


Research Paper

The hidden WASH needs of perimenopausal women

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ABSTRACT

Meeting the needs of an ageing population, particularly in the global South, is increasingly an issue for WASH service provision. An ageing-related issue for women, warranting specific attention from the WASH sector, is the perimenopause, but this is often not discussed publicly. Drawing on data from the UK and Ghana, this paper provides recommendations for meeting the additional WASH needs of women as they experience the perimenopause (the transition period to menopause). Finding these 'hidden' needs involved a UK-based phenomenological review and mixed feminist methods in two low-income urban communities in Accra and Kumasi, Ghana. The hidden WASH needs of perimenopausal women included understanding the perimenopause, menstrual hygiene management, urine incontinence management, bathing, and laundry. Community awareness, engagement and empowerment, and ensuring good perimenopausal health can begin to address these needs. Infrastructural measures for perimenopausal women include a continuous water supply, user-friendly bathing and laundry infrastructure, and gender-sensitive, accessible toilets with discrete sanitary disposal bins. High-absorbency sanitary products are important for managing heavy menstruation. A better understanding of the needs of perimenopausal women and training on how to meet these would benefit the WASH sector in ensuring that perimenopausal women are not left behind in efforts to meet the Sustainable Development Goals.

Key words: bathing, laundry, menstrual hygiene, perimenopause, sanitation, water

HIGHLIGHTS

- The perimenopause has not been considered in WASH.
- Perimenopausal women's WASH needs are 'hidden' and targeted techniques are needed to reveal them.
- Erratic menstruation patterns at perimenopause require changes in menstrual products and sanitation behaviour change.
- Perimenopausal women's practices highlight bathing and laundry as neglected in WASH.
- Existing WASH solutions can meet perimenopausal women's needs.

INTRODUCTION

People's water and sanitation needs change throughout their lifespan, from those of an infant and toddler, to those of the elderly and infirm who may be unable to use standard facilities. This paper explores one particular life stage in detail, the perimenopause. Life expectancy in low-income countries is expected to increase (HelpAge International 2013). By 2050, almost 80% of the world's population aged over 60 will be living in less-developed regions, with women projected to live for significantly longer than men in low- and middle-income countries (UN 2013). Ensuring that WASH services meet the needs of an ageing population is an increasing issue for equity and inclusion. For example, the task of carrying water falls on women, who are prone to osteoporosis as life expectancy increases. Providing water and sanitation facilities closer to the home minimises the risk of injury and violence towards women (WSSCC and FANSA 2016). While some of the physical limitations associated with getting older are obvious to others, some, like incontinence (Rosato-Scott *et al.* 2020), are not so apparent. Some bodily changes due to ageing occur before people are old. For example, one in three men over 50 will have

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some symptoms of prostate enlargement (NHS 2018) leading to problems with urination. The perimenopause, affecting women typically aged between 45 and 54 years, though this may begin earlier or later (UN 2015), is often overlooked as a WASH issue. This occurs long before women show other aspects of the ageing process. Estimates indicate that 76% of the 1.2 billion women aged over 50 will be living in low- and middle-income countries by 2030 (Hill 1996; WHO 1996), therefore reaching the menopause. The additional WASH needs of perimenopausal women, including hygienic management of heavier menstrual flow and more irregular periods compared to menstruating women and girls at other life stages, and access to bathing facilities on a 24-h basis to wash after experiencing night sweats, require greater attention. This paper uses research in Ghana and the UK to make recommendations for meeting these hidden, additional WASH needs of women from the onset of the perimenopause.

While the WASH sector has recognised the specific socio-economic needs of women for over 40 years (Fisher *et al.* 2017), it has only recently begun addressing their specific physical needs. One of these is the hygienic management of menstruation, where the bathing, laundry, and sanitary disposal of pads associated with periods has been considered as a WASH issue (House *et al.* 2012). Often, particular concern has been about menstrual hygiene management (MHM) for girls at school, as it has an impact on their education. Better design of school toilets has been part of these developments.

