

An Exploration of a Digital Solution for Menstruation Stigma

Bhanuja Sanghavi

MSc in Human Computer Interaction
The University of Bath
September 2020

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An Exploration of a Digital Solution for Menstruation Stigma

submitted by

Bhanuja Sanghavi

for the degree of MSc in Human Computer Interaction of the

University of Bath

September 2020

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DECLARATION

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Abstract

Although menstruation is a taboo and profoundly clandestine topic and is known to have many implications on nearly half the world's population, there is a significant need for research investigating the beliefs and experiences of menstruation within the South Asian community. This is highly unusual, taking into consideration the taboos faced by South Asian women based on the orthodox traditions and culture, and the adverse consequences of the stigma on their well-being and health. Initially, through semi-structured interviews, the experiences and attitudes of South Asian men and women were discovered. Subsequently, this investigation motivated the next phase which enabled the design solution, an interactive prototype tested on representative users to evaluate its usefulness and usability, for the challenges faced by those who menstruate. This dissertation introduces *Saathi*, a digital system for tackling menstruation stigma – in particular, the shame perpetuated by a distinct lack of conversation. *Saathi* aims to enable a candid discussion of menstruation, and the various social, religious, physical and emotional factors framing it.

Acknowledgements

Foremost, I would like to express my sincerest gratitude to Dr Bhagyashree Patil, my supervisor, for her dedicated support and supervision during this research. I was fortunate to have an advisor who recognised the significance of this topic. Additionally, I would like to thank my family and friends for their encouragement and guidance in numerous ways. Finally, to all of the participants, thank you for lending a hand towards breaking this barrier.

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sāthī : a companion;

Chapter 1

Introduction

1.1 Problem Description

A stigma confronted by nearly half of the world's population at some point in their life is menstruation, and yet for centuries, it has been a shrouded and taboo topic surrounded by mystery. Historically, menstruating women were regarded as akin to witches, bearing the ability to turn wine sour and razors to become blunt (Delaney et al., 1987; Lips, 1988). Women, globally, are afflicted through their menstrual cycle because of religious or cultural norms about a woman's status in society, which successively weighs on female identity and is one of the fundamental issues pertaining to gender inequality. This is perpetuated by cultural taboos, discrimination, lack of education, silence, and period poverty (Canning, 2019).

Menstruation, though imperceptible, has a monumental impact on a female's self-perception and systemic perception of her (Kowalski and Chapple, 2000). A large number of South Asian adolescent girls and women are still weighed down by unsubstantiated cultural taboos and societal norms that surround menstruation. An example is the traditional practice of 'chhaupadi' in western Nepal: women (and young girls) are forced to live in an isolated hut for the duration of their period, due to the belief that menstrual blood is impure. These women are exposed to health and safety risks in extreme temperatures (Stacke, 2017). Although the use of menstruation huts has since been criminalised, the practice persists (Adhikari, 2017).

A hopeful prospect is that societies are becoming increasingly aware and conscious of the need for women empowerment by liberating them from unfounded beliefs about women's health. Once an often-disregarded topic in the field of Human-Computer Interaction (HCI) (Almeida et al., 2016), researchers are now attempting to break down the taboo surrounding women's health (Home-wood, 2018; Tuli et al., 2018). Although there is research on the menstrual attitudes, experiences and beliefs of South Asians compared to those of a 'western' sample (Bramwell et al., 2002; Hoerster et al., 2003), there is no significant research focussing on South Asians residing in the United Kingdom. There is a necessity for an initiative which gives room for research in the area of feminist HCI and to give insight into designing for the stigmatised, particularly on immigrant communities.

1.2 Context

The exploration into menstruation effectively began in the 1970s (Stubbs, 2008), and studies were carried out across the 'Global North' to investigate menarche and menstruation (Beausang and Razor, 2000; Koff and Rierdan, 1995), along with experiences and education around it. Recently, the literature includes an investigation of menstrual activism (or *men-archy*, a portmanteau of menstrual and anarchy), as well as the celebration of menstruation (Bobel, 2010; Docherty, 2010). In 2015, the undercurrents of menstrual activism entered global media to such an extent that it was instated the "Year of the Period" (Gharib, 2015).

