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Delving into menstrual experiences of women in the public space through mobile diaries

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Abstract: This study aims to understand the factors that impact the menstrual experiences of educated, urban, and working women in the public space within the context of Turkey. Based on the mobile diaries method, this study was conducted with eight volunteer participants, who actively contributed to the data collection by documenting their own daily activities. Analysis of data from this study revealed seven themes related to menstrual product use, conditions of public toilets, social enforcements, and personal preparedness. The themes and sub-themes were discussed in two dimensions: the menstrual difficulties in the public space and the strategies developed to eliminate these difficulties. In the light of these discussions, a comprehensive understanding from which to direct design and research studies on such an intimate subject has been provided. In addition, possible design implications have been addressed that can guide critical research studies and creative ideas to destigmatise menstruation.

Keywords: menstrual experiences; mobile diaries; public space; menstrual products; menstruation.

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1 Introduction

Menstrual experiences, which are complex and multifaceted, include behavioural, psychological, emotional, as well as sensorial themes, such as menstrual practices, perceptions regarding menstruation, culture, religion, and societal beliefs, the feeling of embarrassment, unpleasant smell, etc. (Hennegan et al., 2018). Therefore, such a complicated and intimate experience should be sensitively examined and discussed

(see Fam and Lopes, 2015; Woytuk et al., 2020; Tuli et al., 2020; Søndergaard et al., 2021).

This study aims to understand the factors that affect the menstrual experiences of educated, urban, and working women in the public space within the context of Turkey. How people experience their menstrual cycles in public behaviourally, psychologically, emotionally, and sensorially will be examined through mobile diaries method.

Delving into these experiences will reveal highly personal practices and product usages shaped around social, cultural, and religious norms. The attitudes of educated, urban, and working women toward the behavioural expectations and taboos of Turkish society related to menstruation will also be considered within this context. In addition to this, the difficulties they encounter in the public space and how they tackle these via the solutions and tactics they developed will be addressed.

2 Background

Considering the health of the reproductive systems (Aflaq and Jami, 2012), menstruation plays a crucial role in women's health and well-being (Stein and Kim, 2009). As there are negative attitudes and discourses toward the female body, bodily fluids, sexual activities, intimate care, and hygiene (Almeida et al., 2016), menstruation is still a taboo subject (House et al., 2012), a shameful and unspoken phenomenon in many cultures (Søndergaard and Hansen, 2016).

External factors and internal beliefs, such as the social enforcements, religious restrictions, cultural backgrounds, and the rules people establish for themselves, constantly stigmatise menstruation (Hennegan et al., 2018). This social stigma against menstruation in popular culture and discourse marginalises menstruators,¹ politicises the meaning of menstruation, and conceals the nature of menstrual products and experiences (Johnston-Robledo and Stubbs, 2013). Therefore, the physical activities, mental and emotional states of those menstruating in their social lives, are adversely affected (Hennegan et al., 2018). For instance, negatively biased attitudes toward menstruation restrict the opportunities of school-age girls for education (Biriwasha, 2008; Dasgupta and Sarkar, 2008), reduce the working performances of women (Schoep et al., 2019) and their participation in social life (Hennegan et al., 2018), problematise the accessibility and affordability of hygiene products (Bobel and Fahs, 2020), and make menstrual care difficult (Bobel, 2010; Larsson and Olsson, 2014).

The design of menstrual hygiene products and services also substantially serves for the stigmatised status of menstruation (Almeida et al., 2016). The design approach against menstruation (Almeida et al., 2016), which includes the use of allegorical images, figures, and colours associated with femininity, promotes secrecy and delicacy (Merskin, 1999; Johnston-Robledo and Chrisler, 2013). Moreover, advertisements, which are cultural artefacts that shape the social meaning of menstruation, give messages to hide the menstrual cycles and products (Merskin, 1999). In addition, the censored language of the media, such as the use of blue liquid as a representation of menstrual blood instead of red (Johnston-Robledo and Chrisler, 2013), often contributes to the concealment of menstruation, menstrual experiences, and menstrual hygiene products. Even the technologies and applications developed to track menstrual health, with their encrypted

interfaces, gendered designs, metaphorical nomenclatures and symbols, indicate that the menstrual cycle is something that needs to be hidden (Epstein et al., 2017).

2.1 Menstruation in public space

There is a hierarchical relationship between the public and the private space based on gender roles. This culturally constructed dichotomy identifies women with the private and men with the public space (Matteson, 2014). According to Matteson (2014), public space is not designed with women in mind, so it is difficult for them to gain visibility in this sphere.

Menstruation occupies an inappropriate place in this dichotomy (Bobel, 2010) because menstrual experiences are seen as practices that disrupt the 'normal' emotional and bodily functions, especially in public. The socially stigmatised nature of menstruation enables only a limited discourse in public. Menstruating people are compelled to censor their spoken language and conceal their menstrual symptoms, experiences, and especially hygiene products (Hufnagel, 2012) to be included in social and public life fully. Adopting several behaviours and developing different tactics to hide physical and lingual clues regarding menstruation are completely in the charge of menstruators (Johnston-Robledo and Stubbs, 2013; Søndergaard and Hansen, 2016).

Menstruation is historically and deeply ingrained in feminine identity. Negative attitudes toward menstrual experiences and those menstruating may lead to sexism (Marván et al., 2014), especially due to misogynistic discourses and approaches about menstruation (Dawson, 2005; Marván et al., 2014). The social stigma around menstruation also creates a 'gender barrier' between male, female, trans, and non-binary identities (Findlay et al., 2020; Frank, 2020). Aiming to belittle menstruators, the hostile sexism and misogyny associate menstruation with 'physical and moral corruption' (Dawson, 2005, p.465).