A hidden life stage for women that has few visible bodily changes, unlike puberty and pregnancy, is the perimenopause. This is the transition period to menopause when menstruation permanently ceases (Torpy *et al.* 2003). It is ‘the period immediately before the menopause (when the biological features of approaching menopause commence) and the first year after menopause’ (Utian 1999, 284). The perimenopause has been the focus of medical attention on symptoms including hot flushes and sweating (Stearns *et al.* 2002), heavy menstruation (Duckitt 2010), joint pain (Briggs & Kovacs 2015), and urinary incontinence (Sampselle *et al.* 2002).

The WASH needs of perimenopausal women, linked to some of these symptoms, have also been seen to be ‘hidden’ (Bhakta *et al.* 2019). Sanitation, menstruation, and the perimenopause are not widely discussed as they are largely taboo subjects. Discussing them is not socially acceptable. Managing these bodily functions occurs in private, unseen by observers. As an issue experienced by women, this is otherwise ignored by male-dominated research (Brisolara 2014). In the global South, women’s issues can be obscured by wider factors of poverty. Issues of bodily hygiene are not a focus of a WASH sector heavily influenced by the prevention of water-borne diseases. These layers combine to hide the importance of WASH services to perimenopausal women.

The WASH needs of perimenopausal women build on existing work on women and WASH (ICWE 1992; Fisher 2006; Fisher *et al.* 2017) from their participation in development processes and water collection and management (ICWE 1992) to more recent debates on menstrual hygiene. Women and girls need WASH for their improved health and social status (Fisher 2006). Addressing the WASH needs of perimenopausal women is important as part of efforts to meet the Sustainable Development Goals through Goal 6 to provide WASH for all by 2030, and Goal 5 to ‘achieve gender equality and empower all women and girls’, specifically target 5.6 to ‘ensure universal access to sexual and reproductive health’ (UNDP 2016).

This paper draws on doctoral research to provide recommendations for meeting the WASH needs of perimenopausal women using data from the UK and Ghana. This research uncovered this ‘hidden’ knowledge, beginning with a phenomenological review in the UK, before using participative techniques in low-income urban communities in Accra and Kumasi. The paper presents these needs through a feminist lens and then discusses the implications of these findings for meeting the WASH needs of perimenopausal women.

METHODOLOGY

Approach

A search found an absence of literature on the WASH needs of perimenopausal women; this lack of previous research impacted on the development of the study design and prevented research questions being set at an early stage (Bhakta *et al.* 2019). Chamber’s (1997) call to consider ‘whose reality counts’ was key to placing the voices of perimenopausal women central to the research process, necessitating a feminist approach. The research questions essentially were set by the participants in the study rather than being imposed externally. As such, several cycles of listening to women were planned, firstly in the UK and then in Ghana. Participatory tools were used to help this process. Methods used in each cycle evolved, based on what was learnt from the previous stage. A final activity engaged with the WASH sector to identify suitable responses to the needs that had been identified.

Existing knowledge

In lieu of a literature review, a phenomenological review was conducted, which aims to understand participants' empirical experiences with a specific phenomenon to produce research findings (Randolph 2009, 10). Knowledge on this topic does exist, but it has not been formally recorded by researchers.

A total of 22 perimenopausal and menopausal women, selected from diverse ethnic backgrounds recruited from churches, community centres, universities, women's organisations and personal contacts from the UK, and one personal contact in the USA, were asked about their WASH needs during the perimenopause. An ethnically diverse sample was selected to ensure diversity in the sample, maximum variation in the findings and to show that WASH issues were prevalent for all women, while also providing a point of comparison between ethnic backgrounds.

These high-income country respondents were interviewed at the first stage of the research in 2014 due to their relatively easy access for the UK-based researcher. Semi-structured oral history interviews were used. Oral history involves recording the speech of people with something to say to allow analysis of their memories of the past (Abrams 2010); feminist oral history highlights women's hidden experiences through a two-way conversation where the researcher and the participant are seen as equals (Oakley 1981). These interviews provided information about perimenopausal women's intimate daily WASH needs, which apply to all women irrespective of their WASH provision but which were previously unrecorded. The findings from these enabled initial research questions to be set and the selection of tools for the next round of consultation in Ghana, including oral history interviews, PhotoVoice, and participatory mapping.

