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Menstrual Blood, Sweat and Tears

A Qualitative Study on Women's Menstrual Health Management at Workplace
Settings in Maputo, Mozambique

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Abstract

Equal participation in safe and decent work is a crucial factor for achieving gender equality. Despite this, gender-based obstacles remain as workplaces often fail to ensure the human rights, health, and general wellbeing of their employees, with menstrual health being an especially neglected aspect of the gendered workplace experience. While menstrual health has gained increased attention over the years, potential barriers to adequate menstrual management that women in low- and middle-income countries may encounter in the workplace are still largely neglected in research, programming, and policy. Thus, there is a need for increased documentation of this topic to provide evidence for action on these levels. This study aims to continue breaking the silence around menstruation and contribute to the scarce literature on menstrual health in relation to the workplace, with a specific focus on Mozambique.

By applying Hennegan et al.'s (2021) definition and conditions for menstrual health, and a socio-ecological model of health modified for the specific research, this study explores how factors at different levels affect women's ability to achieve adequate menstrual health while at work, and how this affects their work experience. Data was collected through individual interviews conducted in Maputo Province with women from Mozambique's three largest employment sectors – agriculture, service, and industry. Following a thematic analysis, the findings show that there are several factors at the societal, environmental, organisational, interpersonal, personal, and biological levels that influence women's ability to achieve adequate menstrual health at work. These findings confirm what previous research has stated – that menstrual health cannot just be viewed as an issue of water, sanitation, and hygiene, and a more holistic approach needs to be taken to capture all the physical, mental, and social dimensions of it. The findings also show how inadequate menstrual health can have implications for women's wellbeing, performance, and overall experience at work. Some women reported having to perform their work differently and some could not perform certain work tasks at all during menstruation. However, most women kept doing their work as usual even during menstruation, although for some it meant having to endure pain, discomfort, and psychological distress while doing so.

Keywords: *menstrual health management, Mozambique, decent work, gender equality, socio-ecological model of health.*

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Disclaimer

To start off, this study recognises that gender is a social construct, non-binary and fluid. Not all women and girls menstruate, and people who menstruate may identify themselves as male, female, or neither. Therefore, the terms 'women', 'women and girls', 'people/person who menstruate' and 'menstruators' will be used based on circumstance and sometimes interchangeably, depending on the terms used by the literature that is cited. As Rydström (2020:945) puts it, scholars have a responsibility to pay attention to the descriptions of menstruation and menstruators and the knowledge being produced.

1. Introduction

1.2 Problem statement

Around the world, on any given day, 300 to 400 million people are menstruating (Tellier et al. 2021) and on average, a woman menstruates for about 7 years in total during her lifetime. Despite its commonality, menstruation is still stigmatized. Lack of information, taboos and damaging misconceptions about menstruation prevent women around the world from developing healthy menstrual habits and risk restricting behaviour and activities in their daily lives (UNICEF, 2018).

Menstrual health can be defined as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity, in relation to the menstrual cycle” (Hennegan et al. 2021a). It is an essential aspect for the well-being and empowerment of females (Narang, 2022) and UN Women stresses that “the ability of all women and girls to address their menstrual needs with dignity is a bedrock component of gender equality” (Burt et al. 2016).

While it has started to gain some more attention, menstrual health management (MHM) rarely appears in donor strategies, national government policies, or advocacy agendas (Millington & Bolton, 2015) and an estimated 500 million menstruators do not have access to products and facilities to properly manage their menstruation (Narang, 2022). Most of the research and programming efforts that do relate to menstruation focus on school- and community-based outcomes. The effects of menstruation on adult populations have however been largely unaddressed (Fry et al. 2022), especially in relation to workplace setting, and even more so, workplace settings in low and middle-income countries (LMIC) (Sommer et al. 2016).

The potential barriers to adequate menstrual health faced by adolescent girls and women in workplaces in LMIC has been under addressed in research, programming, and policy. Even though global efforts for poverty reduction among women in such contexts have increased, insufficient attention has been paid to the management of monthly menstruation, which may hinder girls’ and women’s health and wellbeing and their contributions to the workplace. There is an urgent need to research the specific social and environmental barriers to menstrual management in workplaces, to conduct a costing of the implications of inadequate supportive workplace environments for menstrual hygiene management, and to recognise the implications for girls’ and women’s health and wellbeing (Sommer et al. 2016).

The data that exists on MHM and workplaces indicate that the size of the population facing potential workplace health inequities in relation to menstruation is significant. Menstrual aged females represent a large and growing share of the 1.2 billion women employed globally (Sommer et al.

2016). This number, together with the fact that working adults spend almost half of their waking hours at work (Rajaraman et al. 2013) provide great motivation to contribute to the research on MHM in workplaces. This information could provide important evidence to guide donors, activists, the private sector, and policy makers in their work to advance girls' and women's' rights (Sommer et al. 2016).

1.3 Aim

Women's menstrual health in the workplace requires more attention from researchers, public and private sectors to support equal opportunities for decent work and women's health (Hennegan et al. 2020). As previously noted, the potential barriers to adequate menstrual management that girls and women in low- and middle-income countries may experience in workplace environments are particularly neglected in research, programming, and policy, and there is a need for increased country-level documentation of this topic to provide evidence for action on these levels (Sommer et al. 2016).

This study aims to contribute to the scarce literature on menstrual health in relation to the workplace, with a specific focus on Mozambique. It seeks to apply a holistic approach of menstrual health while examining how different factors influence women's ability to achieve adequate menstrual health in their workplace settings. Moreover, it aims to explore how the menstrual health has implications for the respondents' work life experience.

1.4 Research questions

By applying Hennegan et al.'s (2021a) definition and conditions for menstrual health, and the socio-ecological model (SEM) of health, this research considers:

- How do different factors support or hinder women's ability to achieve adequate menstrual health in their workplace settings?
 - Which differences and similarities can be identified between the agricultural, service, and industrial employment sectors in the way that women's ability to achieve menstrual health is supported or hindered?
- How is the menstrual health of women in the agricultural, service, and industrial sector affecting the work life experience?

1.5 Key concepts and terminology

Menstruation:

The flow of blood and tissue lining the uterus through the vagina. Most sources note that flow happens for 5 days (range 2-7 days), every 28 days (range 21-35 days) (Tellier et al. 2021).

Menstrual health (MH):

This study uses the definition of menstrual health by Hennegan et al. (2021a), which defines it as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity, in relation to the menstrual cycle”. The conditions for achieving menstrual health is presented in the theory chapter.

Inadequate menstrual health:

This term is used to refer to a situation that does not fulfil the requirements of varying definitions of ‘menstrual health management’, ‘menstrual hygiene and health’ or ‘menstrual hygiene management’.

Menstrual materials and supplies:

The thesis will use the term ‘menstrual materials’ when referring to items for collecting or absorbing menstrual blood (pads, menstrual cups, cloth, tampons etc), and ‘supplies’ to refer to ‘supporting items’ (soap, trash bins, painkillers etc).

Workplace:

For the purposes of the thesis, ‘workplace’ refers to any formal or informal context in which the women are engaged in income-generating activities.

Capulana:

A capulana is a type of a traditional sarong worn primarily in Mozambique, but also in other areas of south-eastern and western Africa. The cloth usually measures 2 metres by 1 metre and is stamped industrially in its entire surface (Afroculture, n.d).

2. The context: Mozambique

There is an identified need for increased country-level documentation of the topic of menstruation, which could be used to provide important evidence for policy and programme level action (Sommer et al. 2016). In this study, the focus is on MHM in workplace settings in Maputo Province, Mozambique.

Mozambique is a low-income country located in Eastern and Southern Africa with a population of 33.9 million people (UNFPA, 2023), of which around 50.9% are women (World Bank, 2021a). Despite a recovering economy, the country experienced an economic contraction in 2020, pushing an estimated 250,000-300,000 people into structurally high poverty levels and estimates suggest that more than 60% of the population lives in poverty (World Bank, 2023). The country has a gross domestic product (GDP current US\$) of approximately US\$15.8 billion (World Bank, 2021b) and a GDP per capita of US\$492 (World Bank, 2021c), which is among the lowest in the world. Mozambique also ranks among the bottom ten countries on the UN Human Development Index (HDI), largely due to the low level of education, particularly among girls and women (Sida, 2022).

2.1 The labour market

By 2050 the Mozambican population is predicted to have grown to 50 million people (World Bank Group, 2021) and the labour force to have double in size (Jones, 2016). As 300,000 people are estimated to enter the labour market each year, creating decent jobs is essential for the future of young generations (DTDA, 2017).

Agriculture is by far the largest employment sector in the country, accounting for around 75% of the labour force, followed by the service sector (21%), and the industrial sector (4%) (DTUDA, 2017). Similar to many other low-income countries, informality remains widespread in Mozambique, with approximately 80% of the labour force working in the informal sector (Gemechu et al. 2018). The government estimated in 2012 that informal activity accounted for around 40% of the country's GDP, highlighting the importance of the informal sector to economic growth and its status as a source of income for most of the population (DTUDA, 2017). However, working in the informal economy often results in a lack of job security and a reliable, adequate income (Sida, 2022).

According to the national *Labour Law 2007* all employees have the right to perform their work in hygienic and safe workplaces, including good environmental, physical, and moral conditions. Employers should take all adequate precautions to ensure that all work posts are safe and free of risks for the safety and health of employees (Law Nr. 23/2007, Chapter VI, Section I, Article 216).

However, the Ministry of Labour has struggled to effectively enforce health, safety, and wage laws, sanctions are rarely imposed, and violations are frequent (United States Department of State, 2015). Furthermore, the labour law only applies to the formal sector, leaving workers in the informal sector unprotected (United States Department of State, 2021).

2.1.1 Women in the labour market

Programa Quinquenal do Governo de Moçambique 2020-2024 is a five-year plan that sets out the government's main objectives in different areas. The plan states a commitment to gender equality, with a particular focus on women's employment. It emphasizes the importance of promoting women's economic autonomy, providing access to education, and strengthening their ability to participate in the labour market (Government of Mozambique, 2020).

However, it exists a large gap between men and women in terms of quality and intensity of employment. For instance, women's employment rate is lower than men's and women are less likely to be employers. Moreover, women are less likely than men to work in the non-subsistence sector or in the public sector. (DTDA, 2017). Women are also more likely to be self-employed without employees or work as unpaid family workers and typically work less hours than men job (Gradin & Tarp, 2019). The role of women is prominent both in agriculture and the informal economy. A 'feminization' of agriculture is occurring, largely attributed to socio-cultural norms, as well as gender-based disparities in the labour market that leave women with fewer options to leave the agricultural sector (DTDA, 2017).

Overall, Mozambique remains a highly patriarchal society. In 2015, the country ranked 139 out of 159 countries on the Gender Inequality Index (GII) which is a combined measure of the empowerment, economic status and health of women compared to men (UNDP, 2015). Despite comprising the majority of the unskilled workforce in agricultural sectors (63%), Mozambican women's work is largely unpaid, and they are often subjected to discrimination and obstacles due to long-standing gender role beliefs (USAID, 2018). However, Mozambican women are estimated to have a higher participation in the labour market compared to both Mozambican men and the average for the sub-Saharan Africa women (DTDA, 2017).

As the literature suggest that MHM can impact girl's and women's work environment and opportunities, this kind of research is highly relevant to the Mozambican context.

2.2 Menstrual health management in Mozambique

Overall, there is much progress done on MHM in the region of Eastern and Southern Africa, which is now one of the regions in the world with the most policies focusing directly on MHM (Jurga, 2019). UNICEF reports that 13 countries in the region either have fully developed MHM guidelines or have strategies under review for adoption. Six countries, however, have no policies in place, with Mozambique being one of them (Ofori-Kuma, 2018).

As previously presented, a large portion of the employed population in Mozambique is working within the informal sector. From a MHM perspective, informal employments may put women in a more vulnerable position as the sector often lack enforcement of occupational safety regulations and standards. In the informal sector, employers have no legal obligations to provide facilities that meet women's specific needs and women may lack the possibility to influence the standards (Sommer et al. 2016).

In Mozambique, there exists a stigma around menstruation, largely attributed to the lack of knowledge about it. A study conducted in the provinces of Maputo and Zambézia showed that 85% of the participating girls had little or no knowledge about menstruation prior to menarche, as well as no knowledge of the linkage between menstruation and reproduction (Be Girl, 2019a). While there are no legal barriers that impede women and girls from participating equally in society, sociocultural factors can limit autonomy in certain areas (US Department of State, 2021) and there are a variety of traditional beliefs and myths surrounding menstruation that can be detrimental to girls and women (Merz, 2020). For instance, one common myth is that one cannot add salt to their food or wash dishes while menstruating. Other beliefs are that conversations about menstruation between husband and wife, or between mother and daughter, could lead to a death in the family; that allowing menstruating girls and women to work in the fields can prevent crops from growing; or that sexual intercourse with a menstruating woman is harmful and causes diseases. There are however some indications that norms are starting to change and that the practice of following many traditional taboos related to menstruation is outdated (Zandamela et al. 2021).

In addition, access to hygiene services is also a prerequisite for adequate MHM. In Mozambique, rapid urbanization has been driven by economic opportunities and conflict-induced displacements. This rapid influx has overwhelmed the cities' capacity to provide urban infrastructure and services (World Bank, 2021d), which has implications for MHM as rapid population growth often results in unplanned settlements, which lack the necessary development of sanitary infrastructure (Rheinländer et al. 2019). Although there has been some improvement over the years, Mozambique still suffers a

severe lack of basic access to WASH facilities (water, sanitation, and hygiene) as a result of a declining number of natural water sources, high levels of contaminated water resources, inadequate toileting facilities, and governmental corruption. In 2020, around 47% of the population did not have access to clean water, 60% were using either surface or groundwater as their normal drinking water and only one in five individuals used safe sanitation facilities (Britsch, 2022).