Numerous global campaigns, focusing on breaking the taboos and stigma surrounding menstruation scattered through social media (Jones, 2016). In the UK, Laura Coryton initiated the 'Stop Taxing Periods' campaign to abolish the 'tampon tax' on menstrual products, and Kiran Gandhi ran the London Marathon without wearing any menstrual products while on her period (Gandhi, 2015; Mortimer, 2016). Since then, organisations, individual experts, and activists are working on the subject of menstruation with great detail, and it is on the agenda. For instance, the #FreePeriods petition, highlighting the immediate need for governments to address period poverty, was found to be successful in April 2019 (Adams, 2020).

Nevertheless, menstruation is still widely stigmatised, and women experience period shaming at home, school and work (ActionAid, 2018). It is a topic that people are uncomfortable discussing or is only talked about behind closed doors, for the reason that cultures across the world have developed prejudicial notions about menstruation. It may someday no longer be taboo to have a candid discussion about the natural process of menstruation, through an extensive provision of resources, the progression of female empowerment, and an increase in education.

Historically, it is known that menstruation is a function of the female body, and only affects women. Despite that, transgender and non-binary people are also affected by this biological function, and which has an impact on their gender-sex identity (Frank, 2020). The focus of this project is on menstruation and its stigma in the South Asian community, and although ideally, it should have included participants of all genders. There were certain limitations, including time restraints and interviewee access, which is why this research only represents the perspectives of cisgender women and men.

1.3 Research Aims

To tackle this systemic issue, this project is focused on discovering the attitudes, experiences and beliefs of South Asians residing in the UK. Subsequently, this investigation will motivate the next phase, enabling the design solution for the challenges faced by those who menstruate. The course of this project is driven by the anticipation of an immediate and extensive future for women and society. A negative societal view of menstruation affects a women's education, health, relationships and well-being, and it hinders them from realising their highest potential (Johnston-Robledo and Chrisler, 2013).

Within the region of South Asia, the customs and traditions differ culturally, and there is a striking contrast between urban and rural communities. For instance, according to traditional Hindu beliefs, it is improper to touch a menstruating woman (Bhartiya, 2013). Additionally, she is placed under an excessive amount of restrictions, such as being prohibited from entering the kitchen and temples, touch others, sleep during the day, wear flowers, or to have sexual intercourse. Furthermore, there is a severe lack of understanding

and research into the experiences, attitudes, and beliefs of immigrant communities residing in the UK, which provides room for research and to give insight for future design solutions.

1.4 Research Objectives

With the research aim outlined, this research project aims to primarily realise a strategy challenging the pre-existing notions supporting menstruation stigma. In order to do the same, this research details a dichotomous study, the early stages of which is an investigation to discover the underlying factors of menstruation stigma within the South Asian community in the UK. Subsequently, the results inform the next stage - the intervention, a design solution to tackle menstruation stigma. The lack of conversation perpetuates the stigma, and so this solution enables everyone to candidly discuss menstruation, and the various social, religious, physical and emotional factors framing it.

1.4.1 Investigation

The first phase of this research project entails an investigation into the taboo surrounding menstruation in the South Asian community in the UK. The objective of this section is to gain an understanding of the menstrual knowledge, attitudes, experiences, and beliefs of the population and the impact of shame and menstrual stigma. Additionally, another specific objective is to identify a user demographic for the following phase.

Initial Research and User Identification

When drawing attention to a stigmatised community, it is imperative to recognise that one is designing for access. An effective approach to lower emotional barriers to address the users' pains is by employing the framing effect (Tversky and Kahneman, 1985). This approach enables access to the community, along with corresponding populations directly or indirectly affected by the stigma. Approaches that were used to carry out user research to help contemplate the still unresolved process, include:

Online Interviews, is extremely helpful for gathering qualitative data and understanding the perspectives and experience of the participants.

User Personas, are useful for considering the goals and needs of users to help guide design decisions.

1.4.2 Intervention

The second stage of the project is the intervention to address the findings from the investigation phase and to build. It is important to focus on understanding user needs in their context and to engage them in the process of designing a solution.

Content Invention and Structural Design

The fundamental objectives are to design the effective system architecture and to gain deeper insight into the users' mental models.

Card Sorting, to essentially explore and understand the user's perspective on the solution's functionalities.

User Flow, to visually represent all key user tasks in a user-friendly manner.

Wireframing, Prototyping and User Testing

This component is important to explore because the problem of menstruation stigma is different from other human-centric issues as it is deeply ingrained into society and is extremely convoluted. It is important to focus on understanding user needs in their context, engaging them in the process of designing a solution, and rapid prototyping of the accomplished solution.