Case studies

The case study in the UK was with women who had relatively good access to water and sanitation services. The next stage was to look at the needs of women in a low-income country context. The level of water services available to these women had to be adequate, to not mask the specific, additional needs occurring during the perimenopause.

In Ghana, data were gathered in La and Kotei, two low-income urban communities with basic access to WASH. La is a township in the La Dade-Kotopon Municipal Assembly (LaDMA) in the Greater Accra Metropolitan Area. Community water tanks in La supply 1,000 gallons of water to 25 public taps a day. Thirty-two percent of LaDMA residents had piped drinking water at the household level at the last census, 24% used sachet water (in sealed plastic bags), and 9% used a public tap (Ghana Statistical Service 2014). Piped water supply serves 85% of La. Forty-nine percent of residents used public toilets in LaDMA in 2013, while 51% of residents had a household toilet (LaDMA 2013). La has a large public toilet block with 48 cubicles, half of these for females. The pour flush toilets do not function well. A pipe carries toilet waste into a cess pit, which is emptied monthly. A smaller toilet block in La has no doors and lacks privacy. Newspaper is used as toilet paper and disposed of in baskets. Household solid waste is collected door-to-door by hand-pulled carts and by trucks, subject to payment.

Kotei is a former rural community that was absorbed into the Oforikrom sub-metro (OSM) of Kumasi through urbanisation. Kotei is now part of the Oforikrom Municipal Assembly (OfMA) in the Greater Kumasi Metropolitan Area. Two mechanised boreholes pump water to an elevated 50 m³ tank, serving eight public standpipes and 4,000 people. In 2012, 47% of the community relied on three public community toilets. 35% of the households had a water closet (WC) and 18% had a pit latrine. Women in this study mostly used a toilet facility with 20 cubicles, designed and constructed by the United States Agency for International Development (USAID) intended to meet the needs of women, disabled people and the elderly (Leathes 2012). The toilet is connected to a septic tank that is emptied every 3 months. Waste is disposed of in a community dumpsite. Unemployment is high in both communities, particularly for perimenopausal women, and petty trading is the main source of income.

Scoping the issue

The main data collection followed the phenomenological review in 2015–2016 in La and Kotei, firstly with perimenopausal women, and then with environmental health professionals (EHPs). A pilot study in August 2015 tested the effectiveness of selected research tools to engage with perimenopausal women to identify their WASH needs. Women aged between 44 and 75 years and known to the local research assistants in La and Kotei were later engaged in the research in January and February 2016. Fourteen oral history interviews with perimenopausal women across Kotei and La enabled them to provide detailed information about hidden WASH needs that mattered to them. Two participatory maps produced by groups of four to six women per community highlighted non-physical WASH experiences in the community setting, facilitated discussion among women about a taboo topic, and revealed less obvious spatial WASH issues for perimenopausal women. Using PhotoVoice, five perimenopausal women (three in Kotei, two in La) were given cameras to illustrate their lives and share their

expertise of WASH issues for a 3-day period. A follow-up conversation was held with each PhotoVoice participant to discuss and provide contextual meaning to the photographs, which were then pixelated for inclusion in the report to protect the women's identities. Visual observations of the community were made by the lead researcher, providing photographs to triangulate the findings.

Adding depth

The first phase in Ghana identified a range of relevant issues. The next phase aimed at adding detail and exploring solutions. EHPs were purposefully consulted to raise awareness of and to identify appropriate solutions for meeting the WASH needs of perimenopausal women as they had an active role in WASH policy-making and provision, and could influence decisions in the local community unlike perimenopausal women in this patriarchal context. EHPs were policy-makers, professionals, or engineers either from or affiliated with LaDMA or OfMA, and worked on issues broadly concerning water supply, household sanitation facilities, water disposal, or women's health and wellbeing. Engaging EHPs with wide-ranging professional backgrounds ensured diverse engagement with the research topic and a breadth of solutions; engineers analysed the vignettes in the context of supply and design, while social workers assessed issues of access and equity.

