: An overlooked issue in low- and middle-income countries. In *International Journal for Equity in Health, 15* (1): 1–5. https://doi.org/10.1186/s12939-016-0379-8

9. Das, P., Baker, K. K., Dutta, A., Swain, T., Sahoo, S., Das, B. S., Panda, B., Nayak, A., Bara, M., Bilung, B., Mishra, P. R., Panigrahi, P., Cairncross, S., & Torondel, B. (2015). Menstrual hygiene practices, WASH access and the risk of urogenital infection in women from Odisha, India. *PLoS ONE*, *10*(6): 1–16. https://doi.org/10.1371/journal.pone.0130777

10. Caruso, B. A., Clasen, T. F., Hadley, C., Yount, K. M., Haardörfer, R., Rout, M., Dasmohapatra, M., & Cooper, H. L. F. (2017). Understanding and defining sanitation insecurity: Women's gendered experiences of urination, defecation and menstruation in rural Odisha, India. *BMJ Global Health*, *2*(e000414): 1–12. https://doi.org/10.1136/bmjgh-2017-000414

11. Hawkey, A. J., Ussher, J. M., & Perz, J. (2020). The Palgrave Handbook of Critical Menstruation Studies. In *The Palgrave Handbook of Critical Menstruation Studies*. Springer Singapore. https://doi.org/10.1007/978-981-15-0614-7

12. Hennegan, J., Shannon, A. K., Rubli, J., Schwab, K. J., & Melendez-Torres, G. J. (2019). Women's and girls' experiences of menstruation in low-and middle-income countries: A systematic review and qualitative metasynthesis. *PLoS Medicine*, *16*(5): 1–40. https://doi.org/10.1371/journal.pmed.1002803

13. Padmanabhanunni, A., Jaffer, L., & Steenkamp, J. (2018). Menstruation experiences of South African women belonging to the ama-Xhosa ethnic group. *Culture, Health, and Sexuality*, *20*(6): 704–714. https://doi.org/10.1080/13691058.2017.1371335

14. Phillips-Howard, Penelope. A., Caruso, B., Torondel, B., Zulaika, G., Sahin, M., & Sommer, M. (2016). Menstrual hygiene management among adolescent schoolgirls in low-and middle-income countries: research priorities. *Global Health Action*, 1–7. https://doi.org/10.3402/gha.v9.33032

15. Szűcs, M., Bitó, T., Csíkos, C., Párducz Szöllősi, A., Furau, C., Blidaru, I., Kapamadzija, A., Sedlecky, K., & Bártfai, G. (2017). Knowledge and attitudes of female university students on menstrual cycle and contraception. *Journal of Obstetrics and Gynaecology*, *37*(2):210–214. https://doi.org/10.1080/01443615.2016.1229279

16. Johnston-Robledo, I., Ball, M., Lauta, K., & Zekoll, A. (2008). To Bleed or Not to Bleed: Young Women's Attitudes Toward Menstrual Suppression. *Sex Roles*, *38*(3): 59–75. https://doi.org/10.1300/J013V38N03_05

17. Chersich, M. F., Wabiri, N., Risher, K., Shisana, O., Celentanp, D., Rehle, T., Evans, M., & Rees, H. (2017). Contraception coverage and methods used among women in South Africa: A national household survey. . *The South African Medical Journal*, *107*(4): 307–314. http://www.samj.org.za/index.php/samj/article/view/11856/8015

18. Padmanabhanunni, A., Jaffer, L., & Steenkamp, J. (2018). Menstruation experiences of South African women belonging to the ama-Xhosa ethnic group. *Culture, Health, and Sexuality*, *20*(6):704–714. https://doi.org/10.1080/13691058.2017.1371335

19. Hawkey, A. J., Ussher, J. M., & Perz, J. (2020). "I Treat My Daughters Not Like My Mother Treated Me": Migrant and Refugee Women's Constructions and Experiences of Menarche and Menstruation. In *The Palgrave Handbook of Critical Menstruation Studies* (pp. 99–113). Springer Singapore. https://doi.org/10.1007/978-981-15-0614-7_10