More inclusive products and urban spaces should be developed with new urban planning policies from the perspectives of different genders. In order to design accessible and equitable public places, especially restrooms, an awareness of the physical and biological characteristics and needs of different groups in society should be created (Greed, 2016). These developments in urban spaces will enable more students to continue their education during their menstrual periods, more women, trans, and non-binary people to be included in business life, and people to use public spaces more comfortably and safely.

The motivation of this study is to illustrate how menstruation is an important issue not only for those menstruating, but also at the community level, to comprehensively understand and rehabilitate menstrual taboos and stigma, to eliminate menstrual difficulties and gender authorities in public space, to 'cultivate collective responsibility' (Fox et al., 2018, p.21) and to ensure menstrual equality.

2.2 Menstruators in the context of Turkey

Beliefs and attitudes toward menstruation in Turkish society are multidimensional. Women in Turkey have been the symbol of modernisation and westernisation since the republic reforms. Their participation in political, social, and professional life, especially the entry of middle-class women into the public sphere and their experience of public culture, have greatly contributed to this secular social context (Tuncer, 2018). However,

given the significant Muslim population in Turkey (Directorate of Religious Affairs, 2014), studies show that the major factors impacting the menstrual experiences of adolescents and women are religious doctrines (Firat et al., 2008), as well as people's cultural and regional backgrounds (Çevirme et al., 2010). Studies, which centre upon the public experiences of women in Turkey, include macro and micro dimensions shaped around religious and secular ideologies (Tuncer, 2018).

According to Yılmaz (2008), social conservatism in Turkey regulates 'sexuality and gender relations' and idealises the female figure (p.58). Discourses and taboos about the female body, appearance and identity, as well as women's behaviours and perceptions, are socially constructed and managed. Women living in Turkey experience their menstrual cycles around religious, cultural and social expectations and enforcements. In addition, menstrual hygiene product preferences may differ in terms of income level, accessibility, age group, education level, and the opportunities of the region they live in (Ertuğrul, 2003; Uskul, 2004).

For over a decade, Turkey has been experiencing a 'queer turn' that refers to the increased visibility, recognition, and empowerment of queerness (Özbay and Öktem, 2021). However, the studies show that suppression of menstrual bleeding is forced on those menstruating and individuals experiencing gender dysphoria under patriarchal societies (Direk, 2020; Akgül et al., 2021). Therefore, menstrual suppression still requires a social transition and transformation process for trans males and gender non-conforming individuals in Turkey (Akgül et al., 2021).

3 Method

Exploring an intimate experience requires a research method that is delicately designed and conducted with a sensitive and innovative approach.

3.1 *Mobile diaries method as a data collection tool*

In this study, a method called Mobile Diaries is used, which enables participants to actively contribute to data collection by conducting self-documenting activities in their daily lives. The Mobile Diaries method, which draws upon a number of existing research methods, such as Cultural Probes (Gaver et al., 1999), Design Probes (Mattelmäki, 2006), Mobile Probes (Hulkko et al., 2004), and Context Mapping (Stappers and Sanders, 2004), is a self-reporting method through the use of social technologies, such as mobile phones, video cameras, photo messages, and blogs (Hulkko et al., 2004; Hagen and Robertson, 2012, 2015). With this research approach, participants become the researchers, observers, and reporters of their own activities by eliminating the existence of the researcher.

Mobile technologies provide a new form of participation in design research by enabling participants to record, reflect on, and share their personal and real-life experiences that are 'difficult, or impossible, to access through traditional methods such as observation or interviews' (p. 466). The mobile diaries method is often used in the early stages of research to explore the subject and gain a comprehensive understanding, as well as to inspire design practices (Hagen and Robertson, 2015).

According to Hagen and Robertson (2012, 2015), the mobile diaries method is usually conducted with the participation of 1–10 people, lasting from one week to three weeks. The run of the research process, the number of participants, and the structure of

the diaries are considered and designed depending on what the research focus is and how it should be conducted.

While a typical probing pack may contain notebooks, maps and collages, or disposable cameras (Gaver et al., 1999), today, a mobile diary study based on the use of technological interfaces allows participants to record voice and video, send messages, write texts/blogs, and take pictures throughout the day (Hagen and Robertson, 2015). This method usually includes journaling activities where participants document their feelings and experiences during a certain period, answer particular questions, and complete photography tasks that allow them to illustrate their perspectives and collect visual data during the action (Hulkko et al., 2004). These can also be supported by the use of projective tools that encourage participants to express themselves (Sanders, 2001).

The content of the mobile diaries should be open-ended to encourage participants to record their own experiences in different formats, such as written, audio, and visual (Hagen and Robertson, 2015). Adopting a self-reporting approach ensures the active involvement of participants and increases their impact in the data collection phase (Hagen and Robertson, 2012).

Moreover, mobile technologies enable two-way real-time conversation, where participants receive questions, tasks, and reminders from the researcher and can send back their answers, photos, videos, or audio recordings via messaging services, blogs, social media platforms, or mobile applications (Hagen and Robertson, 2012).

In this study, a mobile application, which is a journaling platform, is adapted for participants to record their own experiences. The main reason for choosing this application is its customisable interface that allows easy and quick writing, editing entries, and uploading photos or videos. Second of all, it is supported by both Android and iOS. This application is based on a cross-platform, which synchronises the account with the cloud, so it allows access from different devices. Owing to this, more than one user can use the same account, access and edit each other's entries. Lastly, the app has a daily reminder feature for its users.

Access to this mobile application is possible only by registering with an email address and password. Due to ethical concerns, the researcher created a separate account for each participant. Therefore, a different email address and a password were sent to each of the participants so that they could log in to the application. Before sending email addresses and passwords, the interface was designed and prepared to be the same for each participant. The application's interface consisted of entries with questions about menstrual experiences or requesting to perform a task in the public space.

The cross-platform feature of this application ensured that both the researcher and the participant accessed the same interface and entries. When the participants opened the application, they found entries containing questions and tasks added by the researcher. Likewise, the researcher had immediate access to the answers, entries, and photos uploaded by the participants. It was one of the major advantages of the mobile diaries method.