A vignette method was used in phase two of the research in June–July 2016 with EHPs in two municipal authorities in Accra and Kumasi: LaDMA and OfMA. The vignette method involves 'presenting respondents with one or more scenarios and then asking them how they would respond when confronted with the circumstances of that scenario' (Bryman 2016: 259). Three different vignettes, based on data from women in La and Kotei, were used to present the diverse WASH experiences of perimenopausal women to 13 EHPs across LaDMA and OfMA during short meetings, held either individually or with up to two people. The vignettes each presented a one-paragraph story of a perimenopausal woman, outlining: her perimenopausal symptoms; her hygiene practices to manage these symptoms including MHM, frequently bathing during the day and night, and doing laundry; and the barriers she faces when using WASH infrastructure. During the meetings, the EHPs were asked to reflect on each vignette and offer appropriate measures to address these women's needs from a bank of solutions or to suggest further options available to someone on a low budget.

Choices were discussed, recorded, and transcribed. All data were analysed using a thematic approach in NVivo software. A limitation to this method was that the solutions identified could not be reported back to the perimenopausal women due to time constraints, which would have ensured that the solutions met their needs.

Ethical considerations

Ethical approval was obtained for the phenomenological review from Loughborough University. Further approval was sought from Loughborough University and the Kwame Nkrumah University of Science and Technology for the main data collection in Ghana. The study was explained to all participants who were provided with an information sheet. Written consent was obtained from phenomenological review participants, and verbal consent was given by participants in Ghana. Participants were free to withdraw at any time. Anonymity was maintained in the write up of results, with names being changed and faces of individuals in photos being obscured.

RESULTS

Phenomenological review

The phenomenological review identified previously unrecorded WASH needs of perimenopausal women. These narratives confirmed that MHM is a concern for perimenopausal women with irregular and heavy bleeding. Women were more likely to use high-absorbency sanitary products, and the need to frequently change these highlights the importance of access to private toilets throughout the day. Managing urinary incontinence is important for some women who use pads for protection from leaks. Bathing and laundry are also important hygiene practices that are under-discussed in the WASH sector. Access to WASH infrastructure on a 24-h basis is vital to meeting perimenopausal women's MHM, bathing and laundry needs at any time of the day or night, at home or when out at work or shopping. The data from the phenomenological review were used to formulate research questions to explore in the next stage in Ghana, such as 'What are the uses of water specific to perimenopausal women in low-income countries?', 'How are the bathing needs of women affected during the perimenopause?', and 'How are laundry needs affected during the perimenopause?'.

Hidden WASH needs of perimenopausal women in Ghana

Understanding the perimenopause

Perimenopausal women's WASH experiences in Ghana were shaped through how they were able to understand the phenomenon. Women learned about the perimenopause through local television and radio shows. Sharing their experiences with their sisters, close friends, and consulting doctors reassured them that they were going through a natural stage of their reproductive lives. Limited opportunities to talk to other women led a minority to confide in their husbands. This was an unexpected finding in a patriarchal society where it is taboo for women to discuss these issues with their husbands. Social networks and relationships determined understandings about the perimenopause in communities where it was taboo and, in turn, shaped WASH practices.

Changing MHM needs

MHM needs changed during the perimenopause due to the variation in menstrual flow and duration. This included changes in the use of traditional materials and/or sanitary pads, behaviour change, and sanitation use.

Women adapted their use of menstrual products such as cloth to manage heavy menstruation. Several layers of cloths were used in attempts to absorb increased menstrual flow:

'... I don't wait to get soiled because I increase the number of cloths I use to soak up the blood properly.' (Audrey, La)

Cloths were not effective enough for some women, who also added layers of cotton wool for greater protection, as this was a financially viable option. Fears of leakage and staining of clothes during heavy periods required a combination of traditional cloths and pads to be used to:

'... help soak up the blood [...] I use both because of heavy bleeding, else the pad alone would have been okay.' (Abla, Kotei)

Women who could afford to use pads were often limited to 'normal' flow pads which were not absorbent enough for heavy periods. The choice of the thickness and absorbency of pads was limited in the Ghanaian market, even if women wished to or could afford to use them. They needed to be resourceful and adapt to what they could access, at times relying on their daughters to buy sanitary pads for them if they had previously only used cloth. One woman used adult diapers during heavy menstrual periods as she saw this as the most effective solution. MHM was less of a concern for women with lighter periods during the perimenopause.