3. Previous research

3.1 Menstruation

The onset of menstruation, or menarche, is a natural and important part of a female's physiological development. In most societies, menstruation is surrounded by taboos and secrecy, which can make it difficult to manage it easily and with confidence (Hennegan et al. 2021a). Around the world, women and girls have developed various strategies to manage their menstruation, depending on factors such as cultural beliefs, and traditions, but also available resources, knowledge and individual preferences. Nonetheless, restrictions in these factors can lead to women utilizing unhygienic and inconvenient methods. This is particularly common in poorer countries (Sumpter & Torondel, 2013).

When lacking proper sanitary facilities and products, women and girls resort to other alternatives. Research from Kenya shows how girls used alternative menstrual material such as cotton, plastic bags, and even dried leaves and cow dung (Jewitt and Ryley, 2014). Furthermore, the lack of soap or unclean water for the cleaning of menstrual material can lead to health issues. Social restrictions and taboos may also force girls to dry their material indoors instead of in the open air which might lead to material being reused without being sufficiently sanitized (Sumpter & Torondel, 2013). It is however not only the damp and dirty material that increases health related risks. Examples show girls engaging in transactional sex to procure money for sanitary products, thus exposing themselves to the risk of infections and unwanted pregnancies (Jewitt and Ryley, 2014).

3.2 From 'menstrual hygiene management' to 'menstrual health management'

While issues related to menstruation historically have been seen as private and sometimes even shameful, there has been an increase in public awareness and discourse in recent years (Tellier et al. 2021). The concept of 'menstrual hygiene management' has been increasingly recognised by various actors and Sommer et al. (2015) describes how the perception of menstruation has shifted from a private issue to one that requires a structural response.

'Menstrual hygiene management' as a term and practice has long been associated with the WASH-sector, resulting in much of the existing action being led by the same (Sommer et al. 2016). While some argue that the inclusion of the word 'hygiene' in the discussions around management of menstruation can have a neutralising effect on the otherwise alarming effect of menstruation (Sommer et al. 2015), others state that it can result in a disadvantageous perception of menstruation as something unclean and unhygienic (Bobel, 2019: 124). Either way, the emphasis on the hygienic aspect of menstruation reflects the practical approach that has been predominant in menstrual hygiene management.

The practical understanding of menstrual hygiene management has resulted in practical responses, such as the numerous pad interventions that have been implemented in various LMIC. However, this materialistic focus has been viewed as problematic from multiple perspectives. According to Bobel, it does not only fail to combat the social stigma surrounding menstruation, but it can even accommodate it (2019: 26). Throughout the years, research and practice have however adopted a more nuanced understanding of menstrual experiences and their intersections with physical, mental, and social health. As a result of this increased understanding of menstruation as something more than a sanitary issue, the more inclusive terms ‘menstrual health’ and ‘menstrual health management’ have seen an amplified use across advocacy, programming, policy, and research (Hennegan et al. 2021a). In line with this development, and to acknowledge that barriers to adequately managing menstruation needs to be approached with a holistic approach, this study uses the term ‘menstrual health management’ instead of ‘menstrual hygiene management’.

3.3 Menstruation and the Sustainable Development Goals

Although the Millennium Development Goals (MDGs) did not make any explicit reference to MHM, the Sustainable Development Goals (SDGs) have indirectly included it in Goal 3 (Good Health and well-being), 4 (Quality Education), 5 (Gender Equality), 6 (Clean Water and sanitation), 8 (Decent Work and Economic Growth) and 12 (Responsible consumption and production) (Tellier et al. 2021).

A number of scholars have explored the linkages between MHM and the SDGs (see for example Loughnan, 2020; Tiwary, 2018; Afifah Wardana, 2020). When assessing progress on the SDGs, analysing whether the menstruation needs of populations are being met can yield valuable information. For instance, the regular occurrence of the menstrual cycle between puberty and menopause is a powerful indicator of reproductive health, and overcoming menstrual-related stigma is essential for achieving SDGs that relate to women's and girls' comfort, agency, participation, safety, well-being, and dignity (Loughnan, 2020: 578).

3.4 Menstrual health and work

Equal participation in safe and decent work is a crucial factor for women’s empowerment and to achieve gender equality. Despite this, various gender-based obstacles remain, and workplaces often fail to ensure the human rights, health, and general wellbeing of their employees with menstrual health being an especially neglected aspect of the gendered workplace experience. A growing body of literature has addressed the menstrual needs of adolescent girls’ and informed policy and practice responses (Hennegan et al. 2020), however, there is still a relatively small number of studies referring

to adult women and even fewer referring to work, even though there is an established awareness that menstruation may have implications for work (Tellier et al. 2021).

Sommer et al (2016) have summarised the factors limiting MHM standards in the workplace as a problem of social norms, unvoiced needs, advocacy and policy. There are however many reasons to why more attention should be paid to achieving menstrual health in relation to work. Several studies have previously documented the negative impacts on women's financial, social, mental, and physical well-being at work due to difficulties managing menstrual bleeding, discomfort and pain (Hennegan et al 2020). Studies have for example found that unmet needs for menstrual health can be associated with missed days at work, anxiety and feelings of having to persevere through distress or discomfort to remain at work (Hennegan et al. 2022). Interviews with women working in marketplaces in West and Central Africa also highlighted how the lack of sanitation facilities had an especially negative impact on their productivity while menstruating (Aidara, 2016). Moreover, a policy analysis focusing on two Kenyan factories shows that menstruating employees were affected by a range of factors such as limitations in hiring and induction processes, employee classification, representation and voice, toilet access, sick leave, and supervisor codes of conduct (Fry et al. 2022). In addition, Sang et al. (2021) conducted a study with university workers that revealed a considerable additional labour is required of those managing menstruation and gynaecological health conditions in the workplace.

In the literature, one of the most addressed consequences of unmet menstrual needs in workplaces is absenteeism. Surveys in Burkina Faso and Nigeria found that 19% and 17% respectively, and almost 25% of the women in the lowest wealth tertile in both countries, missed work due to menstruation (Hennegan et al. 2021b). Multiple Indicator Cluster Surveys across countries show results that indicate that up to 35% of women missed participating in school, work, or other social events while menstruating (WHO/UNICEF, 2021). In a recent study from Uganda, 15 % of the interviewed women, who were working as teachers or in markets or health care facilities, missed work due to their last period, and 41% would prefer not to work during menstruation. (Hennegan et al. 2020).

Furthermore, findings from studies conducted in Bangladesh (Herproject Bangladesh, 2010) and India (Rajaraman et al. 2013) show that inadequate access to sanitation at work led to a negative impact on the women's private economy due to decreased productivity and missed days at work during menstruation (Rajaraman et al. 2013). Cote et al. (2002) more specifically estimated that in the United States of America, menstruation leads to an average annual 'work loss' of 1,692 USD per woman. The World Bank (2008) also estimated that in Cambodia, Indonesia, the Philippines and Vietnam, female employees miss an average of one day of work each month due to a lack of sanitary

facilities, resulting in an estimated economic loss of 13 million and 1.28 million per USD year in the Philippines and Vietnam respectively. Research indicating that challenges with managing menstruation leading to work absenteeism are consistent with previous research on adolescents. For example, previous studies show that a lack of WASH in schools leads to high rates of repetition and dropout in school for girls (Agol & Harvey, 2018).

3.4.1 Menstrual stigma and taboos

Regular menstruation is a sign of health and fertility and is inherently female. Drawing on feminist theory, Wilbur et al. (2019) discuss how femininity is generally associated with beauty, freshness and cleanliness, qualities that are often seen as opposites to those associated with menstruation: dirty, bloody, and smelly. This dichotomy between femininity and menstruation may begin to explain menstrual taboos, which are rooted in, and drive gender inequality. In some contexts, those that menstruate are viewed as impure and therefore separated from men and banned from using the same water sources in order not to contaminate them. Wilbuer et al. (2019) explain how these taboos and social beliefs have resulted in some people internalising this stigma, reporting that they feel dirty and ashamed when menstruating.

MHM cannot be discussed without considering the impact of its associated taboos and social stigma that exist in nearly all cultures around the world. Harmful norms and stigma surrounding menstruation has been proven to undermine physical, mental, and social well-being (Hennegan et al. 2021a) and has also shown to affect experiences at work. Studies for example show how gendered ideals of being a responsible woman while menstruating put significant pressure on women to maintain a clean body and menstruation hidden at work (Hennegan et al 2020). House et al. (2013) emphasise the importance men can have to ensure that work environments make it easy for women to manage menstruation with dignity. However, other studies (Fry et al. 2022) show how male-dominated workplaces commonly enhance the silence of menstruation and the stigma surrounding it, with women hiding their menstrual needs to avoid insulting comments from male colleagues and to not appear as attention seeking

Overall, it is particularly evident that data on how women handle menstruation in the workplace in LMIC is scarce (Sang, 2021). UNFPA (2021) also underscores the lack of evidence on the issue emanating from Eastern and Southern Africa. Donors and development agencies are intensifying their attention on girls and women in their attempts to reduce poverty and ensuring that women earn a living is essential for this. However, the provision of adequate MHM and determining how

prevailing inadequacies affect girls' and women's health and productivity in workplace contexts has evidently been neglected in these initiatives (Sommer et al. 2016).

3.5 Recommended menstrual hygiene services

In a study conducted by Morgan et al. (2017), which explored access, continuity, quality, quantity, and reliability of WASH services in rural schools of six Sub-Saharan African countries (Ethiopia, Kenya, Mozambique, Rwanda, Uganda, and Zambia), a list of recommended menstrual hygiene services was presented. The five recommended menstrual hygiene services were: separate-sex facilities, presence of a door, a lock for the door, clean water supply, and a waste disposal bin.

4. Theory

4.1 Menstrual health and menstrual health management

One of the main concepts in this research is menstrual health management. Referring to ‘menstrual *health* management’, instead of the widely used term ‘menstrual *hygiene* management’, is an active choice as “menstruation is not only an issue of hygienic management of something ‘dirty’ but should be expanded to the concepts of wider physical, mental, and social well-being” (Tellier et al. 2020). The list of components considered necessary to achieve menstrual health has expanded quickly. From a focus on menstrual materials, to WASH including disposal and education, to access to services, including health, awareness building and advocacy to create positive social norms (Tellier et al. 2021).

Hennegan et al. (2021a) has defined menstrual health as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity, in relation to the menstrual cycle”. The definition includes several conditions for achieving menstrual health. In this research, adequate menstrual health management therefore refers to a state when a person can manage their menstrual health with all these conditions in place. According to Hennegan et al, menstrual health implies that menstruators, throughout their life-course, are able to:

- Access accurate, timely, age-appropriate information about the menstrual cycle, menstruation, and changes experienced throughout the life-course, as well as related self-care and hygiene practices.
- Care for their bodies during menstruation such that their preferences, hygiene, comfort, privacy, and safety are supported. This includes accessing and using effective and affordable menstrual materials and having supportive facilities and services, including water, sanitation, and hygiene services, for washing the body and hands, changing menstrual materials, and cleaning and/or disposing of used materials.
- Access timely diagnosis, treatment and care for menstrual cycle-related discomforts and disorders, including access to appropriate health services and resources, pain relief, and strategies for self-care.
- Experience a positive and respectful environment in relation to the menstrual cycle, free from stigma and psychological distress, including the resources and support they need to

confidently care for their bodies and make informed decisions about self-care throughout their menstrual cycle.

- Decide whether and how to participate in all spheres of life, including civil, cultural, economic, social, and political, during all phases of the menstrual cycle, free from menstrual-related exclusion, restriction, discrimination, coercion, and/or violence

The definition is well aligned with the World Health Organization's (WHO) definition of health (WHO, n.d) and attends to an individual's mental, social, and physical well-being. While the majority of those who experience a menstrual cycle are women and girls, this approach also acknowledges that menstrual health is relevant to anyone who experiences a menstrual cycle, regardless of gender identity. In addition, it recognizes that many people who experience a menstrual cycle may not have regular bleeding, and that an absent menstruation can cause anxiety and distress. It also emphasizes that individuals experience menstruation differently depending on their lived experiences, needs, and circumstances (Hennegan et al. 2021a)

4.2 Socio-ecological model of health

The socio-ecological model (SEM) of health is a paradigm used for guiding public health practice and research (Sharma et al. 2022). It was initially introduced in the 1970's as a conceptual model for understanding human development and later formalized as a theory. The SEM focuses on several factors that may affect health and conceptualizes health broadly to include both physical, mental, and social well-being. According to the SEM, health is affected by factors at a variety of levels, including the individual, interpersonal, community, organisational and policy level (Kilanowski, 2017).

Much of the existing action towards MHM has been led by the WASH-sector and much of the existing literature focuses on the access to menstrual care and products, without addressing aspects such as shame and stigma (Sommer et al. 2016). As the literature suggests, the physical, mental, and social impacts should also be included to capture a broader picture of MHM (Bobel, 2019). The way that SEM broadly conceptualises health is thus deemed suitable for a study adopting this holistic approach. The model also goes well in line with Hennegan et al.'s (2021a) broad definition of menstrual health.

The model has been revised and adopted several times prior to facilitate multilevel approaches to various areas, with a couple being related to MHM. The model has for instance been re-worked by UNICEF and Center for Global Safe Water at Emory University (2013) with the purpose of guiding researchers globally to generate knowledge about factors that may impact MHM. Their model

includes five key levels of societal, environmental, interpersonal, personal, and biological factors to ensure that experiences of girls and women participating in research are explored in the context of their physical and social environment. Building on the work of UNICEF and Emory University, the SEM has been further adapted by Wilbur et al (2019) to assess the menstrual hygiene requirements of disabled people, the barriers they face, and the available interventions that support them in managing their menstruation in a hygienic and dignified manner. In addition, a scoping review by Maulingin-Gumbaketi et al. (2022) uses the SEM to evaluate, analyse and document existing evidence on the social and cultural practices, beliefs and norms surrounding menstruation and their implication on women’s health and wellbeing in Pacific Island Countries and Territories (PICTs).

4.2.1 Socio-ecological model adapted to the study of MHM in workplace settings

As no SEM adapted to the study of MHM in workplace settings could be found in the existing literature, one was created for the purpose of this study. The new model was created with inspiration from the work done by UNICEF and Emory University (2013), Wilbur et al. (2109) and Maulingin-Gumbaketi et al. (2022), with the same five level of factors included. As the study is designed in a way that all the data is collected first-hand from menstruating women through individual interviews, the model (see Figure 1) was designed around these premisses.