Compared to printed diaries, mobile diaries allowed each participant with a smart mobile phone to immediately and readily record their daily activities throughout the day, in accordance with the dynamics of public life. Instead of writing with a pen, typing on mobile phones quickened and facilitated the writing processes for the participants, thus allowing them to write long paragraphs and to give more details about their experiences. In addition, participants were able to re-edit their entries, which is not so easy to do with printed ones. Instead of carrying additional cameras or recording devices, participants

were able to photograph their experiences in public spaces with their smartphones, which they always carried with them. Uploading photos to the interface of the mobile application made it also easier for the participants to collect and record the visual data. Besides, the researcher was able to closely observe and follow the data collection process and ask questions about the unclear statements of participants by writing notes under the entries.

3.2 *The design of mobile diaries*

The application whose interface is customised by the researcher welcomes the participants with a greeting page (see Figure 1(a)). It includes an informative text about the purpose and content of the research and the privacy commitment of the researcher. After the informative text, there are questions about personal information, such as age, occupation, educational background, and how many hours they spend in public on a typical working day.

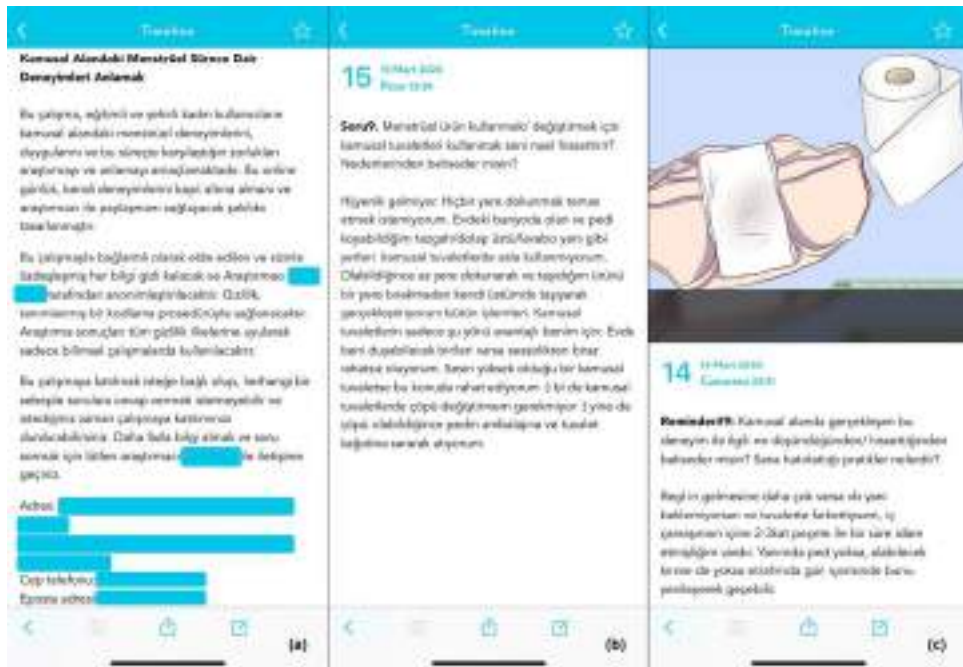
The rest of the interface is prepared in four sections based on different ways of data collection:

- 1) answering questions
 - 2) commenting on visual materials
 - 3) taking photos
 - 4) experiencing and reporting public toilets during the menstrual cycle.
- 1 To obtain narratives of the participants about their current daily practices and memories, open-ended questions were prepared. The participants were asked about their current menstrual product preferences and experiences in public spaces. In order to discuss menstrual experiences in all its parts, the challenges of using menstrual products in public space were also questioned. By following the stages of interaction with menstrual hygiene products before, during, and after use, the questions were asked about product supply (purchase), storage, carrying, using, and disposing practices. To understand the past experiences and changes over time, the memories they couldn't forget, the decisions they made in public life, the changes they made depending on age, product, and environment, and the reasons for these were also enquired (see Figure 1(b)).
 - 2 According to Bruseberg and McDonagh-Philp (2001), visual materials, which are powerful tools, prompt emotional responses and promote participants to get involved in the discussion. In addition to open-ended questions, a certain number of illustrations were uploaded to the interface of the application and were asked to be commented on. These illustrations depicted the difficulties people faced in the public space regarding menstruation or the solutions they developed to cope with them. For instance, an illustration showed a person hiding tampons in a jacket pocket, another one visualised the moment a woman asked her friend for a menstrual pad, and the other showed the use of toilet paper instead of a menstrual product (see Figure 1(c)). In this study, illustrations were used as visual reminders that evoke previous experiences and memories. The participants commented on what they recalled, thought, and felt about the difficulties and tactics depicted in 10 different

illustrations, which were taken from one particular website so that they speak the same visual language (URL-1).

- 3 Participants were also asked to complete some photo tasks. They were expected to take photographs corresponding to the relevant statements and upload them as diary entries. Statements specific to the public space were added to the interface of the application by the researcher, such as ‘the worst thing about my menstruation in public space’ or ‘the life-saving products of my menstruation in public space.’
- 4 There were also tasks that required experiencing and reporting public toilets. Participants were expected to experience three different public toilets during their menstrual cycles and make entries about their experiences, feelings, and challenges. Some guiding phrases were also added by the researcher to prompt their narratives, such as ‘environmental problems you encountered’, ‘products you brought with’, ‘places where you put the products you brought with’, ‘practice of changing menstrual products’, ‘disposal of wastes’, etc. While the participants sometimes took notes under the given phrases, sometimes they wrote all their experiences as stories.