Heavier menstruation changed perimenopausal women's behaviour and use of sanitation. One woman found it challenging to leave the community during heavy periods as she was concerned about access to toilets to change materials:

'I am not really bothered when I am home, but I get worried whenever I have to travel outside.' (Abla, Kotei)

Access to toilets was therefore important. A market trader in La did not know when her periods would start as they were irregular, and access to a space to change at work made MHM easier. However, public toilet facilities were ill-designed to meet the needs of heavily menstruating women:

'Any time after visiting the toilet, I end up staining the slab or the floor with blood and I usually feel bad thinking about another person coming to see that.' (Abla, Kotei)

Poorly designed latrines made it challenging to conceal the taboo of blood stains in the absence of water to flush this away. Public toilets lacked waste facilities for the discrete disposal of heavily soiled menstrual cloths leading women to carry menstrual waste out of the toilets for disposal in bins at home or community dumpsites, potentially exposing MHM issues in public that women preferred to hide from others.

Urine incontinence management

Incontinence was mainly managed through frequent toileting; however, PhotoVoice images illustrated difficulties in squatting to use pit latrines. Irregular water supply led to the closure of community toilets, preventing access when needed. Timing was a significant factor in access to toilets. Public toilets were not viewed as safe to use at night:

'At night I do ease myself into a chamber pot, since I can't go out. I do that in the bathhouse and dispose it the next morning.' (Efua, Kotei)

Frequently using pay-per-use public toilets was costly for the low-income perimenopausal women, and home was the preferred place to urinate in this case. Perimenopausal women wore extra layers of clothing to prevent visibility of urine leaks, as this was the only option. Cost was prohibitive to accessing incontinence products, even though they were the preferred choice.

Bathing

Frequent bathing was needed to manage heavy menstrual periods, incontinence, and sweating at different times over a 24-h period:

'It comes in big clots and flows down my legs [...] when I am menstruating, I bath three times a day.' (Abena, Kotei)

'I wash down because of the cold feeling between my thighs and in my pants as a result of urine incontinence.' (Oheama, Kotei)

'I sweat at night sometimes and when that happens, I clean myself with a wet towel and at certain time, I enter the bathhouse to pour water on myself.' (Mansa, Kotei)

Bathing was shaped by external factors. Safety concerns over being attacked in the dark led some women to wipe themselves with a towel after night sweats, rather than using the outdoor bathhouses. In warmer seasons, increased sweating led to more bathing. At cooler times of the year, however, there were financial implications of bathing. Bathing with warm water helped to soothe increased joint pains but was costly, as women needed to buy more charcoal from their limited incomes to warm the water.

Perimenopausal women faced infrastructural barriers to bathing:

'The comfortable way to bath is to stand but because of my waist pains, I have [to] sit and bath.' (Oheama, Kotei)

PhotoVoice (Figure 1) showed that bathhouses lacked inclusive design and made bathing challenging for women with joint pains who would use kitchen stools. Ghana's power crisis led to intermittent water supply, preventing access to water to bathe when needed. Mapping discussions revealed that perimenopausal women relied on their children and grandchildren to collect water for bathing and disposal of wastewater because of these pains. Wastewater drainage was inadequate, and women experiencing heavy menstrual flow were embarrassed disposing of blood-stained bathwater into the open street or uncovered drains.



Figure 1 | Disposing bathing wastewater in the street (PhotoVoice: Elizabeth).

