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**SUSTAINABLE WATER AND SANITATION SERVICES
FOR ALL IN A FAST CHANGING WORLD**

**WASH for the perimenopause in low-income countries:
changing women, concealed knowledge?**

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With the continued ageing of the global population, the proportion of women who are making the transition to menopause in a stage known as the perimenopause, is increasing. Yet, little is known about the water, sanitation and hygiene (WASH) needs of perimenopausal women in low-income countries as they go through this time of change, and therefore remain a 'hidden' cohort. This paper introduces research which explores these needs, while also documenting the challenges faced in searching for literature on this topic. Some of the sparse literature on experiences of perimenopausal and menopausal women in low-income countries is reviewed. The perimenopause could be the 'latest taboo' in WASH, beckoning exploration of the needs of perimenopausal women. It is concluded that a phenomenological review approach can inform how tacit knowledge is explored and captured.

Introduction

This paper introduces current doctoral research that seeks to explore the water, sanitation, and hygiene (WASH) needs of older women in low-income countries. As the world population continues to age, it is estimated that 1.2 billion women globally will pass through the menopause by 2030 (Hill, 1996). Further, 76% of these women will be living in low-income countries, in which the number of post-menopausal women will have tripled since 1990 (WHO, 1996). As this rate increases, so too will the relevance of meeting the WASH needs of women who are making the transition to menopause: a stage known as the perimenopause. Yet, perimenopausal women remain to be a 'hidden' cohort of the global population, and little is known about their particular WASH needs and how these are met in low-income countries. This paper highlights the necessity to explore WASH provision during the perimenopause. It calls for the need for WASH to move beyond exploring menstrual hygiene management for teenage adolescent girls, and to consider the menstrual hygiene needs of irregularly menstruating perimenopausal women.

Aim

This paper aims to provide an overview of the limited literature available on the experiences of perimenopausal women in low-income countries. The paper provides an in-depth reflection upon the multitude of methodological challenges faced in seeking information about concealed knowledge of this 'hidden' cohort. It outlines attempts to overcome these difficulties through a phenomenological review approach. This paper highlights the need to acknowledge an increase in the proportion of older women who are going through the perimenopause in particular and the specific WASH needs they require as the global population ages overall.

Overview of the perimenopause, menopause, and climacteric

The perimenopause is the phase in a woman's life which marks 'the transition between the reproductive years and the menopause' (Prior, 1998: 397). Gynaecological studies have medically defined the perimenopause as 'the time preceding the normal menopause during which declining ovarian function causes [...] dysfunctional uterine bleeding; symptoms of oestrogen deficiency; and elevated [hormones]'

(Nelson et al, 1996: 1393). The menopause can be distinguished from the perimenopause as the period beginning one year since the permanent cessation of periods as a result of a decline in ovarian function (WHO, 1981). The perimenopause is marked by a range of symptoms. Studies have shown that women commonly encounter night sweats, heavier blood flow, sore breasts, loss of sleep and shorter menstrual cycles (Prior 2005). The shortening of menstrual cycles often accompanies the irregularity of menstrual periods. Other definitive symptoms of the perimenopause include hot flushes, which are feelings of intense warmth that can begin in the chest and spread to the neck and face (Steams et al, 2002). Hot flushes usually last between two to three minutes. Women may also encounter vaginal dryness and mood swings (Torpy et al, 2003), as well as headaches, dizziness, palpitations, poor concentration, forgetfulness, irritability (Nachtigall, 1998) and dry skin (Avis et al, 2009).

The perimenopause and menopause are stages within a broader phase of life called the climacteric. This is 'the phase in the ageing of women marking the transition from the reproductive phase to the non-reproductive state' (Utian, 1999:285). The climacteric incorporates the perimenopause, and includes a period before and after a woman is considered to be perimenopausal. The perimenopause itself ends when a woman has been through an entire year without experiencing blood flow (Prior, 2005).

Lack of literature

There is very little literature on water, sanitation and hygiene issues related to perimenopausal women in low-income countries which has resulted in difficulties in conducting a conventional literature review. A systematic search for literature has used a wide range of academic databases and a total of 59 pre-set search term combinations, including but not limited to 'perimenopause', 'menopause' 'water and sanitation', 'ageing', 'menstrual hygiene', 'change of life', 'developing countries' 'older women' and 'menstruation'. The databases include the WEDC Knowledge Base, Science Direct, IRC WASH, Zetoc, Water Resources Abstracts, Medline, Geobase, Web of Knowledge, and ProQuest. The results of these searches varied from either providing many results, of which the majority were irrelevant, or returning no results at all. Table 1 gives an indication of some of the results from sample searches with key search term combinations used:

Search term	WEDC Knowledge Base	Science Direct	IRC WASH database
Perimenopause + change of life + sanitation	4829 retrieved 0 relevant	9 retrieved 0 relevant	0 retrieved 0 relevant
Ageing + sanitation + bleeding + menstruation + developing countries	12236 retrieved 0 relevant	18 retrieved 0 relevant	23 retrieved 0 relevant
Ageing + perimenopause + developing countries + water supply	15396 retrieved 0 relevant	31 retrieved 2 relevant	927 retrieved 0 relevant

The results of the literature search revealed that there is very little research which directly focuses upon WASH provision for perimenopausal women. Significant gaps in the literature remain with regards to the perimenopause or the menopause in relation to sanitation, water supply, MHM, hygiene, and washing and bathing practices in low-income countries. However, as the subsequent sections show, studies have examined other factors which do not directly draw upon WASH, but remain significant. These studies explore the age of menopause and the physiological and socio-cultural beliefs about the climacteric more broadly in low-income countries.

Climacteric women in low-income countries

Several studies have been conducted in the past about the climacteric experiences of women in low-income countries. Whilst there has been little found on WASH related factors which may affect the perimenopausal experiences of women specifically, some studies have shed light on age of natural menopause, and physiological and socio-cultural experiences of climacteric women more broadly. Indeed, other factors such as beliefs about the menopause and ageing may be relevant in relation to WASH practices during the perimenopause. The existing literature which has been found may have different implications for WASH.

However, this literature does not focus specifically on WASH in relation to the perimenopause. The next few sections discuss the specific factors that have been highlighted through the literature which is available.

Age

The age at which women reach the climacteric phase can vary between different regions within low-income countries. For instance in Iran, it has been recorded that the average age of menopause is earlier in rural areas (49.2) than in urban areas (49.9) (Mohammad, Sadat Hashemi, and Farahani, 2004). It must be noted that climacteric women are not 'elderly'. The meaning of 'elderly' and 'older people' varies between high-income and lower income countries. It is generally felt in high-income countries that 'elderly' people are those aged over 65, but this can vary in countries such as Africa according to traditional views. Older people are considered to be over the age of 50 but younger than 65 (WHO, 2014).

Beliefs surrounding the climacteric

Attitudes towards the climacteric vary between countries and different cultural contexts. This study seeks to understand the relevance of beliefs about the perimenopause and menopause in different countries in respect to WASH. Some existing studies provide an insight into beliefs in different low-income countries.

In Africa, the cessation of menstruation and some of the associated climacteric or perimenopausal symptoms such as sweats and hot flushes are regarded as markers that a woman is naturally ageing. As it is seen to be a natural stage of life, certain taboos are often held against those who have had surgical menopause, or indeed the early onset of menopause. In particular, a lack of clarity and understanding over the perimenopause can mean that at times, particular symptoms may be missed or ignored by women (Wambua, 1997).

However, there are variations between countries, which may shape perimenopausal WASH experiences. According to Gadalla et al (1986) Egyptians believe that stating that one has perfect health can cast an evil eye upon the self and be a cause of envy amongst other women. Further, rural Egyptians and the Hausas of Northern Nigeria claim that as the menopause marks the end of reproductive capacity, women in these areas often suffer a sense of low self-esteem (Wambua, 1997). Yet for the Bamilike women of Cameroon, the menopause marks a transition to an elevated position within society, and is seen as a symbol of power (Wambua, 1997). In light of this, it may be important to recognise how cultural beliefs surrounding ageing may shape different aspects of WASH experiences, such as in terms of access to services in relation to women's statuses.

In the case of South India, a study of Kerala fishermen by George (1996) found that the menopause was also viewed with a positive attitude, particularly due to the knowledge that they would no longer need to worry about sanitary protection after they had passed through the transitional phase.

However, in Guatemala, the Q'eqchi forbid the discussion of the menopause itself until it occurs. There are a range of different taboos surrounding menstruation, such as the prohibition of bathing, looking at newborn babies, and serving food (Michel et al, 2006). Whilst the literature does not directly refer to WASH, the existing literature has various implications for providing WASH for perimenopausal women.

Physiological and psychological symptoms

Climacteric women, including those who are perimenopausal, experience a range of different physiological and psychological symptoms which need to be considered in providing effective WASH.