Figure 1 (a) The home page of the mobile application, (b) the question of how you are feeling when using/changing menstrual hygiene products in the public space and its answer by a participant and (c) a participant’s comment on an illustration (see online version for colours)



4 Conducting the study

The population of this research was identified as educated, urban, and working women, who are between 25–45 years old. The reasons for choosing this population:

- A In the context of Turkey, menstruating women are a more accessible group for the researcher than other menstruators.
- B Educated women with higher education, have more information about menstrual hygiene, physiology of menstruation, menstrual products, and practices (Ameade and Garti, 2016; Kim and Choi, 2020); therefore, they can provide more data to the study.
- C Urban women have a significant variety and accessibility for menstrual products. They also experience different environments in urban life, such as, university, workplace, shopping mall, café, etc.
- D Working women are frequently and actively involved in public spaces. They are usually independent individuals, who earn their own money, so they meet their own needs like buying their menstrual products, deciding which product or brand to buy, etc.
- E The specified age range (25–45 years old) represents the mass that has begun to work, using the public space actively but has not entered menopause. In addition to this, this age range is familiar with mobile and digital technologies, especially mobile phones and applications. Of course, people, who meet the specified criteria but are outside the age range, can also be included in the study.

As a purposeful sampling, the researcher contacted the women who were suitable for the research sample. Ten of the women contacted volunteered to participate in the study.

First of all, the participants were informed about the content of the research and the relevant method, then a consent form was sent to all volunteer participants. They were expected to read and sign consent forms that gave information about the subject and process of the research, the confidentiality of their personal information and the use of data for academic purposes only. They were also informed that they could withdraw from the study at any time. When the consent forms were sent back to the researcher, they were asked to download the above-mentioned journaling application to their mobile phones and log in with a specific email address and a password for each one sent by the researcher.

This study, which started with 10 volunteer participants, ended with 8 participants, who completed the study or provided saturated data that could be analysed. Only two participants were able to provide very limited data as they could not make regular entries.

All of the participants defined their gender as female. The age range of these eight participants was between 26 and 32. When looking at their educational background, 4 participants had a bachelor's degree, 1 participant had a master's degree, 1 participant continued a master's degree, and 2 participants continued their doctoral education. Participants' occupations varied, such as engineer, industrial designer, architect, research assistant, user experience designer, and video editor. The participants stated that they spent approximately 10 h a day (9.6 h on average) in the public space.

The participants were expected to make regular entries and use the mobile application as a personal but digital diary. At the beginning of the study, it was recommended that they set a reminder and make at least one entry per day.

All questions, illustrations, and tasks were added to the application at a start rather than sending them daily. It was explained to the participants that this study was not a

one-shot survey or a report, but regular journaling activity including question answering and task performing activities.

The choice of which question they wanted to answer or which task they wanted to complete that day had a positive impact on the research process. The fact that the participants had the opportunity to choose made the use of this application applicable and adaptable within their daily life dynamics. To exemplify, the participants were able to take photos while actively experiencing public spaces. They were able to answer questions or interpret illustrations when they were at home, on weekends, or on the days when they were not menstruating. If there was a question about a practice they have done recently, like purchasing menstrual products, they were able to edit that entry immediately, thus it allowed the researcher to obtain more reliable and up-to-date data from the participants.

The study lasted for eight weeks for each participant and included at least two menstrual cycles. Undertaking the study throughout two menstrual cycles was quite important for the researcher to be able to observe repetitive behaviours, problems, strategies and to understand these patterns in-detail. In addition, the menstrual habits and rituals of the participant could be understood.

Because not all participants started on the same day, the research period started for each participant based on the date they downloaded the application. Thus, the research was conducted for sixteen weeks in total. The researcher took an active and reminder role throughout the process and reminded them to make entries every two weeks.

However, contrary to anticipated, making regular entries was not possible for all participants every day. While some logged in to the application two or three times a week and made a few entries, some used the app more frequently during their menstrual cycle. Instead of taking and uploading photos for a photo task, some participants uploaded the relevant photos they found on the internet or wrote sentences.

On the other hand, the severe epidemic experienced throughout 2020 negatively affected the process of this research, which focused on experiences in the public sphere. While some of the participants were able to experience public spaces in a limited way, some were not able to visit public toilets or experience public spaces due to lockdowns. Contrary to what was anticipated, it was not possible for each participant to experience three different public toilets; therefore, they could not complete their practice tasks.

5 Thematic analysis

To understand the factors that affect the menstrual experiences of educated, urban, and working women in the public space, the data obtained from mobile diaries were thematically analysed.

Thematic analysis is the process of searching and identifying recurring patterns and themes embedded throughout the qualitative data through a particular analytical reflection (Clarke and Braun, 2013). Identifying themes reveals various aspects of the research topic and provides a more comprehensive interpretation (Boyatzis, 1998).

Thematic analysis has particular phases such as familiarising with the entire data, coding, sorting and collating the codes into potential themes, reviewing and refining the themes. This is not a linear but a recursive process, where the researcher moves back and forth throughout the phases. As an outcome of this process, a theme, which represents an analytic interest and strategic choice of the researcher/analyst, is a crucial aspect

concerning the overall research question. Moreover, a theme identifies a ‘patterned response or meaning’, which does not depend on quantifiability but in relation to capturing something important within the dataset (Clarke and Braun, 2013).

Each theme tells a ‘story’ that fits into a broader ‘story’ that the entire data tells and as such, each theme is in relation to the others. Overarching and multifaceted themes may have sub-themes ‘demonstrating the hierarchy of meaning within the data’ (Clarke and Braun, 2013, p.22).