Low-Fidelity Wireframing & Medium-Fidelity Prototype, will help participants to visualise and interact with a prototype.

1.4.3 Ethical Considerations

This project deals with a vulnerable population and involves the collection and use of sensitive data. Therefore, ethical considerations of their well-being are imperative, along with the administration of a data management plan. There are two ethical issues within conducting research for this project, namely, voluntary participation and informed consent and confidentiality. These are

resolved by the composition of an Information Sheet and Consent Form (Appendix B), whereby the former gives potential participants the necessary details of the study along with information to answer further questions to obtain their consent and the latter is an addendum to the participant information sheet. The consent form is used to ensure that a participant is aware of their role in the study and permits to being audio/video recorded for their session(s).

The 12-Points Ethics Checklist is available in Appendix A.

1.5 Reflexivity

Caelli (2001) states that within research oriented towards experience, the researcher must incorporate a reflexive analysis to define the manner in which the research was observed through their lens. This was of significant importance on account of my absolute interest in the exploration. As a South Asian Hindu woman and an intersectional feminist - who is hugely invested in issues like gender and racial equality, I was enthusiastic about investigating the exhibition of menstruation stigma within British South Asians, and its implications on their experiences and the exploration of specific findings. According to Heidegger's position of Bracketing, the researcher's convictions and stance are not considered to be biases, but instead essential for interpretation (Heidegger et al., 1962). With personal experiences of menstruation stigma, I was better-informed to guide the various requirement eliciting activities during the research.

1.6 Outline

Chapter 1 expresses the problem description and its context, and consequently, the motivation for this project. Additionally, it elucidates the research aims and objectives of the project. Finally, it provides a brief critical reflection and discussion of my position as a researcher for this project.

Chapter 2 provides an overview of all the relevant and closely related work that is of importance to this project.

Chapter 3 details the initial phase of the research: user research and identification.

Chapter 4 visualises the system architecture of the potential design solution. Moreover, it provides a card sorting study, conducted to dive deeper into the user's mental models.

Chapter 5 displays the structural layout of the solution, in the form of a low-fidelity wireframe. In addition to this, it presents the design solution for this project, a medium-fidelity prototype that is, an interactive prototype but with limited functionality.

Chapter 6 summarises the significant findings and limitations learnt through the duration of the project and describes new areas of investigation and the future implementation of the solution.

Chapter 2

Literature and Technology Review

This chapter is a comprehensive literature review on the relevant concepts, related works and contributions that improves the understanding of the field. Additionally, these topics are examined to illustrate the motivation for current research.

2.1 Self-Perception and Stigma

It is part of human nature to be concerned with how other people perceive and assess them (Leary, 2019). The impressions formed by others affect how individuals are accepted and treated; the attempt to influence these perceptions, intentionally or subconsciously, is a process called “impression management” or “self- presentation” (Leary and Kowalski, 1990). Erving Goffman presented this function of self-presentation; he noted that social interactions were highly structured, either formalised or most often informal (Goffman, 1978). Leary (2019) and Schlenker (1980) refer to disconcerting events to as “self-presentational predicaments”, wherein these situations have undesirable consequences on an individual’s social perception. Self-presentational predicaments comprise of events or actions during social interactions; however, these can also include identity marks on a person’s character, physical appearance, or acceptance, also known as *stigma*.

Goffman’s theory describes a social stigma as “an attribute that is deeply dis-

crediting”. He argues that, within societies, there are institutional categories for people, their beliefs and manners. He says, “The routines of social intercourse in established settings allow us to deal with anticipated others without special attention or thought... We lean on these anticipations that we have, transforming them into normative expectations, into righteously presented demands” (Goffman, 1963, p. 2). Goffman’s work identifies three groups within a stigma: the stigmatised, the normals, and the wise. The stigmatised are those who endure the stigma, and they may provide support to others to cope with the stigma. The normals do not carry the stigma, and they may act differently towards the stigmatised. Similar to the normals, the wise are not personally affected by the stigma, but they accept it and sympathise with the stigmatised.

Smith (2012) provides an empirical study of Goffman’s taxonomy of people, with relation to social stigma. Smith’s findings revealed an essential division of the wise into a passive or active role that is dependent on their inclination to rationalise with the normals and to oppose the stigma. It is imperative to recognise that the four actors, identified by Goffman (1963) and Smith (2012), are enclosed by a greater societal context. Societies perpetuate stereotypes as a means to organise the social world through a process of social categorisation; they create and emphasise stigmas and stereotypes because they reduce the amount of mental ‘processing’, allowing one to predict someone’s behaviour, those with unforeseeable actions can be stigmatised.