20. Deshpande, T., Patil, S., Gharai, S., Patil, S., & Durgawale, P. (2018). Menstrual hygiene among adolescent girls – A study from urban slum area. *Journal of Family Medicine and Primary Care*, *7*(6): 1439. https://doi.org/10.4103/JFMPC.JFMPC_80_18

21. South African History Online. (2019). *Khayelitsha Township*. https://www.sahistory.org.za/place/khayelitsha-township

22. Strategic Development Information and GIS Department. (2013). *City of Cape Town-2011 Census Suburb Khayelitsha*.

23. City of Cape Town. (2013). *City of Cape Town-2011 Census Suburb Khayelitsha*.

24. Braun, V., & Clarke, V. (2012). Thematic analysis. *APA Handbook of Research Methods in Psychology, Vol 2: Research Designs: Quantitative, Qualitative, Neuropsychological, and Biological.*, *2*, 57–71. https://doi.org/10.1037/13620-004

25. Padmanabhanunni, A., & Fennie, T. (2017). The menstruation experience: attitude dimensions among south african students. *Journal of Psychology in Africa*, *27*(1): 54–60. https://doi.org/10.1080/14330237.2016.1250428

26. Phillips-Howard, P. A., Caruso, B., Torondel, B., Zulaika, G., Sahin, M., & Sommer, M. (2016). Menstrual hygiene management among adolescent schoolgirls in low-and middle-income countries: research priorities. *Global Health Action*, *9*(1): 1–7. https://doi.org/10.3402/gha.v9.33032

27. Elledge, M. F., Muralidharan, A., Parker, A., Ravndal, K. T., Siddiqui, M., Toolaram, A. P., & Woodward, K. P. (2018). Menstrual hygiene management and waste disposal in low- and middle-income countries—a review of the literature. In *International Journal of Environmental Research and Public Health*, *15 (*11): 1–20). MDPI AG. https://doi.org/10.3390/ijerph15112562

28. Kuhlmann, A. S., Henry, K., & Lewis Wall, L. (2017). Menstrual hygiene management in resource-poor countries. *Obstetrical and Gynaecological Survey*, *72*(6), 356–376. www.obgynsurvey.com|356

29. Tolley, E., Loza, S., Kafafi, L., & Cummings, S. (2005). The Impact of Menstrual Side Effects on Contraceptive Discontinuation: Findings from a Longitudinal Study in Cairo, Egypt | Guttmacher Institute. *International Perspectives on Sexual and Reproductive Health*, *31*(1): 15–23. https://www.guttmacher.org/journals/ipsrh/2005/03/impact-menstrual-side-effects-contraceptive-discontinuation-findings

30. Hennegan, J., Kibira, S. P. S., Exum, N. G., Schwab, K. J., Makumbi, F. E., & Bukenya, J. (2020). I do what a woman should do: A grounded theory study of women's menstrual experiences at work in Mukono District, Uganda. *BMJ Global Health*, *5*: 1–11. https://doi.org/10.1136/bmjgh-2020-003433

31. Shannon, A. K., Melendez-Torres, G. J., & Hennegan, J. (2020). *Culture, Health & Sexuality How do women and girls experience menstrual health interventions in low-and middle-income countries? Insights from a systematic review and qualitative meta-synthesis*. https://doi.org/10.1080/13691058.2020.1718758

32. Crankshaw, T. L., Strauss, M., & Gumede, B. (2020). Menstrual health management and schooling experience amongst female learners in Gauteng, South Africa: A mixed method study. *Reproductive Health*, *17*(1). https://doi.org/10.1186/s12978-020-0896-1

33. *Transforming our world: the 2030 Agenda for Sustainable Development Transforming our world: the 2030 Agenda for Sustainable Development*, (2015) (testimony of United Nations).

34. Babbar, K., Martin, J., Ruiz, J., Parray, A. A., & Sommer, M. (2022). Menstrual health is a public health and human rights issue. *The Lancet Public Health*, *7*(1): e10–e11. https://doi.org/10.1016/S2468-2667(21)00212-7

35. Department of Women, Youth and People living with disabilities. The Republic of South Africa. (2019). *Sanitary Dignity Framework.*

PART C: Appendices.