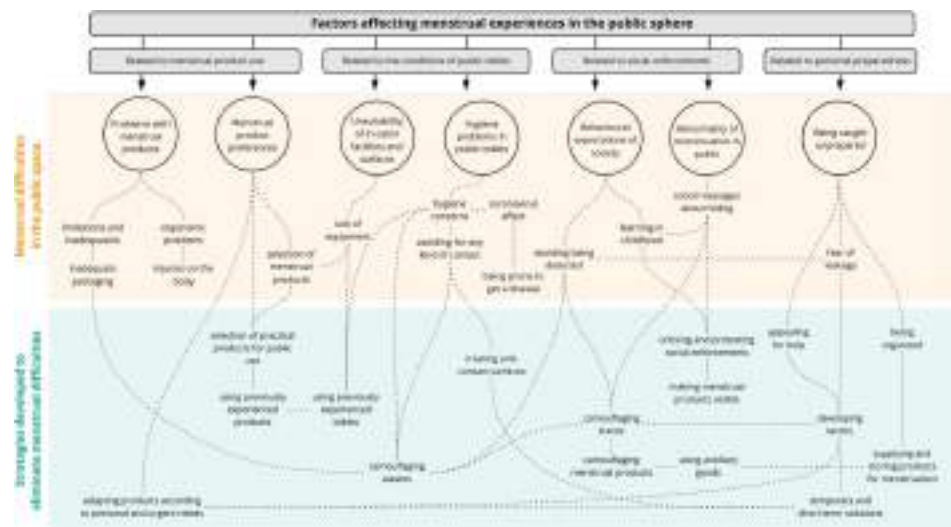
In such an analysis, themes and sub-themes are ‘emerged’ or ‘discovered’ regarding the decision, selection, and organisation of the analyst regarding the research questions. Thus, the theoretical position and the interpretation of the analyst play a significant role in thematic analysis (Clarke and Braun, 2013; Saldaña, 2013).

6 Findings

The data analysis reveals seven themes related to menstrual product use, conditions of public toilets, social enforcements, and personal preparedness. The factors related to menstrual product use are ‘problems with menstrual products’ and ‘menstrual product preferences’. The conditions of public toilets include ‘unsuitability of in-cabin facilities and surfaces’ and ‘hygienic problems in public toilets’. The factors of ‘behavioural expectations of society’ and ‘abnormality of menstruation in public’ are related to social enforcements and ‘being caught unprepared’ is also related to personal preparedness. These themes contain sub-themes that are overlapped and correlated.

The themes and sub-themes that emerged in the data analysis will be discussed at both levels as: menstrual difficulties in the public space and strategies developed to eliminate menstrual difficulties (see Figure 2).

Figure 2 Relations between themes and sub-themes at two levels (see online version for colours)



6.1 Problems with menstrual products

In the public space, people are actively on the move and do a lot of physical activity. Therefore, continuous and long-term use of menstrual products and their infrequent changes in social life may cause some emotional and physical effects. In this context, the participants mention their problems with the usage of menstrual products. Especially, ergonomic problems of menstrual products can cause injuries on the body, such as friction, irritation, allergic reactions, rash, and skin eruption.

“I don’t like the feeling of menstrual pads. I don’t like it because it’s both heavy and sticky...” Zehra²

“In long-term use, it [menstrual pad] causes irritation and itching... and airless genital area....” Melis

In addition, limitations or inadequacy of menstrual products like the sound of the material can affect the product preferences of women for public space use. These can complicate experiences inside of toilet cubicles and increase the time they spend. While the limitations make the product use difficult, the inadequacy of menstrual goods can also cause unsustainable results. To exemplify, in waste disposal practice, inadequate product packaging results in the use of extra material, i.e., toilet paper, to camouflage the waste and make it invisible and inaccessible to next users.

“...rustling... I prefer to use X [a brand] because it rustles less.” Melis

“...The inside of these things [the waste of menstrual pads] is wet, and the packaging held by a small tape may open. It is not pleasant to see bloody menstrual products in public toilets. It is disgusting. Wrapping it [waste] in tons of napkins is also another waste...” Yeliz

6.2 Menstrual product preferences

The menstrual products preferred by the participants directly affect any kind of activity or experience in the public sphere. For instance, preferring a tampon instead of a menstrual pad impinges on how they actively participate in social activities and differentiates the toilet usage practices and the personal needs in public space. Therefore, participants try to choose the most appropriate and practical hygiene products to facilitate their menstrual experiences in public spaces.

“I was using pads without packaging when I was little. You can neither carry it with you nor throw it away easily. I have been using pads with packaging for a very long time. Much more suitable for public space.” Ceyda

“Menstrual pad and tampon... These are the most practical products, I can use different products on different days depending on the fluid... washing the menstrual cup constantly, keeping it in the long-term... are not practical for me. Menstrual pads or tampons are easier for me because they are disposable.” Zehra

The common view of participants about dealing with menstruation in public is that they feel insecure, anxious, and sick. Negative emotions make menstrual experiences difficult both bodily and mentally. However, practices regularly performed in the public spaces, like preferring the same menstrual products based on previous experiences, provide comfort for the participants. For instance, one of the participants, Emel, states that she feels insecure and bad when she has to use a product she has not experienced before

because she cannot be sure of its correct use, durability, and comfort. Therefore, using previously experienced/familiar products makes menstrual experiences in the public space somewhat easier.

“Using tampons scares me... I don’t like to think about how to insert it in public space.” Emel

“I prefer to use a menstrual pad [in the public space] because of easy access and habit.” Gamze

The participants adapt menstrual products and use them according to their personal and urgent needs by making use of their affordances. It is understood that the participants use products unusually, especially in cases they are caught unprepared.

6.3 Unsuitability of in-cabin facilities and surfaces

Some difficulties take place in public toilets due to the inconvenience or inadequacy of these places. The unsuitability of in-cabin facilities and surfaces for menstrual experiences is related to the inadequate conditions of public toilets. The lack of necessary equipment determines whether that place can be used, it can also be effective in product preference. One of the participants, Zehra, states that if the toilet cabin does not have a sink, she prefers to use a menstrual pad instead of a tampon. She says she needs to wash her hands right after removing the tampon, so using menstrual pads in such toilets is more hygienic than changing tampons.