Laundry

Heavy menstruation, urine incontinence, and sweating increased the amount of laundry during the perimenopause as clothes and bedding became soiled frequently, requiring regular changing. Women with heavy menstruation used ineffective MHM techniques, which allowed blood to leak into and stain clothing:

'You know we were not using pads in our days so when you are menstruating, you can soil your cloth at any time and that increases my laundry.' (Efua, Kotei)

Mapping discussions in La revealed that bathing facilities were used to wash clothes and sanitary materials soiled with blood separately from other laundry that was not soiled. Women used the bubbles of soapy water to conceal the bloodstains on menstrual cloths. The neglect of laundry as an important WASH practice was reflected in the lack of user-friendly laundry infrastructure. PhotoVoice images showed how handwashing clothes could be made easier for women with joint pain if they sat on stools at bowls of soapy water placed on higher platforms. Joint pain also made it a challenge to hang clothes on a washing line to dry.

WASH solutions for perimenopausal women

Using the vignette method with EHPs identified some solutions that can be applied through the effective training of WASH professionals on meeting the needs of perimenopausal women.

A prerequisite to providing infrastructure is community awareness, engagement, and empowerment. Increasing awareness of the perimenopause can help women to access appropriate support and engage in dialogue about the provision of WASH infrastructure appropriate to women going through the perimenopause. WASH practitioners need suitable communication techniques to encourage women to discuss their needs; however, this requires women to come forward within settings where it is taboo. Women can be supported if society pays greater attention to the perimenopause as an otherwise neglected topic, perhaps through TV and radio promotion of MHM, alongside the involvement of perimenopausal women as champions for hygiene promotion for this life stage. Girls can be made aware of the perimenopause at an appropriate age when menarche and menopause can be distinguished.

Good perimenopausal health can be ensured through health worker advice to make women aware of this as a natural process and to encourage good hygiene practices. Health and environmental health directorates can support this by sharing information and advocating for improved perimenopausal WASH. Interventions such as hospital visits and medication could help with the management of perimenopausal symptoms.

Once a dialogue is established, appropriate services can be provided. A regular 24-h water supply would help to meet perimenopausal women's increased needs for bathing and laundry to deal with the irregular onset of heavy menstruation, incontinence, and sweating day and night. Ensuring water points are close to people's houses is important as the need for water increases but the ability to collect it reduces. Cheaper utilities and subsidised water supply could help to alleviate the cost burdens of buying additional water; however, this would be challenging to implement as these measures are targeted to individuals and many perimenopausal women live with their families.

User-friendly bathing infrastructure would help perimenopausal women to bathe more easily. Internal bathrooms within the home can create space for women to wash safely at any time of the day or night to manage any irregular symptoms. Covered drainage from bathhouses would reduce the embarrassment caused by blood-stained wastewater and reduce disease spread. Although soakaways are an option to avoid this, they bring their own public health risks, as they become a breeding ground for mosquitoes and increase the risk of diseases such as hookworm.

Laundry facilities would provide private spaces for washing and drying blood and urine-stained clothes. These could ensure that women with joint pain can be supported by others to launder clothes.

Household toilets can ease access for perimenopausal women who need the facilities on a 24-h basis to change sanitary wear during heavy menstruation and for those with incontinence to urinate frequently. Suitable toilets can cater for perimenopausal joint pain and reduce the need to squat, but lack of water supply, household space, and cultural norms around squatting require consideration. Gender-sensitive community toilets with discrete menstrual waste facilities and changing areas can address the needs of perimenopausal women who do not have household toilets. Community toilets need to be cleaned, require adequate availability of water, and should be open on a 24-h basis.

Sanitary disposal bins at both a household level and in community toilets, together with waste collection services, are needed. Bins are an affordable measure which can prevent perimenopausal women from carrying heavily soiled materials away from WASH facilities and avoids risking the spread of disease.

Some of these solutions exist within existing WASH programming, such as 24-h water supply, the provision of household and gender-sensitive community toilets, and solid waste disposal provisions (UNICEF WaterAid and WSUP 2018), but are often not applied due to funding constraints and an unawareness that these measures are needed for women at this life stage. If implemented effectively, these measures can meet the WASH needs of perimenopausal women. WASH professionals need to engage further with understanding and raising awareness of perimenopausal women's needs through effective communication techniques, and place greater emphasis on the provision of user-friendly and gender-sensitive bathing and laundry facilities, which rarely feature in WASH programming.