Figure 1 Socio-ecological Model of Menstrual Health Adapted to Studies in Workplace Settings

Societal factors – Traditional and cultural beliefs and practices
Semi-structured interviews (SSI) with menstruating workers → Solicitation of traditional practices, norms, beliefs, and local knowledge
Environmental factors - Water, sanitation, and resource availability
SSIs with menstruating workers → Perceptions of work environment; condition and use of WASH facilities; availability of affordable, usable, and culturally appropriate menstrual material and supplies
Interpersonal factors - Relationships with family, friends, colleagues, managers
SSIs with menstruating workers → Relationships with family, colleagues, and managers; access to support for information, practical guidance, and supplies; sources of MHM information
Personal factors - Knowledge, skills, beliefs
SSIs with menstruating workers → Biological knowledge about menstruation and MHM; practical knowledge about MHM; skills in coping mechanisms and behavioural adaptations; needs and support required; attitudes, feelings, and beliefs about menstruation; self-efficacy regarding management
Biological factors - Age, intensity of menstruation, cycle
SSIs with menstruating workers → Menstrual variations due to age and features of menstrual cycle (regular, irregular, heavy, light) and any other biological changes related to menstruation, intensity of menstruation and pain (headaches and pain) and influences on behaviour, health (physical, mental, and social), and work experience; ability to manage menstruation in work setting

Source: Author’s construction (2023)

Ultimately, the SEM and the definition of menstrual health guided the shaping of research questions, the questions posed in the interviews (see Annex 1) and structure of the analysis.

5. Methodology and material

5.1 Research approach

The study follows a qualitatively driven research design. Sommer et al (2017) suggest that qualitative methods are suitable when researching sensitive subjects such as menstruation, as they can capture people's perceptions, beliefs, and direct voiced experiences in an in-depth and sensitive manner. Silverman (2000) further notes that qualitative research is characterized by its focus on providing a holistic view of a topic or phenomenon. The need for a holistic approach when studying menstrual health has been emphasized in previous sections, making the choice of qualitative methods appropriate.

Qualitative interviewing was chosen as a method due to an ontological stance that suggests that the knowledge, opinions, interpretations, experiences, interactions, perceptions, language, stories, and sensations of people are meaningful to the social reality that the research questions try to investigate. The epistemological stance is also one that allows a method of data generation by having conversations with people; posing questions, hearing them out, becoming familiar with their stories and opinions and viewing them as sources of knowledge about the world (Mason, 2018: 111). In this study, the ontological and epistemological stance led to the creation of research questions that focus on the experiences told by the women who are menstruating.

5.2 Sampling

The study sample was selected through nonprobability purposive sampling. Nonprobability sampling is useful when randomised sampling is not possible, such as when there is a very large population and when the researcher is working with limited resources, time, and workforce (Ilker et al. 2016), which was the case for this study as only 10 weeks were spent in Mozambique for data collection.

Purposive sampling is a nonprobability sampling where the sampling units are selected based on their relevance for the research (Mason, 2018:59). It is a type of research method which involves the researcher deciding what information needs to be known, and then identifying and selecting individuals or groups who are knowledgeable and experienced with the phenomenon of interest (Ilker et al. 2016). Purposive sampling was chosen as sampling strategy as the study aim required the creation of certain criteria for research participants. The criteria stipulated that potential participants were women over the age of 18 years old; had reached menarche but not yet menopause; were employed in the agricultural, service or industrial sector as their primary source of income; and that their work was based within Maputo Province.

Different methods were used to recruit participants for the study. A majority of the participants were recruited through a socially based strategy with friends and colleagues residing in the country acting as gatekeepers. Gatekeepers can be described as “individuals who directly or indirectly facilitate or inhibit researchers' access to resources such as people, institutions, information and logistics” (Bonnin, 2010). The gatekeepers were asked to suggest potential participants after being informed of the purpose and criteria for inclusion in the study.

Secondly, a snowball strategy was utilized to recruit some of the interviewees. Snowballing is a type of purposive sampling that entails that the researcher identifies certain participants already in the study and then solicits their help to identify additional people who might be eligible to participate (Oppong, 2013). This strategy was adopted by concluding the interviews with a question to the interviewees about their knowledge of additional potential participants.

The sample size selected for a purposive sampling strategy is typically based on theoretical saturation. This means that the data collection process is ongoing, with data review and analysis happening concurrently. The data collection then ends when the researcher finds that new data is no longer providing any deeper insight into the research problem or when similar answers keep recurring (Oppong, 2013). Theoretical saturation was adopted for this study, ultimately resulting in 22 interviews being included in the study.

A purposive sampling method can be subject to issues such as gatekeeper bias; sample frame bias, practicality, and logistics. Gatekeeper bias occurs when key subjects take control of the sampling process, while sample frame bias occurs when a sample is selected with a focus on a particular group of respondents, leading to limited sampling from non-focal participants. Practicalities and logistics can also be an issue as the researcher must negotiate access to sites and individuals with the negotiation process leading to delays, access being refused, or other problems (Grogger et al. 1999) These issues were all considered during the process. Due to the circumstances of the study being performed in a context fairly new for the researcher, with limited time and resources, the use of gatekeepers was deemed necessary to recruit enough participants within the given time frame. The practicality and logistics presented an issue during the data collection, especially as the interviews were performed during the cyclone season in Mozambique. Floodings restricting mobility of both the researcher and participants resulted in delays and cancelations of interviews, with two interviews essentially being moved online.

5.2.1 Description of the final sample

The final sample consisted of a total of 22 participants (see Table 1). Participants ranged in age from 25-45 years old. Eight of them were employed in the agricultural sector, nine in the service sector and five in the industrial sector. Seven worked at a private company, three at a public company, three at a governmental agency, four for private persons and five were running their own business.

Table 1 Description of Final Sample

Participant	Age	Occupation	Employer	Level of completed education	Monthly salary (mts)*
Agricultural sector					
Ana	45	Farmer	Private persons	1 st grade	6,500
Isabel	33	Human resources and Safety and health responsible	Private company	Bachelor - ongoing	40,000
Paula	32	Laundry responsible	Private company	Bachelor - ongoing	13,000
Sonia	32	Warehouse responsible	Private company	2 years of bachelor – not completed.	19,500
Carla	37	Farmer	Self-employed	Did not attend school	1,500
Luisa	40	Agricultural instructor	Governmental agency	Bachelor - ongoing	Did not wish to answer
Helena	29	Agricultural instructor	Governmental agency	Bachelor	34,000
Sara	29	Agricultural instructor	Governmental agency	3 years vocational education	14,000
Service sector					
Fatima	25	Street vendor and online shop owner	Self-employed	Bachelor - ongoing	Did not wish to answer
Marta	26	Street vendor	Self-employed	Bachelor	9,000
Joana	33	Store owner	Self-employed	Bachelor	Did not wish to answer
Teresa**	27	Hotel receptionist	Private company	Bachelor	10,000
Marcia	37	Housekeeper/nanny	Private persons	8 th grade	13,000
Cristina	29	Housekeeper/nanny	Private persons	12 th grade	3,500
Fernanda	43	Shop assistant	Private company	12 th grade	7,500
Yolanda	43	Housekeeper/nanny	Private persons	5th-7th grade as an adult	5,000
Eunice	38	Street vendor	Self-employed	8 th grade	10,000
Industrial sector					
Angela**/**	29	Project manager	Public company	Bachelor	65,000
Alice	27	Electrical technician	Public company	Bachelor	35,000
Aida ***	31	Environmental technician	Public company	Bachelor	100,000
Nilza***	26	Site director	Private company	Master - ongoing	80,000
Carolina**/**	34	Operational supervisor	Private company	Bachelor	Did not wish to answer

Source: Author's construction (2023)

*Salary presented in Mozambican currency Meticaís¹

**Online interview

*** Interview conducted in English without interpreter

¹ 1000 Meticaís equals around 15.649 UDS according to Valutaomvandlare.com 2023-05-16

5.3 Data collection

5.3.1 Semi-structured interviews

The data was collected through semi-structured interviews. Research interviews was deemed a suitable method for this project for several reasons. Firstly, interviews are especially useful when studying processes and social patterns that have previously been ignored or understudied by bringing the invisible into focus (Gerson and Damaske, 2020: 9). This is relevant since menstrual health is a much-neglected global issue (Phillips-Howard et al. 2016). Secondly, interviews are a powerful method to explore complex social dynamics and connections between micro- and macro-processes (Gerson & Damaske, 2020: 34). This is also relevant as this study explores the different complex conditions for MHM as well factors at different levels within the SEM.

Semi-structured interviews can include several prepared themes and a sequence of suggested questions. At the same time, there is room for flexibility to change the order and forms of questions to follow up certain answers (Kvale & Brinkmann 2009: 124). With the flexibility, the semi-structured interview can provide great insight to interviewees attitudes, experiences, and opinions and allows the interviewer and interviewees to go deeper into unexpected topics and themes (Bryman, 2012). The opportunity to be flexible enough to follow up on unexpected topics, which could be expected in such a under researched area, was seen as an advantage for this study. Semi-structured interviews were deemed well-suited for this study given the ability to explore general themes (derived from the definition of menstrual health and the SEM), while also allowing flexibility.

Although interviewing is a powerful methodological tool, it also comes with challenges in need of consideration. For instance, there is a risk that the women say what they believe that the interviewer wants them to say, rather than what they actually think, due to ‘social desirability bias’ (Gerson & Damaske, 2020:15-16). The interviewees may also say what they believe their employers wants them to say. To collect the true views and experiences, follow-up questions and probing was considered essential. Making sure that the participants were aware of the ethical measures to ensure confidentiality and anonymity hopefully also contributed to creating an atmosphere of trust and comfort, thus minimising the risk of social desirability bias.

5.3.2 Face-to-face and online interviews

Most of the interviews for this research project were conducted face-to-face in Maputo Province, with only two interviews being conducted online via Whatsapp video call due to restricted mobility as a result of floodings. Gerson and Damaske (2020) argue that nothing beats meeting in person, but

the ability to do online interviews allowed for the planned interviews to be conducted despite encountering logistical challenges. A potential challenge with video interviews is the lack of physical space between the interviewer and participant, which decreases the researcher's opportunity to take note of the participant's environment, body language, and emotional cues (Iacono et al. 2016). Although it may have posed difficulties in noticing discomfort, conducting a video call enabled the awareness of facial expressions which was taken note of during the interview.

5.3.3 Use of interpreters

As seen by Table 1, five of the interviews were conducted in English. The remaining interviews were conducted in Portuguese with the help of Mozambican female interpreters. In total four different interpreters assisted during the study. One interpreter was a colleague to three of the participants, which could have influenced some of their answers while talking about the relationship with colleagues for example.

5.4 Case selection

Sommer et al. (2016) highlight the need for more in-country documentation on MHM. Sang (2021) observes that data from LMICs on how women manage menstruation and work is sparse, and UNFPA (2021) echoes this, emphasising that there especially is a lack of evidence on this topic coming from Eastern and Southern Africa. Given these considerations, Mozambique was deemed a suitable choice for this study. As the country faces challenges regarding gender equality, both in terms of equal and decent work for women, and the view and practice of menstrual health, the research carried out is also relevant for this context.

The study looks at MHM in different workplace settings within Mozambique. For this purpose, women from the three largest employment sectors - agriculture, service, and industry, were interviewed. The interviews were conducted within Maputo Province, the most Southern province in the country and home to the capital and largest city, Maputo. As the study was conducted during cyclone season, uncertain weather conditions prevailed, and all the interviews were therefore conducted in or proximity to Maputo City due to practical reasons.

5.5 Description of analysis

Data collected from the interviews was analysed with thematic analysis. Thematic analysis is a useful method when examining participant's perspectives and experiences, enabling the exploration of both similarities and differences, and possibly leading to unanticipated findings (Braun & Clarke, 2006). The method also allows researchers to approach large sets of data more easily by categorizing it into

themes (Caulfield, 2019). These characteristics made thematic analysis a suitable method for this study.

While performing a thematic analysis, inductive and deductive approaches must be taken into consideration (Caulfield, 2019). The analysis was mainly carried out with a deductive approach, meaning that it was based on the conditions for MHM and the levels of factors in the SEM. The interviews were carefully analysed and general patterns that were found were categorized into different themes under each research question. While thematic analysis is a flexible method, its subjectivity also implies a risk of missing nuances and meanings present in the data or picking up on things that are not present. Being reflective about choices and interpretations is therefore needed (Caulfield, 2019). After collecting the data, these kinds of reflections lead to the inclusion of a new level of factors, 'organisational factors', in the SEM to facilitate analysis as parts of the findings did not clearly fit under any of the pre-existing levels.

5.6 Ethical aspects

Mason (2018:102) points out the importance of anonymising the data in interview studies. This can be done through precautions such as removing or mixing names and other identifying details (Israel, 2015). To ensure confidentiality as far as possible, no real names are used neither for participants or their workplaces, and other identifying details are removed or mixed between the participants when deemed necessary. In addition, according to Mason (2018:102), another ethical challenge is how to store the material safely. Therefore, research notes and devices storing collected data were kept in drawers in a private accommodation. In line with current ethical guideline (Swedish Research Council, 2017), interview notes and recordings will be destroyed or deleted upon completion of the research.

Additional aspects were considered when conducting this research, such as voluntary and informed consent from participants who are aware of the conditions and potential risks associated with their participation (Sin, 2005). To ensure this, a consent form (see Appendix 2) was created to inform participants of the conditions for their participation in the study.

Corbin and Morse (2003) highlight the risk that interviews on certain topics might evoke powerful emotions. As menstruation is generally regarded as a sensitive subject, often associated with a stigma that socially conditions menstruators to avoid discussing it (Johnston-Robledo & Chrisler, 2013), this was something important to recognize. To approach the sensitivity of the subject, Sommer et al (2017) suggest that interviews should be conducted with female staff in a safe and private space with

someone from the local context present. To adhere to these recommendations, Mozambican female interpreters were recruited to assist during the interviews, and the participants were asked to suggest their preferred time and location for their interview. The participants were also informed of the general lay out of the interview beforehand and that they were free to stop the interview at any time. No one did however choose to terminate their interview early.