“The biggest challenge I faced [in public restrooms] might be the lack of toilet paper.” Ceyda

“If there is no trash can in the toilet, that’s a big problem. I’ve come across some old-style toilets with no trash cans on intercity roads.” Adile

In public life, using the same well-equipped toilet cabin at workplaces or preferring the toilets of shopping malls or restaurants that are known to be cleaned regularly and have suitable equipment makes menstruating people feel more hygienic and safer. Therefore, previously experienced spaces are preferred by people to facilitate their menstrual experiences in the public space.

“I would rather go to a restaurant or mall that I know is cleaned regularly, rather than go to a very crowded outdoor toilet.” Zehra

6.4 Hygiene problems in public toilets

Participants state that public toilets are places, where menstrual products are used, wastes are disposed of, bloodstains are struggled, and therefore menstruation is managed. People check whether the hygiene conditions are suitable for performing menstrual activities. If not, some temporary solutions are implemented.

“I get annoyed when the toilets are not in proper condition... I also get uncomfortable in very quiet environments... I get annoyed that the trash is full in public toilets.” Ceyda

It is understood that the equipment in public toilets is used as carrying surfaces for menstrual products. While they are wearing or changing their used menstrual products, they put the clean ones on the tissue dispensers or the lidded trash cans. On these

surfaces, they also put the items, such as mobile phones, keys, wallets, etc. that they would bring with them (see Figure 3(a)). Due to hygiene concerns, they firstly lay a napkin on these surfaces to create an anti-contact surface. To avoid any kind of contact, they may also stick their menstrual products onto their bodies, tuck them into their pockets or bags.

“I avoid contact with the objects or surfaces in public toilets as much as possible.” Gamze

“The biggest problem is the lack of places to put the products... Not touching the dirty to any place while trying to throw it into the pad unit... I wish there were disposable things such as toilet seat covers for people to create a private surface for themselves. I use 3–4 layers of toilet paper to create a private surface... or if I am in a public space such as a shopping mall, I use the top of my bag, which hangs on the hanger behind the door, to put the clean pad.” Emel

In addition to this, in shared toilets, users are likely to see and contact each other’s traces, which causes other hygienic concerns regarding the wastes. In order to clear their traces off, participants often try to camouflage their wastes by wrapping the dirty products in layers of toilet paper, making them inaccessible and unidentified.

“If I’m changing a menstrual pad, I wrap the dirty one with the packaging of the new pad. But since they open so quickly, I also wrap them with toilet paper and then throw them in the trash. I wrap the tampon with a lot of toilet paper and throw it in the trash... I get sad when I use too much toilet paper, thinking about the damage I do to nature, but if the packaging of menstrual products was more useful, it wouldn’t be necessary.” Zehra

The spreading of coronavirus rapidly around the world has caused a public health crisis. Hygiene concerns in public spaces have increased and performing menstrual experiences has become more problematic. Using public toilets is a necessity in daily routine, but it has become a dangerous necessity of life with the coronavirus (Li et al., 2020). Since public areas can be contaminated with infectious particles, a surface with shared use is seen as an indirect form of virus transmission (Bae et al., 2020; Cai et al., 2020). Therefore, sanitary safety in public toilet use has become quite important with the outbreak of coronavirus (Li et al., 2020).

A large part of this study coincides with the onset of the coronavirus epidemic. For this reason, some parts of this research, which relies on the experiences in the public sphere, have been interrupted. However, even the limited experiences of the participants in this process show how difficult menstrual experiences can be managed in the presence of coronavirus. In this regard, it has been observed that they feel more prone to contracting the disease during their menstrual periods and have more hygienic concerns about touching surfaces.

“While it is difficult to use public restrooms even in normal times, it turns into torture in this process. Trying not to touch anything while changing pads requires superpowers.” Yeliz

“Changing menstrual products in an environment where I am not sure about hygiene makes me nervous, because due to the nature of the process, I feel as if I am more prone to getting germs and diseases.” Gamze

Figure 3 (a) A participant explains that such surfaces are lifesavers for menstruation and (b) a participant hides her menstrual pads behind her mobile phone and makes it look like she is looking at the phone (see online version for colours)



6.5 Behavioural expectations of society

In the narratives of the participants, it is understood that the behavioural expectations of the society they live in have significant effects on their menstrual experiences not only in the public space but also in the private realm. Particular social acceptances still embody and enforce drastic perceptions and taboos against the menstrual experiences, thus menstruation remains as a topic that cannot be talked about openly in public.

When recording their menstrual experiences, participants often depict observers, who are people detecting a person's menstrual experiences. For instance, purchasing menstrual products, going to the toilet with a bag or wallet, the sounds coming out of the toilet cabin, the packaging and the colour of menstrual products, etc. are clues about menstruation. These clues make it easier to be detected by observers (Power, 1995); therefore, they are delicately hidden according to restrictive behavioural expectations of society. The attitudes of society toward menstruation, which includes both explicit enforcements and implicit ideals about menstruating bodies, directly affect the participation of menstruators in social life also vary according to country, culture, religion, even family (Hennegan et al., 2018).

“... the desire to hide from people around. Society needs to be more understanding and conscious about this issue. Now women are constantly in business life and on the outside. We cannot spend a week like this every month for our lifetime.” Yeliz

In their social lives, participants feel obligated to hide their menstrual experiences and products from others and therefore they try to hide them behind other practices. They state that they feel compelled to camouflage their traces (products, wastes, bloodstains, etc.) that are left in the public space. To deal with such problematic situations, they also mention the tactics they developed. To give an example, a participant, Melis, stated that she hides her menstrual pads behind her mobile phone and makes it look like she is looking at the phone (see Figure 3(b)). While some put these products in their make-up bags and try to look like they are going to the toilet to put on make-up, some of the participants hide the bloodstain on their clothes by tying coat-like clothing around their waists.