Appendix 1: Informed Consent for Participants

TITLE OF RESEARCH: To explore menstrual hygiene management among adult women of reproductive ages (25-49) from an under-resourced community in Cape Town.

WHAT IS THE PURPOSE OF THIS STUDY?

I am a researcher from the University of Cape Town, and I am asking you to take part in a voluntary study that is being conducted at Khayelitsha. This document will help you decide if you would like to participate in this study.

I am doing this research to find out about how adult women who are between the ages of 25 and 49 go through their period, what they use to catch blood and how they think these ways of catching blood during their period affect their health and way of life as women. This research also wants to find out what other people who work in Khayelitsha with women for example people like nurses and community health workers think about what women go through during their period. This will help us to understand more about women's period journey, especially for women who come from areas that do not have good resources such as toilets and water inside their houses or yards.

If you choose to participate in this study, we will ask you to be part of a one-on-one interview with a trained researcher at your home or any place near your home where you feel comfortable to talk with the researcher.

WHAT DO I HAVE TO DO IF I AGREE TO TAKE PART?

If you agree to take part in this study, we will have the interview today and the interview will be audio-recorded and will last for a period between 30 and 45 minutes.

Enrolment visits activities

You are required to complete and sign this form as a way of agreeing to take part in the interview and this should happen before the interview begins. During the interview, the researcher will ask you question about your periods and this may be sensitive and uncomfortable to some people. Information such as your age, place of stay, whether you work of not for example will be also collected before the interview begins.

Contact for future study.

There will be no future studies linked to this study and this means that you will not be contacted again for reasons related to this study in future.

Sharing of de-identified data

During or after the study, de-identified data from the study may be used for future research or shared with other investigators. Any data shared will be removed of qualities that might identify a particular participant, such as name, address, or date of birth. Participants will be identified by a three-digit study ID number only. Participant information will never be shared for commercial profit.

WHAT ARE THE POTENTIAL RISKS?

If you decide to be part of this study, you may feel uncomfortable about some of the personal questions you will be asked about your period, what you use to catch blood during your period and how your period may affect your health and way of life. You are allowed to refuse to answer any question that you do not want to answer. There is some risk in sharing your personal information, but we will be careful to keep all your information in a safe and private place where only the researcher will have access.

WHAT ARE THE POTENTIAL BENEFITS?

There is no direct benefit to you if you take part in this study. You may benefit from increased awareness about your period, of the challenges that you may be experiencing in managing them and how that affect your health and way of life. You are unlikely to experience other personal benefit from participating on this study. Other adult women of reproductive ages may benefit in the future from what we learn in this research study.

WHAT ARE THE ALTERNATIVES TO TAKING PART?

If you choose not to take part in this study, nothing will happen to you. Deciding not to participate in the study will in no way affect you.

WHAT ABOUT CONFIDENTIALITY?

If you agree to take part, all information collected during the study will be kept strictly confidential. During today's visit, your name, date of birth, and other personal information will be collected. This private information will be kept separately in a secure location, so that only the study team can access it, and all this information will be used for study purposes only. When we use the data in the study, however, the information that identifies you, such as your

name, will not be used. Instead, we will give you a study identification number that no one else can use to identify you. Your name or other information that would allow someone outside the study to identify you will never be used in study publications or reports.

All study materials will be stored in locked filing cabinets. Only study staff and personnel involved in routine audits will have access to these materials. Electronic databases will be password protected. All staff involved in data collection and management will get specific training in confidentiality. A summary of results of this study will be shared with a partner organization, MPower, linked to the study. That summary will not include your identification information such as your name.

WILL I BE GIVEN ANYTHING FOR TAKING PART?

You will get refreshments at the end of the study.

ARE THERE ANY COSTS?

There is no cost for being in this study.

CAN I LEAVE THE STUDY?

You have the right to decide not to not take part in the study, to refuse to answer any questions, or to withdraw from the study at any time without any penalty.

DO YOU HAVE ANY QUESTIONS?

If there is anything that is unclear or if you need further information, please ask us and we will provide it. Do you have any questions?