2.2 Menstruation Stigma and its Impact

Goffman describes three types of stigma: “tribal stigma” or social attributes affiliated with marginalised communities, “blemishes of individual character”, and “abominations of the body” (Goffman, 1963, p. 4). Johnston-Robledo and Chrisler (2013) asserted that menstrual blood is a stigmatising attribute which applies to each of Goffman’s categories. It has been argued that period blood in comparison to other body fluids is more abhorrent (Bramwell, 2001; Goldenberg and Roberts, 2004). The culture of South Asia is completely entwined by language, ethnicity, and religion. The taboos around menstruation persist in sacred scriptures; for instance, the Quran 2:222 reads:

“They ask you about menstruation. Say, ‘It is an impurity, so keep away from women during it and do not approach them until they

are cleansed; when they are cleansed you may approach them as God has ordained [...].”

Within the regional cultures of South Asia, including Islam, Hinduism, Sikhism and Buddhism, there is a discrepancy around their egalitarian ideals (Caron and Dasgupta, 2016). Although the negative connotation to menstruation is nearly pervasive within these cultures, there are some positive associations. Sikhism condemns the practice of ill-treating menstruating women and the taboos surrounding post-partum pollution; instead, it is considered an essential process (Bhartiya, 2013). Such menstrual customs establish female autonomy, offering social control among other virtues (Buckley and Gottlieb, 1988).

Studies have empirically demonstrated that visible signs, or even prompts of menstruation can instigate social distancing and negative perceptions (Lee, 1994). For instance, Roberts et al. (2002) manipulated participants to see a research assistant either dropping a tampon or hairclip. Their findings reported that participants viewed the assistant to be less competent and likeable in the tampon condition and that they had a tendency to be physically distant in relation to the assistant who dropped a “less offensive but nonetheless a highly feminine item” (Roberts et al., 2002, p. 136). Additionally, the results present that the old notions of stigma, taboo, and pollution are still perpetuated.

It is considered that menstruation is more of an invisible, rather than visible stigma, and Oxley (1998) found it to be a process which is “generally managed secretly and kept hidden”. Kissling (2006) presents that menstrual hygiene products (e.g. tampons, pads) are designed to be easy to conceal and carry inconspicuously, to absorb fluid and any ‘odours’, not to be visible, and to be quickly dumped. It is impossible to perceive when one is menstruating unless it is divulged or for dreaded menstrual leaks which expose one’s stigmatised state (MacDonald, 2007).

Predominantly, the stigma and shame of menstruation is spread to every individual through various subcultural mediums. Specifically, adverse attitudes toward social beliefs about menstruation and those menstruating are communicated through products and general media (Erchull, 2013). Advertisements for menstrual products are instrumental to the taboo by emphasising the allu-

sive and covert nature of periods and by focusing on cleansing and deodorising with the underlying theme that periods are dirty (Delaney et al., 1987; Houpert, 1999). Allegoric representations such as flowers, hearts, and blue rather than reddish coloured liquid, are figuratively used to nurture femininity and discretion (Merskin, 1999). Furthermore, the stigma is consequentially perpetuated by the avoidance of discussion. Menstruation is generally an eluded topic, besides some situations (Kissling, 1996). The private conversations conceptualise menstruation to be a shameful experience which must be obscured and not candidly discussed.

The communication taboo is sustained by euphemisms for menstruation, which exist in cultures globally (Ernster, 1975; Golub, 2017). Code Red, Shark Week, Aunt Flo, The Blob and Crimson Wave are all euphemisms for menstruation. The discourse around the bodily function is substituted with discrete terminology that conditions society to believe it as something to be kept under wraps, worthy of causing shame or disgrace; "... And by not naming a thing, we reinforce the idea that the thing should not be named" (Druet, 2017). There are negative consequences for women's health, sexuality, overall well-being, and social rank associated with menstruation stigma (Johnston-Robledo and Chrisler, 2013). According to research, some significant consequences are self-consciousness associated with one worrying about their menstrual status being revealed (Oxley, 1998), sexual intercourse taboo (Davis et al., 2002). Johnston-Robledo and Chrisler (2013) perceive menstruation stigma to reflect and contribute to a menstruating person's lower status in society.