“If it leaks on my clothes and I can’t go home, the most practical solution is to tie something to my waist.” Yeliz

“...I hide the menstrual pad in different places depending on the clothes I’m wearing, such as in the sweater pocket, trouser pocket, inside the sleeve if I have something loose....” Melis

6.6 *Abnormality of menstruation in public*

The participants state that some people they encounter in the public space impose these social acceptances on themselves and give messages about hiding the menstrual experiences and products. It can be understood that they have been exposed to these messages since their childhood and they have learned that menstrual experiences are shameful practices and should be hidden. They state that they become more conscious as they get older and learn more about the physiology of menstruation. Therefore, they now criticise the enforcements they are subjected to.

“The feeling of having to hide is uncomfortable... If there is a man at the checkout and if he sees a menstrual product in my hand, he looks away. The same happens if the cashier is male. Some markets put the product in a black bag when I buy menstrual pads, even though I don’t request them. It almost gives the message that you should hide your period. This makes us feel like it’s unnatural.” Adile

“Maybe it’s related to age, I’m close to 30, and over time I realised that this was not shameful or something to hide... As I got older, I realised that this is a normal and talkable process. I used to worry about being seen while carrying it (menstrual pad) during high school and university times. However, talking about my period, carrying a pad, being seen with it in my hand, or expressing my stomach cramps to others are normal for me now.” Emel

The participants emphasise that menstrual experiences and products should be more visible, instead of hiding them from others. Only in this way, menstruation can be normalised. Moreover, some participants state that they are carrying out a protest especially against those who think that menstrual experiences and products should be hidden.

“When I buy pads from the market, there is a feminine energy, I feel like I am more woman... ever since I realised that there is nothing to hide, as a reaction,

a desire arises to make the product more visible... Now I carry the products I buy more visibly.” Ceyda

“I used to pay more attention to hiding it, I don’t care much anymore... if they don’t see it, they won’t get used to it, and now they have to get used to it. Why should we have to hide what everyone knows...” Adile

6.7 *Being caught unprepared*

This study shows that one of the biggest concerns of the participants is being caught unprepared, so leaking, in public space. However, while teenagers’ cycles fluctuate, women beyond puberty often tend to have regular cycles. Over time, menstruators learn how to manage their bodies, their symptoms, and their periods. Knowing the body and being prepared for menstruation is a crucial step in managing menstruation (Fingerson, 2006).

“I’m afraid of getting my period when I don’t have a menstrual pad with me.”
Ceyda

The analysis reveals that women try to be heedful in the public space, that is, to be prepared for menstruation. In particular, women supply and store different menstrual products, in a word, they organise in advance for public space experiences according to their bodies. Supplying practice is associated with different sub-experiences such as stocking (i.e., in the workplaces, in the bags), checking stocks, and updating them regularly.

“I store my menstrual products in my locker at school, but I usually keep one or two items in my bag just in case. I am increasing this number when my period gets closer...” Gamze

“At work, I have a box in my drawer where I keep cosmetics. There are several types of menstrual pads in it. There are overnight, small, and thicker versions.”
Melis

The practice of storing, on the other hand, includes the use of ancillary goods. Participants carry purse-like items to both store and carry menstrual products, and also put additional products in their bags for the needs in the public space. To facilitate menstrual experiences in public life, medicines, underwear, napkins are also kept with them.

“It’s very uncomfortable if I have no extra clothes, no extra underwear with me.” Adile

“I have a small cloth bag. There are overnight and normal pads depending on the menstrual flow. I usually renew these before they’re gone. I go to the toilet with it. It’s more practical than trying to hang a big bag on the toilet. However, no matter how small my bag is, it’s hard to find a hygienic place to put it in the toilet cabin.” Yeliz

In case of being caught unprepared, women may appeal for help. Participants state that they may ask their female friends for menstrual products or request them to check their clothes or chairs for bloodstain. In the absence of close friends, they may ask for help from a strange woman encountered, i.e., in the public toilets, workplaces, or schools. For some, taking peer support is very encouraging and reminds them that they are not alone and different from others.

Once the menstrual pad I used leaked and I got bloodstains on my skirt... it's physically unpleasant to see bloodstains on my clothes... With the help of my girlfriends, we ran to the bathroom and washed the stain on my skirt with soap and water, but when it didn't go away, we turned the skirt back to the front and it looked like a food stain." Adile

To avoid leaking, particular adaptations or short-term solutions are also applied in the public space. People carefully avoid staining clothes and leaving blood stains on chairs. If they accidentally leave such marks, they employ certain tactics to avoid the detection of observers, such as tying coats around their waists or asking another woman (mother, sister, or friend) to check the back of their clothes. They also apply temporary and short-term solutions, such as using toilet paper to manage menstrual bleeding for a short time. Moreover, some menstrual products are adapted considering the current needs.

...it leaked on my skirt in a very strange way, and that's exactly how I tied my sweater to cover it." Deniz

If I was in a very urgent and difficult situation, I used toilet paper to save 10-15 minutes... I did it while traveling or when I couldn't go to the toilet for a long time like camping." Ceyda

If I don't have a menstrual pad at that moment, and there's no one around to buy it... if I'm out and there is no overnight pad, [I use] two small pads together." Emel

7 Possible design implications for further studies

The factors shaping menstrual experiences in the public space often hinge upon negative experiences and acceptances related to menstrual product use, conditions of public toilets, social enforcements, and personal preparedness. Negatively biased perceptions constantly stigmatise menstruation and make menstrual experiences difficult in the public space. However, it can be seen that those menstruating develop different strategies to eliminate these difficulties that can also be potential for the development of new products and services:

- 1 As it is understood, the problems and inadequacies encountered in menstrual product use make menstrual experiences in the public space difficult. Menstrual products are preferred according to their practicality for public life and they are adapted for personal and urgent needs to eliminate the problems related to menstrual product use. At first sight, some improvements can be made on the form, material, and ergonomics of existing menstrual products on the market. However, the practicality and adaptability of menstrual products appear as significant concepts that can nurture new design ideas and products. Affordances of menstrual products are also quite interesting topics to be searched for.
- 2 The conditions of public environments, especially public toilets, make the menstrual experiences more complicated. The unsuitability of in-cabin facilities and hygiene problems of public toilets can be eliminated by temporary solutions to create personal surfaces or by interventions to ensure the accessibility and maintenance of menstrual hygiene resources (see Fox et al., 2018). From a broader scale, new architectural and interior ideas which 'contribute to people's subjective well-being' (Petermans, 2019, p. 64) may be triggered in pursuit to create hygienic surfaces for

menstruation. A wider change through the critical and social design of public environments can also ease the menstrual experiences through raising the awareness of society for menstruation.