FOR ADDITIONAL INFORMATION:

If you have any questions or have any problems while taking part in this research study, you should contact:

Dr. Lucia Knight

School of Public Health and Family Medicine

Faculty of Health Sciences, University of Cape Town

Tel: 021 650 5313

Email: Lucia.knight@uct.ac.za

If you have any questions about your rights as a research participant, you may contact the following member of the ethics committee:

Prof Marc Blockman

Chair, Human Research Ethics Committee

Faculty of Health Sciences, University of Cape Town

Tel: 021 406 6338

Email: lamees.emjedi@uct.ac.za

CONSENT STATEMENT:

I have read this form, or someone has read it to me. I have been offered a copy of this consent form. I was encouraged and given time to ask questions. I agree to be in this study. I give my permission for the following activities:

1. Provide my personal details such as my age and employment status.
2. One interview, which will be audio recorded.

I know that after choosing to be in this study, I may withdraw at any time. My being in the study is voluntary. I understand that whether or not I participate will not affect me in any way.

Please indicate your consent to participate in this study with your signature.

Volunteer's name _____

_____ _____

Signature or Thumb Print of Volunteer Date

Please indicate your consent to be audio-recorded with your signature.

Volunteer's name _____

_____ _____

Signature or Thumb Print of Volunteer Date

Staff member's name_____

_____ _____

Signature of staff member Date

Thank you.

Appendix 2: Informed Consent for Key Informants

TITLE OF RESEARCH: To explore menstrual hygiene management among adult women of reproductive ages (25-49) from an under-resourced community in Cape Town.

WHAT IS THE PURPOSE OF THIS STUDY?

I am a researcher from the University of Cape Town, and I am asking you to take part in a voluntary study that is being conducted at Khayelitsha. This document will help you decide if you would like to participate in this study.

I am doing this research to find out what people who work in Khayelitsha with women for example people like nurses and community health workers think about what women go through during their period. This will help us to understand more about women's period journey, especially for women who come from areas that do not have good resources such as toilets and water inside their houses or yards.

If you choose to participate in this study, we will ask you to be part of a one-on-one interview with a trained researcher at your home or any place near your home where you feel comfortable to talk with the researcher.

WHAT DO I HAVE TO DO IF I AGREE TO TAKE PART?

If you agree to take part in this study, we will have the interview today and the interview will be audio-recorded and will last for a period between 30 and 45 minutes.

Enrolment visits activities

You are required to complete and sign this form as a way of agreeing to take part in the interview and this should happen before the interview begins. During the interview, the researcher will ask you question about what you think about how women deal with their period, and this may be sensitive and uncomfortable to some people. Information such as your age, place of stay, whether you work of not for example will be also collected before the interview begins.

Contact for future study.

There will be no future studies linked to this study and this means that you will not be contacted again for reasons related to this study in future.

Sharing of de-identified data

During or after the study, de-identified data from the study may be used for future research or shared with other investigators. Any data shared will be removed of qualities that might identify a particular participant, such as name, address, or date of birth. Participants will be identified by a three-digit study ID number only. Participant information will never be shared for commercial profit.

WHAT ARE THE POTENTIAL RISKS?

If you decide to be part of this study, you may feel uncomfortable about some of the questions you will be asked about period, what you think women use to catch blood during your period and how they do that. You are allowed to refuse to answer any question that you do not want to answer. There is some risk in sharing your personal information, but we will be careful to keep all your information in a safe and private place where only the researcher will have access.

WHAT ARE THE POTENTIAL BENEFITS?

There is no direct benefit to you if you take part in this study. You may benefit from increased awareness about how women deal with their period; of the challenges they deal with in managing their period and how that affect their health and way of life. You are unlikely to experience other personal benefit from participating on this study. Other adult women of reproductive ages may benefit in the future from what we learn in this research study.

WHAT ARE THE ALTERNATIVES TO TAKING PART?

If you choose not to take part in this study, nothing will happen to you. Deciding not to participate in the study will in no way affect you.

WHAT ABOUT CONFIDENTIALITY?

If you agree to take part, all information collected during the study will be kept strictly confidential. During today's visit, your name, date of birth, and other personal information will be collected. This confidential information will be kept separately in a secure location, so that only the study team can access it, and all this information will be used for study purposes only. When we use the data in the study, however, the information that identifies you, such as your name, will not be used. Instead, we will give you a study identification number that no one else can use to identify you. Your name or other information that would allow someone outside the study to identify you will never be used in study publications or reports.