For instance, Chompootweep et al (1993) noted that perimenopausal women in Thailand had the highest prevalence of vasomotor climacteric symptoms which are of direct relevance to WASH. Vasomotor symptoms are directly related to hormonal changes during the menopausal transition. 22.3% of perimenopausal women had hot flushes, and 17.5% complained about their night sweats. Perimenopausal Thai women in the study by Punyahotra et al (1997) were also most likely to be anxious about reaching the menopause compared to pre-menopausal and post-menopausal women.

Wasti et al (1993) suggest that climacteric symptoms may indeed vary between socio-economic groups. It has been suggested that within Pakistan, the prevalence of certain symptoms such as hot flushes, night sweats, back pain, and psychological symptoms such as anxiety, decreased as the socio-economic status declined to urban slum dwellers. Studies have also revealed a range of climacteric symptoms for women in Latin America. The Movima women of Bolivia, who were mostly farmers, were found to commonly experience severe hot flushes (46%) and genital itching (41%) during their menopausal transition (Castelo-Branco et al 2005). Climacteric women in India have also complained of drying skin (Bairy et al, 2009).

Meanwhile in the Brazilian Western Amazon, climacteric women across a broad age range of 35-65 have been reported to experience a wide range of issues as they go through the menopausal transition. Middle-aged women noted that the psychological anxieties and worries over ageing were the main issue which concerned them, along with hot flushes and muscular-skeletal joint pain (da Silva and d'Andretta Tanaka, 2013).

In an African context, a study in Zimbabwe (Moore, 1981) showed that climacteric women experienced a range of symptoms which were related to changes in their nervous system. 43% of women in this study noted hot flushes, palpitations, sweats and indigestion. Similarly, in Egypt, the highest prevalence of complaints about perspiration (54.8%) and hot flushes (85.7%) was amongst perimenopausal women (Gadalla et al, 1986).

WASH and the perimenopause

In relation to the perimenopause in particular as this study seeks to investigate, there is a mixture of technical and socio-cultural factors which need due consideration when exploring WASH experiences. Engineers who are designing infrastructure require an awareness of providing for the specific needs of women such as safety and convenience, and strategically locating WASH hardware in areas in which women feel safe and have a sense of privacy. Some of these areas of concern are discussed below: cultural beliefs in different countries including practices such as purdah, menstrual hygiene management (MHM), and access to water for washing and bathing.

Socio-cultural factors

The relevance of cultural beliefs to providing effective WASH in a broader context is already recorded in depth (WELL, 1998). Factors such as wider beliefs and taboos about menstruation in particular, and ageing may affect the water, sanitation and hygiene experiences of perimenopausal women.

In many low-income countries, the practice of purdah, or the veiling and seclusion of women, is common (WELL, 1998). The phenomenological study has identified that purdah is a significant practice for women who are menstruating in countries such as India, regardless of their age. Hence, as perimenopausal women menstruate, and their menstrual periods are heavier in flow, it is important to investigate the interplay between purdah with the WASH experiences of women who may be bleeding heavily and more irregularly.

Phenomenological review: uncovering tacit perimenopausal experiences

Due to the lack of written literature and women's hidden sanitary and hygiene management experiences of the perimenopause, this project incorporates a phenomenological approach to reviewing perimenopausal experiences in order to fill this knowledge gap at this stage of the research. Phenomenology involves 'the study of phenomena, of things or events in the everyday world' (Becker, 1992:7). It focuses on descriptions of experiences given by people and how these experiences are experienced (Patton, 1990). This approach involves interviewing people to ask them about their experiences of certain issues, to reveal 'phenomena' which are unknown. The knowledge of women of different ethnicities revealed through interviews in the United Kingdom and the USA is reviewed.

A phenomenological review technique seeks to establish the lived experiences of a particular phenomenon (Moustakas, 1994). It was identified that knowledge of perimenopausal WASH issues is present amongst women, although this may have not been recorded. Thus, the purpose of the phenomenological review is to capture this tacit knowledge in a high-income country context, in order to then situate the WASH experiences of perimenopausal women in low-income countries. Tacit knowledge is a 'non-linguistic, non-numerical form of knowledge that is highly personal [...] and deeply rooted in individual experiences, ideas, values and emotions' (Gourlay, 2002: 2). As Polanyi (1966: 4) aptly summarises, 'we know more than we can tell'.

For this initial phenomenological review, a total of 25 women have participated in semi-structured interviews, either face-to-face or online through video conferencing. Women were selected according to a range of criteria. These women were of White, Black African and South Asian ethnicity, to provide a range of experiences of perimenopausal women... Participants were recruited from: relatives, Loughborough University, the Women's Institute in Leicester, the Redeemed Christian Church of God, Seventh Day Adventist Church in Leicester, the Leicester Caribbean Centre, Central Surgery in Oadby and the John Storer House community centre in Loughborough. Recruitment was done through writing letters and emails

to the organisations, face-to-face recruitment by attending church services and women's groups and telephone conversations.