- 3 The other factor affecting the menstrual experiences of people in the public space is the social enforcements that participants live in. It seems that participants have been victims of menstrual taboos since childhood, so it is very difficult to overcome the social enforcements associated with menstruation. Some of the participants, as they learned and are used to, still continue to camouflage their products, traces, wastes, but for many others, this effort to camouflage seems unnecessary today. It is even understood that they rebel against these acceptances and the enforcements they are subjected to. Therefore, to make changes at a deeper level, designers and researchers should focus on the normalisation of menstruation. It can be said that making menstrual products more visible in their public lives is a unique way of participants' protesting. The design approach of menstrual products should serve the design for menstruation, instead of nurturing patriarchal censorship. New design approaches should inform society, empower menstruators in public spaces, encourage people to talk about menstruation, help to break social awkwardness (see McKinsey and Company, 2019; Ng et al., 2020). Embracing thought-provoking and innovative approaches not only to ensure new product developments but also to promote product-focused design activism are quite essential to fight social taboos and destigmatise menstruation.
- 4 Besides, as both a design phenomenon and a research method, feminist debates should be more frequently made around menstrual products, public environments, social, cultural, and religious enforcements. Thus, the politicised nature of menstruation, menstrual equality, and the identity of menstruators can be discussed and re-constructed.
- 5 Menstrual experiences in the public space are highly affected by personal preparedness. Being caught unprepared leads to fear of leaking and being detected in the public space. To avoid being detected and leaving traces, those menstruating organise their social lives around menstruation through supplying and storing menstrual products for the following cycles according to their bodily knowledge. The fear of a period stain leads menstruators to develop temporary and short-term solutions, also called 'hacks' (Tuli et al., 2020), which have the potential to trigger new product ideas in further design practices.
- 6 Lastly, menstrual management often requires additional products to carry and keep products hygienic in public, and to ease physical symptoms of menstruation, such as pain and cramps. In a situation of being caught unprepared, those menstruating appeal for help or develop instant solutions and tactics in public life. Herein, the services and systems that promote peer support will be helpful to facilitate menstrual experiences in social settings and to 'make spaces for conversations... in the communities' (Søndergaard et al., 2021). Besides, the adaptability of menstrual products becomes critical here again to provide freedom for menstruators and to allow them to customise products according to their needs. The focus on how menstruation is managed in public will lead to the development of new products for menstruation to be used in public spaces.

8 Conclusion

This study conducted with eight volunteer participants living in Turkey, aims to comprehend the factors that impact the menstrual experiences of educated, urban, and working women in the public sphere.

The mobile diaries method was used to understand these factors. This method was quite beneficial to eliminate the existence of the researcher and allowed participants to document their own activities in their daily lives. Contrary to traditional methods, mobile diaries overcame the unspoken nature of menstruation and enabled the researcher to obtain data about such an intimate experience. Within the scope of this study, mobile technologies had an important and facilitating potential for recording daily activities in public spaces. The interactive interface of the application used for this study allowed the researcher to follow the data collection processes, ask questions about the statements of the participants, answer their questions, and remind them to make entries. In addition, this platform facilitated the transcription and analysis processes by allowing the researcher to export the data in a digitally documented format.

The data analysis revealed different themes and sub-themes that provided comprehensive information about the research objective. Thematising the data obtained in this study shows that the behaviours, psychology, and emotional state of those menstruating regarding menstruation are affected drastically with seven factors. These are 'problems with menstrual products' and 'menstrual product preferences' related to menstrual product use; 'unsuitability of in-cabin facilities and surfaces' and 'hygienic problems in public toilets' related to the conditions of public toilets; 'behavioural expectations of society' and 'abnormality of menstruation in public' related to social enforcements; and 'being caught unprepared' related to personal preparedness.

Themes and sub-themes were discussed and mapped in two dimensions, including menstrual difficulties in the public space and strategies developed to eliminate these difficulties. The factors affecting menstrual experiences in the public sphere relied on negative perceptions and practices that make menstrual experiences difficult. On the other hand, various strategies were developed to overcome these problems. In the light of these findings, critical studies and discussions can be carried out, and creative design ideas for the future can be encouraged.

As possible design implementations, the practicality and adaptability of menstrual products can be ensured, and new interior and architectural ideas for public spaces can be developed, especially considering public toilets and hygiene conditions, to facilitate menstrual experiences and contribute to health and well-being. More critical and provocative design approaches should be adopted to fight social enforcements and normalise menstruation.

There appear several limitations associated with this study that are worth stating. This study relies on data from a very limited participant group, who are educated, urban, and working women living in Turkey. The participants were acquaintances of the researcher, so there was a relationship of trust and friendship between the researcher and the participants dating back to the pre-research process. This trust relationship positively affected the research process and made it possible to conduct the research. If this study had been carried out with unfamiliar participants, the research process and the data to be obtained would have been different.

Future studies should consider selecting participants from diverse ages, socioeconomic and educational backgrounds. Most importantly, the menstrual

experiences of trans and non-binary individuals should be examined. Thus, the different dimensions of social enforcements, the use of menstrual products and public restrooms can be understood or new factors affecting menstrual experiences may emerge.

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Notes

¹Used as a gender-neutral and inclusive term.

²All names have been changed.

Website

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