In her quintessential essay "If Men Could Menstruate" (1987), political activist Gloria Steinem argued that if the tables were turned, men would appraise the experience of menstruation, worthy of pride and admiration (Steinem, 2019). She said, "menstruation would become an enviable, boast-worthy, masculine event", "Sanitary supplies would be federally funded and free.", and "if men could menstruate, the power justifications could probably go on forever. If we let them.". Her work highlights menstruation, as the biological, cultural, and political issue that it is, only because women menstruate.

The stigmatised status of menstruation is contributed to by social norms and hierarchies of gender. Further research is required on a menstruating person's

experiences, attitudes, and beliefs, along with an investigation into how their menstrual status might impact their interactions with other people. Through a redefinition of menstruation, and by challenging its stigma, the bodily function might empower women. Design can positively impact girls and women by presenting a radical experience (or future) in which menstruation is not esteemed as shameful.

2.3 Feminist HCI and Third Wave HCI

There are considerable amounts of descriptions to the contentious term feminism. However, a baseline embraced by feminists is an aim to end oppression which takes on several forms, including sexism, racism, ableism, along with other forms which stem from religion, gender identity, culture, sexuality, and nationality. Feminist HCI draws attention to the importance of bearing the commonly overlooked perspectives of marginalised populations in mind (D'Ignazio et al., 2016). In particular, this subfield of HCI incorporates the designing of interactions which reflect on the central commitments: agency, equity, empowerment, fulfilment, identity, and social justice (S. Bardzell, 2010).

Even though there is some investigation of gender intersecting with HCI (Rode, 2011), explicit discourse about feminism is inspiring novel interaction principles, S. Bardzell (2010) includes qualities such as rejection of a universal perspective, embodied interaction which mitigates gender similarity and disparity, and involvement of users through development . In their study, J. Bardzell and S. Bardzell (2011) developed on this design agenda. Moreover, they defined a feminist HCI methodology by encompassing various approaches such as empathy with users, co-design of fundamental research activities and goals, self-disclosure, mixed methods for information gathering, and reflexivity (J. Bardzell and S. Bardzell, 2011).

Harrison et al. (2007) defined three paradigms of Human-Computer Interaction, specifically: Human Factors, Classical Cognitivism and the Third Paradigm. A ‘paradigm’, is a way to explain the distinct waves of research in a field derived from Kuhn’s theory of the structure of scientific revolutions (Kuhn, 2012). In several situations, including Human-Computer Interaction, the latest paradigms do not invalidate old ones, but instead, present alternative methods

of reasoning.

For the context of this project, of the three the Third Wave which is “interaction as phenomenologically situated”, is most relevant as it foregrounds subjectivity. Additionally, it indicates the critical aspects of human life, such as emotion, culture, and experience by centring attention on the interaction design between users and technologies (Bødker, 2006). For instance, Fiesler et al. (2016) presented their work about the fanfiction community, which designed their system — “Archive of Our Own”, incorporating existing values, such as accessibility, inclusivity, and identity into its design.

The focus of this paradigm is on meaningful design based on human experiences. Thus, Third Wave HCI is consistent with characteristics of Feminist HCI, mainly, by avoiding universality and empathy with participants involved through the process for diverse perspectives. Since the design narrative began shifting towards feminist and third wave HCI, there is an increase in focus on the once insignificantly researched facets of women’s health that are closely connected to emotion, experience and embodiment (J. Bardzell and S. Bardzell, 2011), such as intimate care, menstruation, and sexuality (Epstein et al., 2017; M. Wood et al., 2017).

2.4 Designs tackling Menstruation Stigma

2.4.1 Sputniko!’s Menstruation Machine

A fictional design project by designer Hiromi Ozaki (or Sputniko!), the menstruation machine aims to understand the experience of menstruation. She was intrigued by the question ‘why are humans still menstruating in 2010?’ and was motivated to solve it. According to Hiromi, the contraceptive pill was deliberately designed in the 1960s to provide a week free of menstruation, and because doctors felt that humans would find the loss of periods discomforting. She asserts that with the advent of technology, it is possible for women to stop bleeding altogether. It is fascinating to dwell on the notion of femininity, motherhood and the societal expectations of women to ‘fulfil her assigned role of producing a child’. Moreover, how the contraceptive pill is a woman’s responsibility, even if the concept of effective male contraceptive pills is an

ongoing research topic (Simonsen, 2019).