Perimenopausal women have been interviewed in order to capture their direct experiences during this particular phase of life, whereas post-menopausal women have provided information about the changes faced from the beginning to the end of the perimenopause, reflecting back on the whole of that period of their lives. This information has focused upon a wide variety of aspects of women's lives which are affected by the perimenopause and are relevant to WASH, including menstrual hygiene management (MHM), and patterns of washing and bathing.

Results of phenomenological review

Menstrual hygiene management

Women who are at the perimenopausal stage are usually still menstruating, although it may be irregular in nature. Thus, accessing sufficient and appropriate MHM for perimenopausal women in low-income countries would be crucial. Nine women in this preliminary study have noted a change from regular bleeding during their cycle to significantly heavier flow and flooding when they have their periods. Further, the duration for which they bleed has lengthened. For instance, one perimenopausal woman stated that she has bleeding throughout the entire month and therefore MHM has become of increasing importance, in terms of protection over a longer length of time and in needing to change her sanitary materials more frequently. Therefore, MHM remains to be a critical factor of WASH for women in the perimenopause, in particular factors such as duration of bleeding, type of flow, access to effective materials, the need for different levels of protection at different times, and frequency of changing materials.

In light of this issue, in a low-income country context, a crucial aspect of ensuring effective MHM is also having sufficient access to WASH hardware such as clean and private latrines. The unpredictable nature of periods therefore reflects the need for easy access to public and nearby changing facilities.

Access to water: washing and bathing

As perimenopausal women can experience significantly heavier bleeding or flooding, access to water on a regular basis to wash themselves is obviously an important factor.

The preliminary phenomenological study has also identified sweating as a key issue for perimenopausal women in terms of hygiene. Women reported that as well as the commonly recorded night sweats, access to clean water is also paramount to their daytime hygiene practices too, as sweating for some occurred at different times of the day. Therefore, from an engineering perspective, WASH provision for women of this age should ensure that easily accessible washing facilities are in locations where women feel safe to use them at any time of the day.

As women go through the perimenopause, common symptoms such as hot flushes and sweating are a potential source of embarrassment when in a public setting. Thus, it will be necessary to consider these particular factors for perimenopausal women, and to question how the extent of WASH provision to deal with these symptoms can influence their experiences. Bathing is also important for perimenopausal women as symptoms such as dry skin and painful joints can increase with age. Bathing to relieve these symptoms by being able to moisturise the skin and to soothe aches and pains is an additional factor.

Lessons learnt

Research related topics to date suggests that there may be a range of aspects of water, sanitation and hygiene services which have relevance for perimenopausal women in low-income countries, from both technical and socio-cultural perspectives. Heavier and prolonged bleeding during the perimenopause raises significant questions over whether provision for MHM in low-income countries provides effective protection for women. There remains a gap in published research on MHM experiences during the perimenopausal stage, to expand the knowledge beyond what is known about MHM for adolescent girls and to consider the MHM needs of irregularly menstruating perimenopausal women. Experience of sweating, hot flushes, dry skin and aches, as well as bleeding suggests that access to water for these women is important.

Relevant engineering and infrastructural issues related to WASH are factors which merit investigation. This study also seeks to explore whether perimenopausal WASH experiences are mediated by factors such as socio-economic status, particularly according to how or whether certain symptoms are reported in lower

socio-economic groups. In turn, this could highlight differences in WASH experiences for perimenopausal women from different socio-economic backgrounds.

Socio-cultural factors such as taboos, sensitivities and acceptance of the issues faced are likely to play a critical role as to why the WASH issues of perimenopausal women remain 'hidden' and not researched to date. Similarly other issues such as sanitation (Black and Fawcett, 2008), MHM (Water Supply and Sanitation Collaborative Council, 2013) and disability (Jones, et al., 2012) were previously viewed as 'taboo' topics to research. In recent years however, there has been a rise in research on these topics in relation to WASH. It could be argued that WASH for the perimenopause is the 'latest taboo', and the lack of literature upon this topic signals the need for exploration to understand the needs of this particular hidden cohort. Indeed, it must be recognised that a lack of literature signals a necessity for phenomenological study and consultation with hidden groups such as perimenopausal women in order to understand their WASH needs. Yet, it must also be understood that a lack of literature does not mean that WASH for the perimenopause is not an important issue which requires a more in-depth understanding.

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