Another way of practising more ethical qualitative research is to explore the topic in a contextual way to get a better understanding of its circumstances and how participants and their relationships are a part of it (Mason, 2018:73, 87). As I was living in Maputo during five months prior to the start of data collection, conversations were held with several Mozambican women and men to gain more contextual knowledge about the topic. For the same purpose, consultations were held with staff from organisations working locally with efforts related to menstrual health. These conversations ultimately had an impact on for example the methodological choices. As menstruation often was referred during these conversations as something shameful that is not talked about a lot in the Mozambican society, individual interviews were chosen over focus group interviews as the method for data collection so that the women's stories could be shared with more privacy.

According to Creswell and Creswell (2018), one major characteristic of qualitative research is that the researcher is involved in all parts of the research process, and thus is somewhat visible in the interpretations. As a result, it is important to be mindful of personal biases and subjectivity during all phases of the research. For this purpose, a critical reflexivity was practiced throughout the research process. Mason (2018) describes reflexivity as the practice of critically considering one's motivations and rationale, questioning, and frequently contesting one's own presumptions, and being aware of the degree to which one's cognitions, activities and judgments shape the research and the observations made. Consulting local population and practitioners on the topic prior to designing the study and collecting data hopefully helped bringing in other perspectives of menstrual health into the study, however, I am well aware that my individual perception of menstrual health to a varying degree still have affected the way the study was conducted, and the paper written.

Lastly, the ethical implications of paying participants in qualitative research have been a focus in numerous debates. Some researchers argue that paying participants has had positive benefits such as facilitating the recruitment of participants. On the other hand, Goodman et al (2004: 821) argue that those of a low-income may feel forced to take part if the compensation is too great to reject. In the end, it was decided to not provide any monetary compensation to the participants, but flyers with information regarding menstrual health, provided by the organisation Be Girl, were given as a token.

6. Analysis

In the first part of the analysis, findings will show how different factors from the SEM have an influence on the women's ability to achieve adequate menstrual health in their workplace settings, and how this may differ between the employment sectors. The analysis then goes on to answering the second research question by looking at how women's menstrual health is affecting their work life experience across the different employment sectors.

6.1 Research question 1

How do different factors support or hinder women's ability to achieve adequate menstrual health in their workplace settings?

6.1.1 Societal factors

6.1.1.1 Society's view of menstruation

A large proportion of the women indicated that menstruation should be kept private. It was apparent that this view was influenced by a societal perception of menstruation as shameful and dirty. This also had an influence on the women in the workplace, as many expressed how they adopted strategies to make their menstruation as unnoticeable as possible since they would feel uncomfortable and ashamed if anyone noticed it.

For instance, Fatima, a street vendor who spends parts of her working day moving around the city, explained that she is worried about her pads leaking and people on the street potentially noticing that she is menstruating, which might lead to teasing and shaming. Other women described the need of hiding their menstruation from colleagues. Angela, a civil engineer working in the construction business, noted that hiding one's menstruation is a cultural norm, citing her own experience of having to conceal it from her colleagues out of fear of an unsympathetic reaction, particularly if they are male.

Marta, another street vendor, shared her discomfort with potentially exposing her menstruation to others by discarding her pads in the trash bins in public toilets. This has led her to refrain from changing her menstrual material during her seven-hour workdays and instead wait until she gets back home. Similarly, Cristina, a housekeeper, shared being taught by her aunt to not to throw menstrual material in places where other people can see, and so she has continued to do so even though she throws other things in the trash bins at work. The findings indicate that there exists a social stigma

surrounding menstruation that has caused many women to feel shame and embarrassment of discarding their menstrual material in public.

The effect of the societal view of menstruation did however seem to differ somewhat. Sonia, warehouse responsible at an agricultural company, described how she is used to hearing that women are impure because of their menstruation, but that this does not affect her way of thinking about her menstruation. She did explain however that many people are afraid of being judged in case of a leakage and sometime even afraid to talk about it due to the perception of menstruation.

Overall, the women's experiences illustrate how societal perceptions of menstruation can have an impact on women's MHM at work by influencing if they can change their material as often as necessary and preferred, and if they experience a positive and respectful work environment, free from stigma and psychological distress, in relation to the menstrual cycle,

6.1.1.1 Stolen pads

In the previous section, stories revealed that some women experience unease when discarding their menstrual material in the work environment. Additionally, some mentioned another factor that discourages them from discarding menstrual material in their work environment – the fear of someone stealing their used material.

'People scavenge for pads. I'm scared. It's a cultural thing. It's my menstrual blood. I don't know what kind of rituals they will do with my pads.'

(Angela, project manager)

Angela explained that since she was a child, she has heard stories of individuals scavenging trash and retrieving used pads with traces of blood to use in rituals. As a result, she does not feel secure disposing her pads in public areas where other people could access them. Instead, she usually brings the pads back home from work to throw it in a place where she knows they burn the trash. Nonetheless, she is sometimes left with no alternative but to dispose of her pads in an unknown location, particularly when working in remote sites. When this is the case, she tries to clean the pad to discard it with the least amount of blood. Marcia, an employed housekeeper, also expressed discomfort in discarding sanitary pads where she works due to the prevalence of individuals searching for pads. As a result, she disposes her pads in another container on her way home, where she perceives fewer individuals to be searching for them.

Nilza, a site supervisor in the construction industry, did not explicitly state that she was afraid of someone stealing her pads. She explained, however, how cultural beliefs influence her decision not to discard her used pads in any public place, including work. She explained that her mother had

taught her to dispose menstrual material at home because it was “more secure.” Additionally, her mother had instructed her to wash her pads before discarding them. When asked why she thought her mother had taught her this, Nilza stated that it was related to her mother's culture. She explained that her mother was taught that to become pregnant, one had to perform rituals involving her used menstrual material; hence, it was necessary to throw it away at home.

The examples presented in this section highlights how the fear of someone stealing used menstrual material, as well as cultural traditions, lead to women feeling unsafe and uncomfortable when disposing their pads in their work environment.

6.1.2 Environmental factors

Table 2 and 3 provide an expanded version of the list of recommended menstrual hygiene services by Morgan et al. (2017). The interview guide was expanded after the first interview made it clear that additional hygiene services than the ones recommended by Morgan et al. could influence how the women manage their menstrual health during work. The new list of recommended menstrual hygiene services was considered to capture a picture of the women’s context on an even more detailed level.

Some of the women spend their time at working environment inside for instance an office or their employers private house, other spend their time outside by the fields or the city streets, and some are alternating their time in between. As seen by the Table 2 and 3, there is a difference in the access to menstrual hygiene services depending on what kind of working environment the women are in. The lack of menstrual hygiene services was a particularly common problem for the women who worked at least partially outdoors, often with varying locations for work.

Table 2 Menstrual Hygiene Services in Outdoor Work Environments

Outdoor Work Environments												
Participant	Location	Presence of toilet(s)	Sex-separate facilities	Presence of door	Possibility to lock door	Presence of toilet paper	Water at facility	Location of water	Presence of soap	Presence of trash bins	Locations of trash bins	Payment necessary
Agricultural sector												
Ana	Farming field	Yes	No	Yes	Yes	Sometimes	Sometimes	Shared	No	No	N/A	No
Carla	Farming field	Yes	Yes	Yes	No	Yes	Yes	Sex-separate	Yes	Yes	Each toilet	No
Luisa*	Farming fields	Yes	No	Yes	No	No	Yes	Shared	No	No	N/A	No
Helena*	Farming fields	Yes	No	Yes	No	No	No	N/A	No	No	N/A	No
Sara*	Farming fields	No	No	No	No	No	No	N/A	No	No	N/A	N/A
Service sector												
Fatima*	Public urban areas	Yes	Yes	Yes	Yes	No	Yes	Shared	No	Yes	Sex-separate	Yes, 5-15 mts
Marta*	Public urban places	Yes	Yes	Yes	Yes	No	Yes	Sex-separate	Yes	Yes	Sex-separate	Yes, 5-15 mts
Eunice	Roadside marketplace	Yes	No	Yes	Yes	No	Yes	Shared	Yes	Yes	Each toilet	No
Industrial sector												
Angela*	Construction sites	Yes	Yes**	Yes	Yes	Sometimes	No	Shared	Sometimes	No	N/A	No
Alice	Substations	Yes	Yes	Yes	Yes	Sometimes	Yes	Sex-separate	Sometimes	Yes	Sex separate	No
Aida*	Substations	Yes	Yes	Yes	Yes	Sometimes	Yes	Sex-separate	Sometimes	Yes	Sex separate	No
Nilza	Construction site	No	No	No	No	No	No	N/A	No	No	N/A	N/A

Source: Author's construction (2023)

*generalisation of hygiene facilities in changing work environments

**usually not followed in practice

Table 3 Menstrual Hygiene Services in Indoor Work Environments

Indoor Work Environments												
Participant	Location	Presence of toilet(s)	Sex-separate facilities	Presence of door	Possibility to lock door	Presence of toilet paper	Water at facility	Location of water	Presence of soap	Presence of trash bins	Locations of trash bins	Payment necessary
Agricultural sector												
Isabel	Production area	Yes	Yes	Yes	Yes	Yes	Yes	Each toilet	Yes	Yes	Each toilet	No
Paula	Laundry area	Yes	Yes	Yes	Yes	Yes	Yes	Each toilet	Yes	Yes	Each toilet	No
Sonia	Warehouse	Yes	Yes	Yes	Yes	Yes	Yes	Each toilet	Yes	Yes	Each toilet	No
Luisa	Office	Yes	Yes	Yes	Yes	Yes	Yes	Each toilet	Yes	No	N/A	No
Helena	Office	Yes	Yes	Yes	Yes	Yes	Yes	Each toilet	Yes	No	N/A	No
Service sector												
Fatima	Home office	Yes	Yes	Yes	Yes	Yes	Yes	Each toilet	Yes	Yes	Each toilet	No
Joana	Public marketplace	Yes	Yes	Yes	No	Sometimes	Yes	Shared	No	Yes	Each toilet	Yes, 2-5 mts
Teresa	Hotel reception	Yes	Yes	Yes	Yes	Yes	Yes	Each toilet	Yes	Yes	Each toilet	No
Marcia	Employers house	Yes	No	Yes	Yes	Yes	Yes	Each toilet	Yes	Yes	Each toilet	No
Cristina	Employers house	Yes	No	Yes	Yes	Yes	Yes	Each toilet	Yes	Yes	Each toilet	No
Yolanda	Employers house	Yes	No	Yes	Yes	No	Yes	Each toilet	Yes	Yes	Each toilet	No
Fernanda	Shop	Yes	No	Yes	Yes	Yes	Yes	Each toilet	Yes	Yes	Each toilet	No
Industrial sector												
Angela	Office	Yes	Yes	Yes	Yes	Sometimes	Yes	Sex-separate	Yes	Yes	Each toilet	No
Alice*	Office	Yes	Yes	Yes	Yes	Yes	Yes	Each toilet	Yes	Yes	Each toilet	No
Aida	Office	Yes	Yes	Yes	Yes	Sometimes	Yes	Each toilet	Yes	Yes	Sex-separate	No
Nilza	Office	Yes	No	Yes	Yes	Yes	Yes	Each toilet	Yes	Yes	Each toilet	No
Carolina	Operative department	Yes	Yes	Yes	Yes	Yes	Yes	Sex-separate	Yes	Yes	Each toilet	No

Source: Author's construction (2023)

*generalisation of hygiene facilities in changing work environments

It was made clear that the lack of access to water in the outdoor work environments has several different implications. Firstly, it restricts the freedom of choosing what product to use during work. Angela explained that there is usually no running water by the construction sites she goes to. This means that even though she normally uses reusable pads during some days of her menstruation, she only uses disposable pads while in the field due to the challenges of cleaning reusable pads. It also affects her ability to feel secure enough to dispose used pads by the construction sites as she prefers to wash the blood off them before disposing them there, as explained under ‘societal factors’. In addition, the lack of running water also affects her possibilities to clean herself.

The importance of having access to water to clean oneself was addressed multiple times. For instance, Luisa, who spends most of her time working by different fields, explained how not all locations she visits have bathrooms, and those that do are usually very basic with no water or soap. She recalled one particular day when her period came unexpectedly and since she was unable to clean herself, she did not feel comfortable enough to continue her work and decided to return home early.

As seen in Table 2 and 3, around a third of the work environments lack a trash bin. This was proven to affect the women’s comfort of disposing used materials in their work environment. For example, the hotel receptionist Teresa stated that she feels comfortable changing her pads at the toilet at work because it is equipped with bins with lids and sanitary bags in which she can put her pads before disposing them, minimizing the risk that someone else notices that she is menstruating.

6.1.2.2. Condition and quality of menstrual hygiene services

It is not only the access to a toilet, water source, or trash bin that proved to be important, but also its condition. Several women mentioned that the cleanliness of the toilet contributes to if they feel comfortable enough to change their menstrual material there. Fatima, Marta and Joana who works in the service sector and mainly rely on public toilets during work all avoiding using them because they are not clean. Alice, an electrical technician who amongst other things conducts house visits to help clients, stated that she can determine the cleanliness of the toilet by looking at the client’s house, and based on this assumption she decides whether to ask to use the toilet or not. If she does not think the toilet will be clean, she waits until returning to the office to change her pads.

Angela explained that she has never felt comfortable enough to change her pads in the mobile toilets that her company provides by the remote construction sites since they are unclean, if they are even lucky to have any toilets. When forced to change her menstrual material while at the construction site, she goes into the bush to change and wraps used pads in newspaper to bring back home. She also explained that when she goes to the bushes to change her menstrual material, she feels like she

has to alert the male colleagues that she needs time for herself and that they should not follow. Due to several incidents with colleagues following and watching her, she usually goes to hide and waits for at least five minutes to see if someone is there. She shares a story of a male colleague waiting behind a bush for 15 minutes, resulting in her having to leave the bushes and ask her manager to drive her a few miles she could change her pads in privacy. The lack of hygienic toilets by the construction sites essentially leads to her not feeling safe nor comfortable managing her menstrual health at work.