All study materials will be stored in locked filing cabinets. Only study staff and personnel involved in routine audits will have access to these materials. Electronic databases will be password protected. All staff involved in data collection and management will get specific training in confidentiality. A summary of results of this study will be shared with a partner organization, MPower, linked to the study. That summary will not include your identification information such as your name.

WILL I BE GIVEN ANYTHING FOR TAKING PART?

You will get refreshments at the end of the study.

ARE THERE ANY COSTS?

There is no cost for being in this study.

CAN I LEAVE THE STUDY?

You have the right to decide not to not take part in the study, to refuse to answer any questions, or to withdraw from the study at any time without any penalty.

DO YOU HAVE ANY QUESTIONS?

If there is anything that is unclear or if you need further information, please ask us and we will provide it. Do you have any questions?

FOR ADDITIONAL INFORMATION:

If you have any questions or have any problems while taking part in this research study, you should contact:

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CONSENT STATEMENT:

I have read this form, or someone has read it to me. I have been offered a copy of this consent form. I was encouraged and given time to ask questions. I agree to be in this study. I give my permission for the following activities:

1. Provide my personal details such as my age and employment status.
2. One interview, which will be audio recorded.

I know that after choosing to be in this study, I may withdraw at any time. My being in the study is voluntary. I understand that whether or not I participate will not affect me in any way.

Please indicate your consent to participate in this study with your signature.

Volunteer's name _____

_____ _____

Signature or Thumb Print of Volunteer Date

Please indicate your consent to be audio-recorded with your signature.

Volunteer's name _____

_____ _____

Signature or Thumb Print of Volunteer Date

Staff member's name_____

_____ _____

Signature of staff member Date

Thank you.

Appendix 3: Interview schedule for participants.

Monthly period experience and contraception

1. Can you tell me about your monthly periods? (probe)
2. Can you tell me about family planning methods you are using? (if not using any contraceptive method, skip to question 6).
3. How do these contraceptives you use influence your period pattern or days?
4. What do you think are good things about the family planning method you use in relation to your periods?
5. What do you think are the bad things about family planning in relation to your periods?
6. How do you catch your monthly blood?
7. What makes your periods easier for you to manage?
8. What are the things that make getting periods difficult for you?
9. Can you tell me why you choose the materials you use to catch blood?
10. So now, can you tell me about what you do with the materials used to catch your period blood?

(Probes)

- How are these materials often changed?
- What does the process of changing materials involve?
- How are materials thrown away?

11. Can you tell me how you make sure you remain clean during your period days?

Now I will ask you questions about what you think are good and bad things about periods and their impact on your health and way of life as a woman.

1. Based on your experience, can you tell me what you think the good things are about having periods? Why do you think so?
2. Can you tell me about the ways you think that your periods affect your quality of life?
3. Can you tell me about the ways in which you think that your periods affect your health?
4. Can you tell me what you think the bad things are about having periods?
5. What are the greatest challenges you experience with regards to your periods.
6. What you think can be done to make women like you experience periods better?

Conclusions.

We have come to the end of the interview. Thank you so much for the time that you have spent answering my questions.

Is there anything you would like to add? Do you have any questions for me?

Appendix 4: Interview schedule for key informants.

Key informants' perceptions about ways in which women catch their blood during their periods.

1. Can you tell me how you think women in this community experience their periods?
2. What do you think they use to catch blood during their period?
3. In your opinion, where do you think women get the materials, they use to catch period blood?
4. How do you think women get rid of materials they use to catch blood during their periods?
5. What do you think are things that make it easier for women to catch their blood during their period? Why do you think so?
6. What do you think are things that make it difficult for women to catch their blood during their period? Why do you think so?
7. In your opinion, what do you think are bad things that occur to women's health because of having a period?
8. Can you tell me what you think can be effects of having periods on women's quality of life?
9. What do you think are the challenges individual women face in relation to periods?
10. What do you think are the challenges in general in the community in relation to periods?
11. Can you tell what you think can be done to help improve how women in this community deal with their period?

Conclusions.

We have come to the end of the interview. Thank you so much for the time that you have spent answering my questions.