Recommendations for the WASH sector

The WASH needs of perimenopausal women pose implications for policy and practice, for them, and ageing women more generally. In Ghana, the goal of the National Gender Policy to mainstream gender equality into national development processes can only be fully met by addressing perimenopausal women's needs. This requires that decision-making on the planning and provision of public and community WASH services should include the voices of perimenopausal women. Providing water to benefit the health of Ghana's population warrants recognition at the policy level of how 24-h access to water can be achieved, to cater for perimenopausal women's water needs for bathing, laundry, and irregular MHM. Environmental sanitation policy should learn from these women, to work towards provision of on-site, gender-sensitive sanitation for on-demand access for women, and to incorporate effective water disposal systems to meet their bathing and laundry needs.

Solutions for meeting the WASH needs of perimenopausal women as identified in this study need to be incorporated into strategic action plans for environmental sanitation at the district level. MHM programmes for adolescent girls should be adapted to also provide information to perimenopausal women. Health directorates and medical professionals should be involved in perimenopausal health promotion to raise awareness of the perimenopause as a normal biological process. Water providers need to provide affordable drinking water for perimenopausal health on a 24-h basis near to women's homes. The construction of covered drainage connected to user-friendly bathing and laundry facilities in new housing developments can conceal the signs of heavy menstruation and ensure dignity, privacy, and safety. Waste disposal facilities at the household, community, and institutional levels can ensure discrete disposal of menstrual waste for perimenopausal women with heavy periods. These provisions in the workplace and other public areas would raise women's abilities to earn a living if symptoms could be managed with ease.

If SDG6 is to be met through providing WASH for all, the hidden needs of groups currently neglected in WASH require consideration. A feminist lens was used in the study in recognition of the fact that WASH needs during the perimenopause are not only neglected as a women's issue, but specifically as an issue for older women who are, themselves, generally overlooked (Greer 1991). A post-modern feminist approach (Parpart 1993) provided scope to recognise all women's experiences as the truth while also catering for factors of race and class for women both in the UK and Ghana. The focus of the study on the perimenopause inherently required a feminist approach to understand the WASH needs of women who are older and less likely to discuss a private women's issue with outsiders. The methodologies used in this study can be used in WASH programmes to work with increasing numbers of perimenopausal women and to explore other issues that are overlooked. These hidden issues can only be catered for through infrastructure provision if their voices are heard. The needs of perimenopausal women should feature in discussions on equality, non-discrimination, and inclusion around WASH, expanding the current focus on MHM and reproductive health for adolescent girls. Improving and adapting existing WASH solutions would help to meet the needs of perimenopausal women.

CONCLUSION

Perimenopausal women's WASH needs are hidden, as they are not publicly discussed, are absent from written literature, and physically occur behind closed doors. Power needs to be reversed, so that the WASH sector listens to users such as perimenopausal women through the use of feminist, participatory techniques, and delivers practical solutions to address their specific needs. Perimenopausal women's experiences highlight the importance of access to infrastructure with close proximity to their homes, particularly for bathing and laundry; these are women-centred, infrastructural needs that are often missed by the WASH sector.

Meeting WASH needs during the perimenopause has social, economic, and physical aspects. Existing practical solutions for MHM cover some needs of perimenopausal women if they are applied. Women can be supported to use and effectively dispose of appropriate sanitary products to manage heavy menstruation. Greater awareness is needed among WASH professionals of the importance of menstrual hygiene during the perimenopause as well as at menarche. Effective MHM for perimenopausal women requires the implementation of different components: high-absorbency sanitary products, sanitary disposal facilities, accessible toilets (ideally on-site) at home and in the workplace, and covered drainage. Affordable 24-h access to water near to people's homes can support frequent bathing and laundry needs, along with user-friendly infrastructure.

This research highlights the hidden WASH needs of perimenopausal women and provides recommendations to address them. Solutions for meeting the WASH needs of perimenopausal women already exist, but due to a lack of awareness of these and funding constraints, they are not usually applied. The WASH sector would benefit from a better understanding of these needs and training on how to meet them.

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DATA AVAILABILITY STATEMENT

All relevant data are included in the paper or its Supplementary Information.

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