A factor that was raised as affecting the cleanliness of the toilets at work, and thus influencing many women's decision to use them or not, was if they were separated between men and women. Male colleagues were several times described as "making a mess" at the toilets and in the cases that they used the women's toilet it discouraged women from using it afterwards. Keeping toilets, but also water sources and trash bins separated between the sexes can be important to enhance the possibility to manage menstruation discretely. Many of the women reported being uncomfortable if male colleagues learned about their menstruation, which could be more likely to happen if the hygiene services are shared between sexes.

6.1.2.3 Cost of utilizing hygiene services

For Fatima, Marta and Joana, who primarily rely on public toilets during work, an additional factor affected their access to hygiene services compared to the others – the cost of utilizing public toilets. For Joana, the cost for using the toilet at the marketplace is 2 meticaïs (around 0.031 USD)², with an additional cost of 3 meticaïs (around 0.047 USD) for a bucket of water. Joana described that those toilets often are dirty and smelling badly since many people pay only to use the toilet, but not for water to flush it. While it is possible to not pay for water when using the toilet, the other way around is not. Joana explained that "if you pay for water, they assume you will go there to poop so you have to pay for the toilet as well". This means that if one would like to use water to clean off menstrual blood for example, this is not possible without also paying for using the toilet.

Fatima and Marta, who compared to Joana, are moving between different public places during their workday reported that they must pay between 5 and 15 meticaïs (0.078 – 0.157 USD) to use the public toilets. The difference in price usually reflects a difference in the cleanliness and available hygiene services. In addition to having to pay to access the toilets in the first place, this means that they need to pay more to get access to toilets with water and trash bins.

² All exchange rates calculated 2023-04-29 at Valutaomvandlare.com

6.1.2.4 Availability of appropriate menstrual materials

Table 4 Use of Menstrual Material

	Disposable pads	Reusable pads	Diapers (cut into smaller pieces)	Capulana (cut into smaller pieces)	Tampon
Number of users?	21	1	4	2	1
Reasons for using it?	Practical: 8 Comfort: 6 Good absorbency: 3 "Have always used it": 3 Limited knowledge about other products: 2	Comfort: 1 Economical: 1	Comfort: 3 Good absorbency: 2 Economical: 1	Affordable: 2	Comfort:1
Satisfied with material?	Yes: 16 "Yes, but": 2 No: 3	Yes: 1	Yes: 4	No: 2	Yes: 1

Source: Author's construction (2023)

As seen by Table 4, a clear majority of the women mainly, or only, use disposable pads. Comfort and practicality were the main reported reasons for using them. Most of the women are satisfied using disposable pads, although for Luisa it depends on if she can access the brand that she is not allergic to, and Fatima would like to use the reusable options to save money. For those that are not satisfied with the disposable pads, this is mainly due to discomfort wearing them. The ones who are using a capulana are doing so due to financial reasons but are however not satisfied with it because it gets full quickly and can lead to rashes. Overall, six of the women reported using a mix of materials, often depending on what they can afford that month. The approximate monthly spending on menstrual material ranged between 45 (0.705 USD³) – 1000 meticaïs (15.662 USD), with an average of 170 meticaïs (2.662 USD).

For many women, the choice of menstrual material is influenced by the range of supplies available in stores, which can have implications for their health at work. For example, Paula, a laundry responsible at an agricultural company, and Luisa, an agricultural instructor, both reported getting allergic reactions such as rashes depending on the brand of pads they use. Paula often experienced painful rashes due to difficulties finding the right brand in stores, whereas Luisa did not encounter this issue as often. Carolina also said that, if she can find them, she prefers to use thicker night pads at work so she can go longer without having to change. These examples demonstrate the importance of having access to a variety of menstrual materials to care for one's body according to preferences, relieve discomfort, and reduce pain.

³ All exchange rates calculated 2023-05-13 at Valutaomvandlare.com

6.1.2.5 Access to painkillers

Many of the women reported experiencing symptoms during menstruation with various levels of pain. Among those who sought measures to alleviate the pain, a majority resorted to taking painkillers, showing the impact access to such medication can have on women's ability to relieve menstrual pain at work. Isabel, a Human Resource and Safety and Health manager at an agricultural business, has access to painkillers from the company's first aid box, on the condition that a reason is provided for needing a painkiller. Except for Isabel, three other women reported having access to painkillers at work under similar conditions. Other women did however not have access to painkillers at work, which sometime constituted a challenge to manage pain. Angela for example described sometime having to "save" friends with severe menstrual pain by giving them her own painkillers. However, this could mean that she did not have any left for herself when needed, as the sites where she works are usually located far from the nearest store. Other reported methods to alleviate pain were moving around as much as possible, sitting down as much as possible, consuming lemons, and taking contraceptive pills.

Overall, the environmental factors show that the women place a great emphasis on access to hygiene services, such as toilets and water, to be able to manage their menstrual health during work. This access differs depending on the type of work environment they are in. The access to trash bins was also emphasised, however, whether they are used or not is highly dependent on societal factors. The type and condition of menstrual materials and hygiene services also matter. These environmental factors thus influence the women's ability to access and use menstrual materials and supportive facilities and services, to care for their bodies such that their preferences, hygiene, comfort, privacy, and safety are supported, to access pain relief, and to decide whether and how to participate in the work sphere.

6.1.3 Interpersonal factors

The third level of factors in the SEM is interpersonal factors. Within this level, two factors could be identified – the relationship with colleagues and managers/employers.

6.1.3.1 Relationship with colleagues

The relationship with colleagues proved to be influential for most women's ability to manage their menstruation with comfort, confidence and free from psychological distress. Some reported being comfortable talking about menstruation with their colleagues and receiving positive and supportive responses when colleagues knew they were menstruating. Others experience the opposite.

As seen in Table 5, some women reported feeling more comfortable discussing menstruation with female colleagues, while others said that it instead depends on how close they are to the colleague, rather than the gender. Carolina, who works in a male-dominated industrial company, said she is not comfortable talking to any colleague about her menstruation, except for one man.

'He is my colleague yes, but he is also my friend, so I am open enough to talk with him about this. I am not close to them (other colleagues), that's why I prefer to not even touch upon this subject'.

(Carolina, operational supervisor)

Similarly, Nilza also highlighted the importance of having time and space to form relationships with colleagues. She stated that due to her lack of time spent at her office, she does not feel comfortable discussing menstruation with her colleagues there, no matter if they are male or female.

6.1.3.2 Relationship with managers or employers

It was not only the relationship with colleagues that was addressed. Amongst those who are not self-employed (17 out of 22 participants), some also discussed the relationship they had with their manager or employer. As seen in Table 5, women's comfort level talking to their manager or employer about menstruation varied. Some felt that they could turn to their bosses for support when needed. Others, such as Marcia, who works as a housekeeper, felt uncomfortable speaking to either the man or woman of the house about her menstrual issues. She stated that she felt it would be a sign of disrespect to ask for pads. To cope when her menstruation starts unexpectedly or if she runs out of pads, she resorts to using toilet paper. Moreover, Cristina, who also works as a housekeeper, reported feeling uncomfortable using the only toilet of the house while her employers are there. This means that she cannot access that toilet most of the time, instead she goes to one of the neighbouring, uninhabited houses.

Nilza, who works at construction sites, also reported feeling uncomfortable talking about menstruation with her manager. However, compared to Marcia and Cristina, she still talks with him about it as he is aware of the construction site lacking toilets and is understanding of her challenges

Table 5 Relationships with Colleagues and Managers/Employers

Participant	Feeling comfortable talking about menstruation with colleagues?	Feeling comfortable talking about menstruation with closest managers or employers?
Agricultural sector		
Ana	Yes, since they were all women	No
Isabel	Yes	Yes
Paula	No	No
Sonia	Yes, but more comfortable with the female colleagues	Yes
Carla	N/A	N/A
Luisa	Yes	Yes
Helena	Yes, but only female colleagues	Yes
Sara	Yes, but more comfortable with female colleagues	Yes
Service sector		
Fatima	Yes	N/A
Marta	N/A	N/A
Joana	Yes	N/A
Teresa	Yes	Yes
Marcia	N/A	No
Cristina	N/A	No
Fernanda	Yes	Yes
Yolanda	N/A	Only female manager
Eunice	N/A	N/A
Industrial sector		
Angela	Mainly with female colleagues. Need close relationship with male colleagues to be comfortable.	No
Alice	Yes, but most comfortable with female colleagues.	Yes
Aida	Yes	Yes
Nilza	No	No
Carolina	No	No

Source: Author's construction (2023)

with managing her menstrual health. Therefore, she accepts that she leaves the site to go to the bathroom in her friend's house if needed.

Furthermore, Angela, project manager in the construction business, reported that cases of teasing and harassment were a common occurrence in her work environment, and thus highlighted the value of a good relationship with an understanding manager. She expressed appreciation for one of her previous managers, who always checked that the female staff felt okay and safe and that they could report any issues at work without fear. This made Angela comfortable to discuss menstruation-related challenges with that same manager.

As visualised by the stories above, the relationship with colleagues and managers can have an influence on women's ability to adequately manage their menstrual health at work. If a woman has a positive, supportive relationship with her colleagues and managers, she may feel more comfortable discussing her menstrual health and the associated needs or challenges that may arise. This can encourage her to take proactive steps to manage her menstrual health, such as taking time off work when necessary or openly asking for help. On the contrary, if a woman has an unsupportive or uncomfortable relationship with her colleagues and manager, she may be less prone to discuss her menstrual health and act to appropriately manage it.

6.1.4 Personal factors

6.1.4.1 Knowledge about the menstrual cycle and how to track it

Many of the women stated that their biggest concern while menstruating at work is the fear of leakages and stains. However, having general knowledge about the menstrual cycle and being aware of when to expect their menstruation can help in planning for it and managing associated symptoms. The women were therefore asked about the length of a typical menstrual cycle, if they were using any methods to track their cycle, if they knew about ways to track it, and if and how they know when their menstruation is coming.

The regular menstrual cycle typically ranges from 21 to 35 days, with the average length being 28 days (Be Girl, 2019b). Amongst the women, everyone except for one, who said 14 days, reported a number within this range when asked about the typical length of a menstrual cycle. The importance of having this general knowledge can be illustrated with a story from the hotel receptionist, Teresa. Prior to a friend teaching her that the average cycle is 28 days, Teresa assumed that her menstruation was irregular, resulting in it often coming as a surprise to her. Having this information, she said she is better at predicting her menstruation, which in turn contributes to her feeling more secure at work.

When asked about the menstrual cycle some however also quickly added statements like “I know what it is, but I don’t know how to explain it” (Sara, agricultural instructor), “I never understood this in school, but let’s try it” (Aida, environmental technician) or “I don’t have much information about the menstrual cycle itself, I just know about my own experience” (Helena, agricultural instructor). This may indicate a lack of deeper knowledge and understanding of menstruation.

Moreover, several women indicated that they are tracking their menstrual cycle and that they are observant and aware of their symptoms that might appear prior to menstruation. Why, and how, the women are tracking their cycle slightly differs however. For instance, one woman uses a calendar to be prepared with enough menstrual material when her menstruation comes, while another uses an app to be able to take measures in time to prevent painful cramps. By keeping track of their cycle, the women can plan ahead, anticipate the arrival of their menstruation and minimize the risk of leakages and stains. Additionally, tracking can help women identify irregularities in their cycle, such as the length of their period or if they are experiencing any unusual symptoms. This could help them access timely diagnosis, treatment and care for menstrual cycle-related discomforts and disorders that can affect them at work.

6.1.4.2 Knowledge about menstrual material

As shown under environmental factors, what kind of menstrual materials women access is in part determined by the supplies accessible in their surroundings. The findings also show that there are also some personal factors that play a part in this, knowledge about menstrual material being one of them.

The menstrual material that was by far the most used one were the disposable pads, as seen in Table 4. Some of the reasons given for using a certain material were that it is practical to use, comfortable or affordable. Some however stated that it is simply the material that they have always used, and that their knowledge about other available material is limited and it was made clear that the level of knowledge about existing menstrual materials influence what type is used.

This was the case for Teresa, a hotel receptionist, who said she wanted to try using a menstrual cup as she had heard it was comfortable and did not need to be changed as often during work. But, as she does not feel like she has enough knowledge about the menstrual cup to feel comfortable trying it, she still uses the disposable pads. Similarly, Carolina, an operational supervisor, explained that she uses disposable pads because she doesn't have much knowledge about the reusable. Teresa and Carolina's experiences demonstrate how limited knowledge of a specific material can hinder women from using it. Other women had limited knowledge of materials in general, like Joana and Yolanda,

a bottle store owner and housekeeper respectively, who for example asked if there were any other types of pads other than disposable ones.

Since some women stated that the material that they are using is not satisfactory (see table 4) and that they experienced discomfort during work due to it, having the knowledge about available options could perhaps open up for possibilities to change to a material that better fit individual preferences and needs, therefore making it easier to manage the menstrual health at work.

6.1.4.3 Financial situation

For some women, a lack of financial resources has prevented them from accessing their preferred menstrual materials for months at a time, leaving them to rely on alternatives such as pieces of capulana or cotton. For instance, for the farmer Carla, due to its affordability, her only option is often to use a capulana that she washes and reuses. She explained however that the capulana is uncomfortable and often causes rashes. Eunice, who sells vegetables by a road-side market also shared how she sometimes cannot afford disposable pads, and, like Carla, uses the capulana. Her biggest concern with the capulana is however that it gets saturated too quickly. These examples illustrate how the financial situation influences what materials women can access, and therefore their ability to effectively care for their bodies during menstruation such that their preferences, hygiene, and comfort are supported.

In summary, personal factors can affect women's ability to adequately manage their menstrual health at work in multiple ways. Women need to have general knowledge about the menstrual cycle to facilitate the management of associated symptoms. Knowledge about different types of menstrual materials also facilitates a choice of material that best suits their needs and preferences. Lastly, their financial situation plays an important role in terms of their access to satisfactory menstrual materials.