Is there anything you would like to add? Do you have any questions for me?

Appendix 5: Letter of Approval- UCT HREC.

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room 45 E-52-E-Floor- Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6492
Email: hrec-submissions@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

22 August 2022

HREC REF:406/2022

A/Prof L Knight
Division of Social & Behavioral Sciences
Public Health & Family Medicine
Email: Lucia.knight@uct.ac.za
Student: Ncbsem001@myuct.ac.za

Dear A/Prof Knight

PROJECT TITLE : AN EXPLORATORY QUALITATIVE STUDY OF MENSTRUAL HYGIENE MANAGEMENT AMONG ADULT WOMEN OF REPRODUCTIVE AGES (25-49) FROM AN UNDER-RESOURCED COMMUNITY IN CAPE TOWN, SOUTH AFRICA – (MASTERS CANDIDATE-MS SEMKELISIWE NCUBE)

Thank you for your response letter, addressing the issues raised by the Faculty of Health Sciences Human Research Ethics Committee (HREC).

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30 August 2023.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

The HREC acknowledge that the student: Ms Semkelisiwe Ncube will also be involved in this study.

Please quote the HREC REF 406/2022 in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval, where necessary, before the research may occur.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FACULTY OF HEALTH SCIENCES HUMAN RESEARCH ETHICS COMMITTEE

HREC.REF406.2022

Federal Wide Assurance Number: FWA00001637. Institutional Review Board (IRB) number: IRB00001938 NHREC-registration number: REC-210208-007
This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use: Good Clinical Practice (ICH GCP), South African Good Clinical Practice Guidelines (DoH 2020), based on the Association of the British Pharmaceutical Industry Guidelines (ABPI), and Declaration of Helsinki (2013) guidelines. The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

Appendix 6: Table of themes

Table 1: Themes labelled ME are for menstrual experiences and those with MHM are for menstrual hygiene management.

Category of framework	Themes and subthemes
Shame and distress	***Mixed feelings associated with menstruation. (ME Theme)***
	Feel scared.
	Feel good and free.
	Feel uncomfortable
Perception of menstruation	***Differing perceptions of menstruation. (ME Theme)***
	Periods are bad.
	Periods are boring.
	Periods are good.
Individual menstrual factors	***Menstrual abnormalities or disorders (ME Theme)***
	Heavy bleeding
	Period pains
	Irregular bleeding
	Access to and use of pain remedies. (ME Theme)
	Use painkillers.
	Drink hot water.
	Drink vinegar.
	Characteristics of sanitary products. used (MHM Theme)
	Pads are better.
	Fabric is much better.
	Pads are safer.
	Cloth is light.
	Unequal economic access to sanitary products used (MHM Theme)
	Pads are affordable.
	Buy any cheap one.
Menstrual practices	***Individual choices for regulation menstruation (ME Theme)***
	Use them to become better.
	Use them to skip periods.

	Let me stop this thing.
	Ways of maintaining hygiene during menstruation. (MHM Theme) Using a bucket to wash genitals. Changing pads up to four times Sometimes wash, sometimes don't. Wipe the overflow.
	A long process of changing and disposing of materials (MHM Theme) Remove pad and bath. Wash removed pad. Wrap washed pad & put it into bin outside. Flush pad in toilet. Throw it outside.
Perceptions of practices and environment	***Contrasting perceptions of menstrual practices (ME Theme)*** When I use them, I start getting better. It does not work for me.
	Adequacy of the environment. (MHM Theme) Better to change inside the room I don't think it's even safe. Queue for the water.
Confidence	***Reduced confidence to manage menstruation and engage in other activities. (MHM Theme)*** Stop me from having sex. Affect my enjoyment. Don't work well
Containment.	***Strategies to contain menstrual leakages and odour. (MHM Theme)*** Wear two pads Wash the smell of blood
Impacts on	
Physical health	***Skin rashes, irritations & increased risk to reproductive tract infections***

	Irritates vagina skin & you get a rash. Infections. ***Exposure to unhygienic environment with serious health hazards*** Clog the sewage system. See them laying around.
Psychological health	***Increased anxiety and stress*****.** Must know that I have money for pads. Don't know what can help me.