6.1.5 Biological factors

6.1.5.1 Regular or irregular menstrual cycle

As discussed previously, several of the women track their menstrual cycle. Moreover, it was apparent that the women with an irregular cycle had a harder time tracking their menstruation. Irregular menstruation can make it difficult to predict the onset and duration of the bleeding, thereby making it harder to plan for any menstrual symptoms that might appear. Some women for example described it as challenging to have the necessary supplies at hand at the right time, resulting in some of them staining their clothes during work, a fear causing distress for many of the women. Despite these difficulties, many of the women with irregular cycles reported being able to anticipate the onset of their menstruation due to physical signs such as back pain, nausea, and acne.

As seen here, only one biological factor was reported having influence on women’s ability to adequately manage menstrual health at work. In relation to the research questions, the biological factors come more into play in research question two, as something affecting work experiences.

6.1.6 Organisational factors

The findings from the interviews revealed a need to update the previously constructed SEM with an additional level of factors. The inclusion of the additional level ‘organisational factors’ further facilitated the analysis by enabling a clearer distinction between the physical work environment, and the organisational aspects of a workplace, such as workload or staff composition.

6.1.6.1 Workload

The level of workload proved to be a factor mainly affecting women’s opportunities to change to clean menstrual materials and wash themselves as often as necessary. For instance, Joana, who works in a bottle store, explained how her pants once got stained despite having prepared with two pads. Due to the number of customers, she felt unable to leave the shop to change her pads in time. Instead, she wrapped a capulana around herself and went to clean up when she had the time.

Similarly, Aida, an environmental technician, said that she sometimes experiences leakages because she finds it difficult to go to the toilet when her work is as most intense. She works in an office most of the time, and the intense workload, in combination with the toilet being located quite a distance from her desk, sometimes make her feel like does not have the time to take a lengthy enough break to and change her menstrual material.

6.1.6.2 Working alone or with colleagues

A factor that is highly interrelated with the workload and was found to affect some women’s ability to take breaks when and for as long as needed, is if they were working alone or not (see Table 6). Teresa, who partly works alone in the hotel reception, mentioned that she can go to the toilet whenever she needs, however, when working alone she feels like she needs to rush to get back to the

Table 6 Staff Composition

Participant	Male or female dominated work environment?	Male or female manager/employer?	Working alone or with colleagues?
Agricultural sector			
Ana	Female	Male	Colleagues
Isabel	Female	Female	Colleagues
Paula	Female	Female	Colleagues
Sonia	Female	Female	Colleagues
Carla	Male	N/A*	Alone
Luisa	Female	Male	Differs
Helena	Female	Male	Differs
Sara	Female	Male	Alone
Service sector			
Fatima	More or less same	N/A*	Colleagues
Marta	More or less same	N/A*	Alone
Joana	Female	N/A*	Differs
Teresa	Female	Male	Differs
Marcia	More or less same	Both	Alone
Cristina	More or less same	Both	Alone
Fernanda	More or less same	Male	Colleagues
Yolanda	More or less same	Both	Alone
Eunice	Men	N/A*	Alone
Industrial sector			
Angela	Male	Male	Colleagues
Alice	Male	Male	Colleagues
Aida	Male	Female	Colleagues
Nilza	Male	Male	Colleagues
Carolina	Male	Male	Colleagues

Source: Author’s construction (2023)

reception. She said that “only when working with someone I can take a longer break”. Sara, who works by the fields demonstrating agricultural practices, explained that she is unable to change her pads as often as she prefers since she is working alone. If she takes a break, it means that everyone must stop what they are doing. On the contrary, Cristina and Carla, working as maid and farmer respectively, described it as an advantage to work alone because for them it meant that they could take a break whenever and as long as they needed to, without anyone telling them otherwise.

When asked directly if they could take a break whenever needed, all but one woman said yes. However, the findings presented under the sections ‘workload’ and ‘working alone or with colleagues’ suggest that these factors may influence the women’s ability to take breaks. This suggests a discrepancy between theory and practice; in theory, they can take breaks whenever needed, but the findings show that this is not the reality for everyone. Based on the available data, it is unclear why this discrepancy exists.

6.1.6.3 Gender-ratio in work environment

Some women also indicated that the ratio of men and women in their work environment has implications for their ability to achieve adequate menstrual health at work. While some women reported that it does not make a difference, many said they do not feel as comfortable discussing menstruation with male colleagues as they are with female colleagues (see Table 5). Reasons given for this included the perception that male colleagues would not be as understanding, could potentially treat them differently, and view them as "dirty", if they knew a woman menstruated. For instance, Helena described an experience when one colleague made her aware of a menstrual stain on her clothes during work. She felt ashamed in the moment, but also relieved that it was a female colleague who noticed the stain, as she would feel even more uncomfortable if a man had noticed it. Helena was not alone with sharing this type of story.

Moreover, Aida, who usually is the only woman in her team while going on work trips, said that she feels uncomfortable changing her pads when they are on the road since it is hard to access a toilet. With only male colleagues she does not feel comfortable to ask anyone to make her company as a “look-out”. Because of this she sometimes feels unsafe when she needs to go out in the bushes or along the road alone to change her pads. Carolina, who is also working in a heavily male-dominated environment, did however see it as an advantage that there are few women at her department. This means that each woman can get a key each to the toilets and therefore the men cannot access the women’s toilets and “make them dirty” during the day. This is relevant since many of the women mentioned the level of cleanliness affecting their level of comfort with managing their menstruation at a toilet. This nonetheless presupposes that the toilets are separated by sex in the first place.

As previously discussed, the relationship between employees and managers/employers can have implications for women's MHM at work. For some, the comfort level in discussing issues associated with menstruation is affected by the gender of their manager. For instance, Yolanda, who is employed by a couple as a housekeeper, explained that she is only comfortable discussing menstruation with the woman of the house because she perceives the intimacy between women to be much deeper. Similarly, Aida, who often takes time off her job as an environmental technician due to painful menstrual symptoms, feels that she can be honest with her manager about her challenges because she is a woman.

As illustrated by these examples, the gender-ratio can influence women's ability to achieve adequate menstrual health at work. They might feel more comfortable discussing menstruation with female colleagues and managers/employers and might feel embarrassed, uncomfortable, or even scared, around male colleagues during menstruation. A lack of females in the work environment could also influence how easy it is to access menstrual material when needed. All but six of the women mentioned turning to a colleague or other women in their work environment to ask for menstrual material as an option for them in case they run out of or forget to bring material to work.

6.1.6.4 Ability to be flexible with work tasks

All women reported experiencing some kind of menstrual symptoms, the most common ones being abdominal cramps and back pain. Furthermore, some of them reported that their symptoms are aggravated while performing certain work tasks. Thus, conditions that allows women to be flexible with work tasks can be beneficial for alleviating pain or minimizing the risk of leakage. This could for example entail being able to perform tasks sitting down instead of standing up while having painful cramps, as mentioned by Teresa and Marcia, or being assisted with carrying heavy things if it increases the menstrual flow, as mentioned by Alice, Sonia, and Carla. Aida also mentioned how she would feel less ashamed for having to stay at home due to her painful symptoms if she had the possibility to work from home instead.

To summarize, factors such as workload, working alone or not, gender-ratio at work and or not having the ability to be flexible with work tasks can create a situation in which women cannot take the necessary breaks to change their menstrual material, feel too embarrassed to talk about menstruation with their superiors, or even have their menstrual symptoms aggravated.

6.2 Sub question

Which differences and similarities can be identified between the agricultural, service, and industrial employment sectors in the way that women's ability to achieve menstrual health is supported or hindered?

At the end of each interview, the participants were asked for suggestions for making it easier and more comfortable to manage menstrual health in their work environment. The collected feedback, along with the findings from the analysis, can be used to identify any differences in how the agricultural, service, and industrial sector might support or hinder women from practicing adequate MHM.

6.2.1 Suggestions for enhanced menstrual health management at work

Suggestions from the women in the agricultural sector primarily focused on two themes – talking more about menstruation and improving access to washing facilities. The women that worked at an agricultural company all provided similar suggestions, that there should be a greater focus on normalizing conversations about menstruation and providing women with more information. They suggested this to be done through meetings and discussions at work. The goal would be to create an environment of increased empathy and understanding to reduce judgement surrounding menstruation. Amongst the women that spent at least parts of their time working outdoors, the focus was more on ensuring that water and toilets are available so that women can not only change their menstrual material, but also clean themselves, in a comfortable and private environment also by the fields.

The suggestions collected from women in the service sector indicate that there is a need for better access to resources, such as more and cleaner public toilets, with trash bins in each one, as well as reliable access to clean water free of charge. This would especially support the women working in public spaces. They also suggested workshops and conversations about menstruation, both in schools and workplaces, to increase knowledge and reduce stigmas for a more accepting work climate. One woman suggested that managers should provide pads and pain relief medication for free.

Similar to the women in the service sector, some women in the industrial sector emphasises that the number of toilets should be increased at their workplaces, and the conditions of the existing ones improved. They also suggested that the toilets should be larger, to make it easier to move around with work uniforms and equipment while managing menstruation. One woman suggested having locker

rooms at the workplace, where an extra uniform could be stored if anything is stained. It was also suggested that menstrual material and pain medication should be available in the workplaces, including in the personal protection equipment and emergency kits when going to remote working sites. One woman in the industrial sector also highlighted the need for more discussion about menstruation. Another woman did however say that it was complicated to answer the question of what she thought could be improved at her workplace. This had two reasons. Firstly, she thinks that it could negatively impact the view of women working there:

'Because it is a male working environment, if they would do something for us for the menstruation, it would be more evident that we are fragile, so they don't want to do that.'

(Carolina, operational supervisor)

Secondly, she believes her male colleagues may feel that it is unfair if measures, such as distribution of free menstrual materials, are taken to improve women's menstrual health at work and that they would state that they should receive similar benefits as they have menstruating wives and children at home.

While there were many suggestions for improvements, it is also worth noticing that five of the women expressed satisfaction in managing their menstrual health at the workplace and did therefore not provide any suggestions.

6.2.2 Similarities and differences between the sectors

Firstly, the findings suggest that there was a difference between the sectors in terms of the gender ratio of their work environments. Looking at Table 6, findings show that the women in the industrial sector work in a more male-dominated environment. In contrast, most women in the service sector work in an environment with roughly equal numbers of men and women, while all but one in the agricultural sector reported working in a female-dominated environment. Even though the women in agricultural and service sectors focused on having an open and understanding working climate regarding menstruation in their suggestions above, it was primarily the women in the industrial sector who shared stories about non-understanding male colleagues, which sometimes even made them feel directly unsafe.

Secondly, more women in the agricultural and service sectors are working alone than in the industrial sector. Working alone proved to have implications for how often these women feel they can take a break to manage their menstruation, both positively and negatively.

Thirdly, what was similar across all three sectors was that the access to menstrual hygiene services during work is related to whether the work is performed inside in a more stable environment or if it is performed outdoors by different field and sites.

Fourthly, it was only women within the service sector who reported relying on public toilets in their work environment and thus also having to pay to access hygiene services during work. This difference is also reflected in their suggested improvements, as only women from the service sector suggested that there should be more public toilets. Fatima and Marta, who rely on public toilets while working as street vendors, stated that they move between different urban places a lot during work to find potential clients. Some women from the agricultural and industrial sectors also move between locations at work, visiting different fields and sites, but in comparison, they do not have to pay for the toilets that are available to them. If there is no toilet, they are also able to go further away from the fields and working sites to find a place to change their menstrual material, something that would be more difficult in an urban environment.

6.3 Research question 2

How is the menstrual health of women in the agricultural, service, and industrial sector affecting the work life experience?

The findings of this study revealed that the ways in which women's menstrual health affects their day at work varied from person to person. However, four general themes emerged that describe the implications of menstrual health on women's work experience. Some reported being unable to perform their work tasks as usual, or at all, while others were able to continue their tasks as usual. In addition to these themes related to work performance, many women described feeling different due to their menstrual symptoms, typically described as a sense of discomfort.

Table 7 Description of Work Experience During Menstruation

Participant	Occupancy	In what ways is a day at work different during menstruation compared to other days?	Any work tasks that become more difficult during menstruation?	Stayed home or gone home from work during past 12 months?	Biggest concern about menstruating at work
Agricultural sector					
Ana	Farmer	Feels “unfree”. Worries about staining.	No	No	Fear of leaks and stains. Not being able to rest as she wants.
Isabel	Human resources and Safety and health responsible	It is the same.	No	No	Fear of leaks and stains.
Paula	Laundry responsible	It is the same.	No	No	Fear of leaks and stains.
Sonia	Warehouse responsible	Feels tired and needs to take more breaks to manage menstruation.	Does not like carrying heavy stuff.	No	Fear of leaks and stains.
Carla	Farmer	Feels stressed and uncomfortable. Takes more breaks.	Carrying heavy things causes heavier flow.	Yes, usually stays home one day per month due to pain.	Worrying about her crops when she is not there.
Luisa	Agricultural instructor	Avoids walking around too much.	No	Yes, due to leakage at work.	Fear of leaks and stains.
Helena	Agricultural instructor	Does not use a lot of power. Tries staying shorter days. Careful of how she sits and moves. Takes more breaks if possible.	Demonstrating how different instruments works need to be done more carefully.	Yes, stayed home because of cramps and headache.	Fear of leaks and stains.
Sara	Agricultural instructor	Has less energy. Feels worried and uncomfortable.	No.	No.	Fear of leaks and stains.
Service sector					
Fatima	Street vendor and online shop owner	Can not stay where there is a lot of people or noise. Has less energy. Harder to concentrate.	With cramps she does not go to the market to buy supplies. Harder to answer all clients.	Yes, could not work due to pain.	Worried others will tease or treat me differently.
Marta	Street vendor	It is the same.	No	No	Fear of leaks and stains. Being unprepared when menstruation starts.
Joana	Store owner	Takes less breaks.	No	No	Fear of leaks and stains.

Teresa	Hotel receptionist	It is the same.	No	No	Fear of leaks and stains.
Marcia	Housekeeper/nanny	Does not feel as free. Concerned and worried about having a full pad.	Avoids ironing so she does not have to stand up for a long time which increases her flow.	No.	Fear of leaks and stains.
Cristina	Housekeeper/nanny	Does not feel comfortable. Often checking for full material or stains.	No.	No.	Fear of leaks and stains.
Fernanda	Shop assistant	It is the same.	No	No	Does not have any concerns.
Yolanda	Housekeeper/nanny	Feels like she needs to be <u>careful</u> so no one notices that she is menstruating.	No	No	Fear of leaks and stains.
Eunice	Street vendor	<u>Usually</u> it is the same. If she <u>has to</u> use the capulana as material she has to go to the bathroom more frequently.	No	No	Not having the preferred menstrual material. Fear of leaks and stains.
Industrial sector					
Angela	Project manager	Feel sick, <u>unmotivated</u> and different.	In general, not able to be as focused.	No	Not having a clean private space to wash and change menstrual material. Fear of leaks and stains. Worried others will tease or treat me differently.
Alice	Electrical technician	Have less energy, take more breaks, always worrying about stains. More tired afterwards.	Worried when carrying heavy things that intensify her bleeding.	No	Fear of leaks and stains.
Aida	Environmental technician	Usually in pain. Does not work during some days.	Avoids traveling with work.	Yes, stays home almost monthly due to pain.	Fear of leaks and stains.
Nilza	Site director	Needs to move more carefully. Feels uncomfortable.	Climbing, for example up into excavators.	Yes, stayed home due to pain.	Fear of leaks and stains.
Carolina	Operational supervisor	Takes more breaks. Sometimes in pain. Constantly worried and stressed about staining clothes and equipment.	No.	No.	Fear of leaks and stains.

Source: Author's construction (2023)

6.3.1 “I feel different”

As seen by Table 7, many women expressed feeling concerned and having an uncomfortable experience at work due to their menstruation. Fear of staining clothes, office chairs, or car seats caused feelings of worry and a lack of freedom, leading many to check their clothing multiple times a day. Although only a few reported actually experiencing staining their clothes while at work, this was a constant source of concern for many, with 19 out of the 22 women mentioning fear of leakages and staining as one of their main worries while menstruating at work.

Alice mentioned that her days at work as an electrical technician are different when she is menstruating because she goes to the toilet more frequently to change menstrual material and wash herself. Her work involves climbing and she specifically mentioned worrying about “being dirty” and having a colleague notice it while standing underneath her. Marcia, who works as a housekeeper, said that it is difficult being at work during her menstruation because she is not “feeling free”, always worrying if her pad is full and if it is leaking, and another woman, Sara, mentioned that she feels uncomfortable and “unsafe” at work due to the risk of staining or someone noticing that she is wearing a pad.

Other women did not necessarily talk about the feeling of discomfort as deriving from the fear of leakages, but from the process of having to prepare mentally and practically. For example, Isabel, who works as a Human Resource and Safety and Health Manager, described that even though menstruation is something natural for women, she still does not feel comfortable with it at work. She said that to have a normal workday, she needs to slightly adjust her routine at work so that she can focus on work and be comfortable. If she is organised and mentally prepared, however, she feels like menstruation does not affect her focus and it is “as normal as having to pee”. Similarly, Paula, who works as a laundry responsible, said that she does not like “the logistics” of managing her menstruation and described it as "a process" and "uncomfortable issue".

In addition to feeling uncomfortable, several of the women reported feeling different at work in other ways due to menstrual symptoms. Common feelings included feeling down or in a bad mood, being stressed and having less patience, energy, and concentration. Only one woman, Angela, reported having a "positive feeling" during her menstruation, as she reported sometimes feeling calmer at work.

Overall, the fear of staining, feeling "dirty", and having to prepare both mentally and practically during menstruation can all contribute to an uncomfortable experience while working. Even though the story of Angela proved that one can feel better at work during menstruation, this was the exception to the rule.

6.3.2 “There are things I don’t do”

A few women reported sometimes having to avoid certain work tasks due to menstrual symptoms (see Table 7). For example, Fatima, who works as a street vendor, explained how she typically avoids going to the marketplace when she is having cramps. She is also more restrictive with the amount of time she spends in the city or on the phone due to noise sensitivity during menstruation. However, the symptoms she experiences vary in intensity; for example, her headaches are not as intense as the cramps, so she can still work when she only experiences that.

Six of the women reported having had to stay home from work or leave work at some point during the twelve months prior to the interview due to issues relating to menstruation. Pain was the most common cause, while having to go home to clean menstrual stains was cited as another. Two of the women said that they have to stay home regularly. One of them, Aida, spoke of the negative emotions caused by having to ask colleagues to take her place on work trips.

“I feel really bad. Because it’s my job, and I have to stay at home for something that happens like every month”

(Aida, environmental technician)

The findings highlight the significant impact that menstruation can have on women’s ability to participate at the workplace. For some of the participants, menstruation has a detrimental impact on their job performance and Aida's quote reflects well the frustration and guilt that some women expressed when having to take time off from work or avoiding work tasks due to menstrual symptoms.

6.3.3 “There are things I don’t do as usual”

Several of the women explained how the fear of leakage and staining led to them being careful and restrictive in their movements while at work. For instance, Helena and Luisa, agricultural instructors, reported experiencing this restriction. Helena explained that she can do everything at work, but that she must be extra careful with how she moves when demonstrating things in the field. Luisa mentioned that she is particularly cautious with walking around too much to avoid any potential leakage. Luisa also explained how she is not comfortable changing her menstrual material while

working by the fields, so she tries to perform her work as quickly as possible on those days to return home to change in a more comfortable environment.

For Marcia, who works as a housekeeper, it is mainly the pain that restricts her movements while at work. She explains how she can experience back pain so severe that she is unable to stand up to perform her work tasks. Despite intense pain, she has never taken a leave of absence in the past twelve months. Similarly, Eunice, who sells vegetables by the roadside, often has to sit down when she gets the cramps which sometimes affects her ability to approach potential customers as quickly as those working next to her.

In all, the interviews revealed how women's pain, discomfort, and fear of leakage can hinder their ability to carry out their work as usual, thus possibly disadvantaging them at the workplace.

6.3.4 “I do the things anyway”

Some women reported experiencing very little to no difference at work during menstruation, and that their work performance is not affected by it. Some of these women explained that their symptoms are not strong enough to affect their work. Marta, a street vendor, for instance described that although she suffers from backpain, it does not hurt enough to hinder her work, and that she is so used to it that she does not even think about it anymore. Another woman, Carolina, operational supervisor, uses painkillers to “just control the pain and keep working”.

Notably, some women who reported that their menstruation does not hinder their ability to perform work task did however highlight that they experience pain and discomfort while doing it. Many of those who said that they were performing their work as usual, even during pain and discomfort, expressed feelings of having no other option but to keep doing the work.

“Walking, climbing, getting into the tractor. I can not not do it, but it’s not a thing I like to do at all when I’m on my period.”

(Nilza, site director)

Similarly, Alice, an electrical technician, noted that although she is worried about intensified bleeding while carrying heavy things, and that she is more tired when she comes home after work during menstruation, there are not really any tasks that she avoids performing since “the work cannot stop”. Carla, a self-employed farmer, also mentioned her wish to take more days off work due to painful cramps; however, she noted that she must come to the plot to take care of her crops as she could not afford to pay someone to help her with it.

In addition, Alice and Nilza addressed the issue of gender equality and raised their concern that if they stopped doing certain tasks because of their menstruation, people could say that women are not capable of certain things and companies could avoid hiring women. Carolina, an industrial operational supervisor, resonated in similar ways:

“Because I want to avoid the kind of people that say that female don’t do things because of this or that, I just do whatever is needed to do.”

(Carolina, operational supervisor)

Angela, project manager, said that it is important to have painkillers with you all the time to be able to keep working and not “whine” about menstruation:

“I’m in an environment where I have to be as professional as possible so I know that whining will not take me anywhere”.

(Angela, project manager)

6.3.5 Identified differences and similarities across the employment sectors

An identified similarity across the different sectors is that the biggest concern about menstruating at work is the fear of leaking and getting visible stains. Women from each sector stated that a day at work is different in relation to this, some saying that they feel “unfree” or uncomfortable when always worrying about leakages.

It is also noteworthy that only women from the industry sector raised the issue of being seen as less suitable for certain jobs if they "whine" about menstruation or cannot perform work tasks as usual. These women are all working in predominantly male-dominated environments, and doing work that is typically viewed as male, a culture that might cause them to feel this way.

In addition, the women from the agricultural and industrial sector reported being restricted in their movements to a larger extent than those in the service sector. They expressed feelings of having to be more careful while moving around and avoiding carrying heavy things. Work within these two sectors also seemed to include more physical work tasks, which might be the explanation for this.

In all, the interviews showed how a majority of the women are able to cope and continue doing their work tasks during menstruation, some despite experiencing pain and discomfort. For some it is a result of fearing to be seen as less capable than their male counterparts, or because they do not have the opportunity to take days off due to financial constraints. Others are simply managing their menstrual health with quite an ease and do not experience enough intense symptoms to have their work affected.

6.4 Summarized results

6.4.1 Research question 1

How do different factors support or hinder women's ability to achieve adequate menstrual health in their workplace settings?

From the data collected, several general patterns were identified and categorized into factors in accordance with the created SEM. These are factors that were found to have influence on the women's ability to achieve adequate menstrual health at work. After revising the collected data, an additional level of factors, 'organisational factors', was added to the SEM that was created prior to data collection. All identified factors are summarized in Figure 2 below:

Figure 2 Summary of Factors Influencing the Ability to Achieve Adequate Menstrual Health at Work

Societal factors <ul style="list-style-type: none"> - Societal view of menstruation - Stolen pads 	Environmental factors <ul style="list-style-type: none"> - Type of work environment - Condition and quality of menstrual hygiene services - Cost of utilizing hygiene services - Availability of appropriate menstrual material - Access to painkillers
Interpersonal factors <ul style="list-style-type: none"> - Relationship with colleagues - Relationship with managers or employers 	Personal factors <ul style="list-style-type: none"> - Knowledge about the menstrual cycle - Knowledge about menstrual material - Financial situation
Biological factors <ul style="list-style-type: none"> - Regular or irregular menstrual cycle 	Organisational factors <ul style="list-style-type: none"> - Workload - Working alone or with colleagues - Gender-ratio in work environment - Ability to be flexible with work tasks

Source: Author's construction (2023)

Above all, there were mainly three of Hennegan et al.'s (2021) conditions for menstrual health that were affected by these factors, namely women's ability to:

- Care for their bodies during menstruation such that their preferences, hygiene, comfort, privacy, and safety are supported. This includes accessing and using effective and affordable menstrual materials and having supportive facilities and services, including water, sanitation, and hygiene services, for washing the body and hands, changing menstrual materials, and cleaning and/or disposing of used materials,

- Experience a positive and respectful environment in relation to the menstrual cycle, free from stigma and psychological distress, including the resources and support they need to confidently care for their bodies and make informed decisions about self-care throughout their menstrual cycle.
- Decide whether and how to participate in all spheres of life, including civil, cultural, economic, social, and political, during all phases of the menstrual cycle, free from menstrual-related exclusion, restriction, discrimination, coercion, and/or violence.

To summarize, this study highlights the similarities and differences between the three sectors in terms of the factors influencing women's ability to achieve menstrual health at work. The findings suggest that there are differences in the gender ratios of the workplace, the access to menstrual hygiene services, and the need for public toilets. The industrial sector was the most male-dominated sector, working alone was more common in the agricultural and service sectors, and water access was more of an issue in the agricultural and industrial sectors. Similarities and differences were also identified when looking at the suggestions for improvements from each sector. While women from all three sectors suggested more open conversations around menstruation and better access to clean and private facilities, the women from the service sector also suggested that public toilets should be more accessible and free of charge.

6.4.2 Research question 2

How is the menstrual health of women in the agricultural, service, and industrial sector affecting the work life experience?

In summary, women's menstrual health had varying implications for their work experience, depending on the character of their menstrual symptoms and their ability to manage them. Many reported feeling uncomfortable due to fear of leakage, needing to prepare mentally and physically for their menstruation, and experiencing physical and emotional symptoms. Some reported having to avoid certain tasks or take time off and some performed their tasks differently, while others were able to perform their tasks as usual. Notably, women in the industrial sector emphasized that they must perform their tasks as usual to avoid being seen as less capable than their male counterparts. Finally, women in the agricultural and industrial sectors were more likely to report feeling restricted in their movements due to their menstruation.

7. Discussion

According to the SEM, health is affected by factors at a variety of levels (Kilanowski, 2017). In line with this theory, the findings of the study show that the ability to achieve adequate menstrual health at work is indeed affected by several factors. Both the SEM and the definition of menstrual health emphasize that health has physical, mental, and social dimensions, which is also supported by the findings showing that inadequate menstrual health management at work can have implications across all these dimensions.

In line with the development of MHM-research and practice, the study also highlights the importance of not looking at MHM as simply an issue of WASH. Sommer et al (2016) have summarised the factors limiting MHM standards in the workplace as a problem of social norms and unvoiced needs, advocacy, and policy. While this study does not investigate policies, findings confirm that inadequate MHM, in addition to being a WASH-issue, also is an issue of social norms and unvoiced needs. Many of the women were affected by social factors and had rarely, if ever, talked about menstrual health at their workplace.

The findings also highlight the importance of not approaching the issue of inadequate menstrual health at work with a “one-fits-all-solution”. The work environments look very different and which factors are present where, and to what extent, also differs. How women prefer to cope with menstrual symptoms also differs. Some avoid sitting down, some avoid standing up, some avoid moving heavy stuff and some move around and so on. It is also important to remember that while some see a factor as hindering their menstrual health, others see it as supporting, as in the cases with ‘working alone or with colleagues’ or ‘gender-ratio in work environment’.

Findings indicating that challenges with managing menstrual health lead to work absenteeism are consistent with previous research (e.g. Hennegan et al. 2021b; WHO/UNICEF, 2021). However, as also indicated by the findings, absenteeism is not the only implication of inadequate MHM. Many women endure discomfort and distress to remain at work, meaning that presence at work is not a sufficient indicator of women's menstrual health if their physical, social, and mental well-being is unsupported, further confirming the need of adapting a holistic approach to menstrual health to provide decent working conditions for women.

The study also demonstrates the need for a gendered perspective in the provision of water, sanitation, and hygiene, as stated in previous research (e.g., Agol & Harvey, 2018). For example, not being able to pay only for a bucket of water when going to public toilets to change menstrual material or cleaning oneself illustrates this issue. The study also reveals how the most vulnerable people are

disproportionately affected by the challenges associated with inadequate MHM conditions. This can be exemplified by Angela's story about how the lack of water at remote working sites can be solved by bringing your own wipes, "if you are fortunate enough to afford wipes". Moreover, those relying on public toilets, but unable to pay for access, do not have the same opportunities to adequate MHM during work as those with free access to facilities.

Furthermore, the literature (e.g. Sommer et al. 2017; Johnston-Robledo & Chrisler, 2013) emphasizes how menstruation can be sensitive and difficult to discuss while conducting research. However, the subject did not seem to be as uncomfortable to discuss during the interviews as anticipated. The women seemed quite open to talk about it, none declined to answer any questions about menstruation, and most of them said it felt comfortable to talk about when asked how they experienced the interview. Since the interviewees were informed about the topic beforehand, it is possible that those who would have found it too sensitive to talk about declined the invitation to participate in the first place. Still, it is worth noting that norms may be changing regarding menstruation in Mozambique, as predicted by Zambela et al. (2021). Moreover, many women said that it was comfortable to talk with me and the interpreters due to us being female, which supports Sommer et al.'s (2017) statement that interviews on menstruation should be conducted with female staff.

As previously presented, when asked about their knowledge of the menstrual cycle some were quick to emphasize that they are uncertain about the facts around the menstrual cycle. Besides indicating a lack of deeper knowledge of the menstrual cycle, it might also indicate that formal education per se is not necessarily linked to having good menstrual knowledge as some of these statements were provided by the women with the highest level of education.

Wilbur et al. (2019) also discuss how femininity is generally associated with beauty, freshness and cleanliness, qualities often seen as the opposite to those associated with menstruation: dirty, bloody and smelly. These taboos and social beliefs have resulted in some people internalising this stigma, reporting that they feel dirty and ashamed when menstruating. Hennegan et al. (2020) further discuss how these gendered ideals put significant pressure on women to maintain a clean body and menstruation hidden at work. This seemed to be the case for some of the women who talked about feelings of shame, referring to menstruation as something dirty, and going lengths to conceal their menstruation for people in their work environment. The findings show how these gendered ideals seemed to create a culture of silence around menstruation, resulting in women being uncomfortable talking to both colleagues and managers and employers about it. This is for example consistent with previous research from Fry et al. (2022) that demonstrated how stigma and taboos related to

menstruation prevented menstruators from discussing the challenges they faced with other employees, which ultimately affected women's workplace experiences negatively. Similar to Fry et al.'s study, this was especially visible in male-dominated workplaces.

Lastly, similar to previous research (e.g. House et al. 2013), the findings show that it is critical to raise men's understanding of menstruation and involve them in efforts towards MHM. The story presented from Carolina about how women would be perceived as fragile, and that her male colleagues would think that it is unfair if the management would do something to support women's menstrual health, clearly illustrates this. I also want to end this discussion with addressing the importance of not using research like this as an argument that women are less suitable for performing certain jobs. With this study I in no way intend to reproduce stigmatisation of MHM and menstruators as "weak" or "fragile". This study aims to break the silence around this neglected issue to highlight the barriers to what should be obvious – women's ability to decide on their own whether and how to participate in all spheres of life. As previously stated, adequate menstrual health is essential for the well-being and empowerment of females (Narang, 2022) and the ability of all women and girls to address their menstrual needs with dignity is a bedrock component of gender equality (Burt et al. 2016).

7.1 Limitations

The analysis led to the identification of several general themes within each of the research questions, however, it is important to note that this is a small study, and that more data would be required to further investigate the sectoral relations and how representative these are for a bigger sample. It is important to note that this study, due to its size, does not claim that the findings are possible to use for generalisation in another context than the one studied. However, the findings may have value for a larger scale follow-up study.

7.2 Suggestions for future research

As tampons are frequently used in Europe, it was striking to see that only one of the women reported using it. While some brought up tampons as an example of menstrual material that they knew off, only one other woman reported having tried tampons, but she stopped using it as it caused her headache. Otherwise, no other explanation for the rare use of tampons was found in the collected data. Other studies have however suggested that outside Europe, and especially in LMIC, the rare use of tampons could be explained by factors such as safety fears, perceptions of tampons as inappropriate for virgins, lack of accessibility of disposable menstrual materials and so on (van Eijk et al. 2021; Romo & Berenson, 2012; Roth, 2022). These factors could be interesting to explore in

future studies in the context of Mozambique as several efforts aimed at MHM in the country still focuses on the distribution of menstrual materials.

Additionally, as the findings show, there are many factors that influence women's ability to manage their menstrual health at work, for example relationship to colleagues and managers. It would therefore be interesting to apply the SEM, include these actors and analyse their answers in relation to the women's. It would be interesting to include the study of other possible factors, such as national labour laws and regulations, within the SEM.

8. Contributions arising from the study

After finding inspiration amongst previous research (Morgan et al. 2017) and analysing the collected data, an expanded checklist of recommended menstrual hygiene services was created (see Figure 3). The list might be utilised to control which recommended menstrual hygiene services are available in workplace settings, as well as other types of settings, such as schools for instance.

Figure 3 Recommended Menstrual Hygiene Services

Recommended menstrual hygiene services		
Presence of:	Condition of:	
Toilet	Sex-separate	
	Presence of door with lock	
	Ability to flush toilet	
	Use free of charge	
Water source	Clean water	
	Located inside each toilet	
Soap	Located inside each toilet	
Toilet paper	Located inside each toilet	
Disposal bin	With lid	
	Located inside each toilet	
Sanitary bags for disposal of menstrual material	Located inside each toilet	
Menstrual material	Located inside each toilet	
	Use free of charge	

Source: Author's construction (2023)

In accordance with the findings, a modified SEM for further studies on MHM in workplace settings was created. The SEM is specifically modified to be used while studying the factors affecting menstrual health in workplace settings. To capture an even wider picture of the issue, it also includes collection of data from sources beyond menstruating workers, such as male colleagues, managers and documents of labour policies, laws, and regulations.

Figure 4 Updated Socio-ecological Model of Menstrual health Adapted to Studies in Workplace Settings

<p>Societal factors – Policy, tradition, cultural beliefs</p> <ul style="list-style-type: none"> • Desk review: Work/gender policies; staff training standards; reports • KIIs: National and community-level government officials; non-governmental organization staff • FGD/IDIs with menstruating workers and managers male/non-menstruating colleagues: Solicitation of traditional practices, norms, beliefs, and local knowledge.
<p>Environmental factors - Water, sanitation, and resource availability</p> <ul style="list-style-type: none"> • Observations in work environments (including to and from work) and communities: WASH conditions; availability and cost of MHM supplies. • KIIs with managers: Availability of resources and support for WASH • FGD/IDIs with menstruating workers: Perceptions of work environment (including to and from work); condition and use of WASH facilities; availability of affordable, usable, and culturally appropriate menstrual material and supplies.
<p>Organisational factors – Policy, work culture, contractual circumstances</p> <ul style="list-style-type: none"> • KII with managers: Company policies; understanding of needs; knowledge about menstruation; available support system; contractual circumstances. • FDGS/IDIs with menstruating workers: Perception of contractual circumstances and policies; staff composition; work schedule; responsibilities at work.
<p>Interpersonal factors - Relationships with family, friends, colleagues, managers</p> <ul style="list-style-type: none"> • KIIs with managers: Role of managers in supporting menstruating workers; changes in menstruators' interactions with others. • FGDs/IDIs with menstruating workers: Relationships with family, colleagues, and managers; access to support for information, practical guidance, and supplies; sources of MHM information.
<p>Personal factors - Knowledge, skills, beliefs</p> <ul style="list-style-type: none"> • FGDs/IDIs with menstruating workers: Biological knowledge about menstruation and MHM; practical knowledge about MHM; skills in coping mechanisms and behavioural adaptations; needs and support required; attitudes, feelings, and beliefs about menstruation; self-efficacy regarding management.
<p>Biological factors - Age, intensity of menstruation, cycle</p> <ul style="list-style-type: none"> • IDIs with menstruating workers: Menstrual variations due to age and features of menstrual cycle and any other biological changes related to menstruation; intensity of menstruation and pain and influences on behaviour, health (physical, mental, and social), work experience and ability to manage menstruation in a work setting.

Source: Author's construction (2023)

9. Conclusion

Equal participation in safe and decent work is a crucial factor for women's empowerment and the achievement of gender equality. However, as seen by this study, various obstacles remain as workplaces often fail to ensure the well-being of their employees, with menstrual health being an especially neglected aspect of the gendered workplace experience. As made evident once again, achieving menstrual health is not only a question of accommodating the need for hygiene services, but there are also other aspects to it, therefore requiring a holistic approach to the topic. There are many reasons to not neglect menstrual health at a workplace since recent studies, including this one, show how inadequate menstrual health can have implications for women's well-being, performance and overall experience at work. It is important to raise the voices of the menstruating women and including them in the creation of solutions, however, it is also made clear that there is a critical need of raising boys and men's awareness and understanding of the topic.

With these findings, it is further demonstrated that addressing menstrual health in workplaces is relevant to the SDGs, especially nr 8 "Sustainable economic growth, full and productive employment, and decent work for all". For Mozambique, addressing the issue of menstrual health would be highly relevant as 300,000 people are estimated to enter the labour market each year, making the creation of decent jobs essential for the future of the young generations. It would also be an opportunity to take important steps in line with the government's five-year plan and the commitment to gender equality with a particular focus on women's employment and their ability to participate in the labour market.

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11. Appendices

Appendix 1 – Interview guide

Introductory questions

1. Can you please tell me a little bit about yourself?
2. What is your highest level of completed education?
3. For how long have you been at this job?
4. How come you started working there?

Working environment

5. What kind of employment do you have?
6. What is your position at work?
7. What kind of tasks do you perform at work?
8. Do you work alone, or do you have any colleagues?
9. How many days a week do you usually work?
10. For how many hours per day?
11. Is there anywhere where you can file complaints about your workplace?
12. If you have a boss, is he/she male or female?
13. In your work environment, is it mostly men or women?
14. Do you have any kind of working agreement from your employer?
15. Do you get paid on a daily, weekly or monthly basis?
16. How much do you usually earn per day/week/month?

Introduction to menstruation

17. Do you know what the menstrual cycle is?
18. Do you usually know when you can expect your period to start (regular or not)?
19. Are you tracking your menstrual cycle in any way? Why? How?
20. Do you use any kind of family planning?
21. Why do you use family planning?
22. Do you experience any physical/psychological symptoms when you're menstruating?
23. What kind of material do you usually use as protection you during your menstruation?
24. Why do you use this specific material?
25. Is this product satisfactory or do you experience any problems with it?
26. Do you know approximately how much you usually spend on sanitary products per week or month?
27. Is there anything a woman isn't allowed to do while she is menstruating?

Menstruation at workplace

28. Do you have any toilets or sanitary facilities at your workplace?
29. Where do you usually change your sanitary material while at work or do you do it in another place?
30. Do you feel comfortable with changing your menstrual material there?
31. Could you describe the toilets or sanitary facilities at your workplace?
 - How many are there?
 - Are there separate latrines for men and women?

- Is there a door?
 - Can you lock the door?
 - Is there toilet paper?
 - Is there water?
 - Do you think the water is clean?
 - Where is the water located?
 - Is there soap?
 - Are there any trash bins?
 - Where are the trash bins located?
 - Do you have to pay to use the toilet?
32. Do you feel comfortable to change your menstrual product at the toilet?
 33. How long does it usually take for you to go to the place where you change/clean your menstrual product from where you're working?
 34. Is a day at work different when you're on your period compared to another day when you're not? In what ways?
 35. Are there any work tasks that become more difficult or that you don't do at all when you're on your period? Which ones? Why do they become more difficult? How do you handle it?
 36. What do you do if you experience pain or other symptoms during menstruation at work?
 37. Do you have regular break times?
 38. Do you feel like you can take a break whenever you need to, for example to change sanitary materials, get new products or rest when you're on your period at work?
 39. During the last 12 months, have you ever had to stay home or go home from work or because of your period?
 40. Do you get offered sick leave? (get money even though you're not working because you're sick?)
 41. What are your biggest concerns about menstruating at work?
 42. Would you feel comfortable talking with your colleagues about menstruation?
 43. Would you feel comfortable talking with your manager about menstruation?
 44. Is it the same with male and female colleagues/managers?
 45. If you forget to bring or run out of your usual menstrual material when you want to change it while at work – what do you usually do?
 46. How long does it approximately take to walk/drive from work to the closest place where you can buy new products?

Improvements/recommendations

47. What do you think should be done to make it more easy or comfortable to take care of menstruation at your workplace?

Closing questions

48. Before ending the interview, is there any further information regarding menstruation at work that you would like to share?
49. Do you have any other questions for me?
50. How did you experience talking about menstruation like this?
51. Do you know of anyone else that you think could be interested in participating in an interview?

Interview Consent Statement

Description of the project

This study explores the challenges faced by working women in Mozambique during menstruation and how these might affect their working life.

- I confirm that my participation in this research project is voluntary
- I understand that I will not receive any payments for participating in this research interview
- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.
- I understand that I have the right to decline to answer any question or I can stop the interview at any time.
- I confirm that the research interview will last approximately 1 hour.
- I understand that the interview will be recorded and that these recordings will be deleted once the study is completed.
- I understand that all information I provide for this study will be treated confidentially. I understand that the researcher will not identify me by name in any reports using information obtained from this interview and that my confidentiality as a participant in this study will remain secure.
- I agree that the researcher may publish text that contain quotations by me. The quotes will be anonymous.
- I have read/been read the consent form and understood the explanation provided to me.
- I have been given a copy of this consent form.