Figure 2.1: Menstruation Machine

Source: (Sputniko!, 2010)

Hiromi's work is stimulated by questions, such as, "So what does Menstruation mean, biologically, culturally and historically, to humans? Who might choose to have it, and how might they have it?" (Sputniko!, 2010). It comprises of a 'Menstruation Machine' which simulated a five-day cycle's menstrual bleeding and pain, on the basis of her own experience. The machine is exhibited in a music video¹, featuring a fictional transgender character – Takashi, who invents and wears the machine "in an attempt to biologically dress up as a female, being unsatisfied by just aesthetically appearing female" (Sputniko!, 2010).

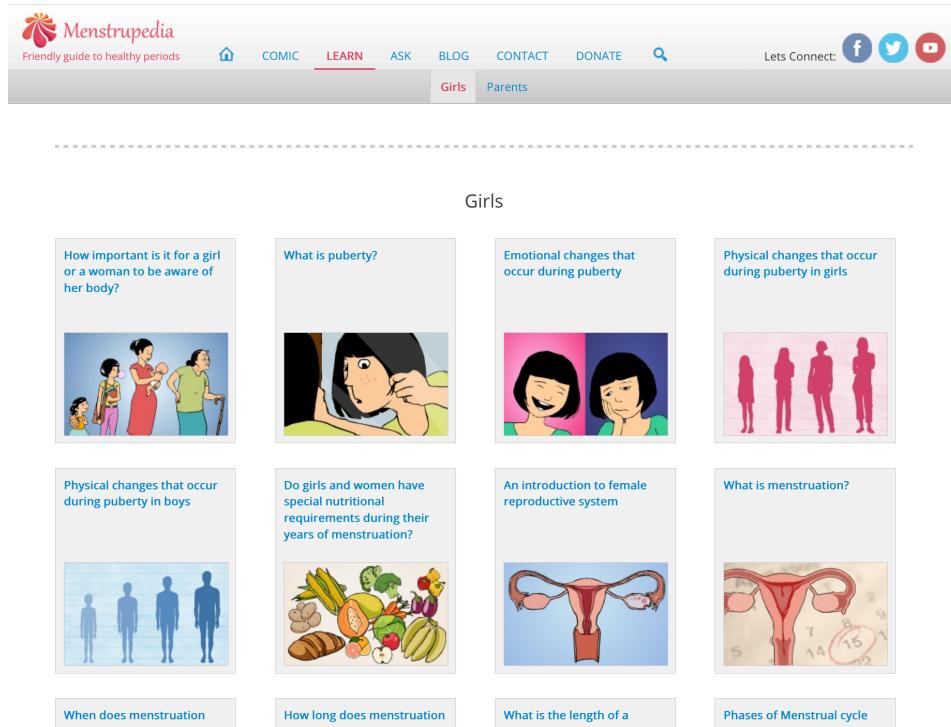


Figure 2.2: Menstrupedia’s Website
Source: (Gupta et al., 2020)

2.4.2 Menstrupedia

A community-oriented organisation provides an informative, yet friendly guide on menstruation and all its surrounding issues through various mediums — a crowdsourced website, comic, and YouTube channel². It aims to spread awareness about menstruation and challenge myths around the matter. Additionally, it was designed to support young and older women (of India) to manage their menstrual health. The initial groundwork began with the work of Aditi Gupta, Tuhin Paul, and Rajat Mittal as a research project when they found a severe need for improved menstrual health education across an Indian audience (Bahukhandi, 2018; Tuli et al., 2018).

Gupta, Paul, and Mittal’s work on Menstrupedia is extraordinary, as it is focussed on a problematic subject, in a fictional society, to challenge the deep-rooted, stubborn attitudes and beliefs around the existing issue in India. The

¹<https://vimeo.com/13317589>

²<https://www.youtube.com/user/menstrupedia>



Figure 2.3: Menstrupedia's Comics

Source: (Gupta et al., 2020)

social enterprise, comprising of both the comic and the online blog, has a rightful place in the movement of menstrual activism. Menstrupedia's users are assisted to participate in an active 'redefinition' of menstruation, as a construct and experience. Moreover, the community of users expose new ideas and narratives by disseminating menstrual health information through crowdsourcing. Its approach is to place the problem — lack of menstrual health awareness, at a discursive level. Gupta, Paul, and Mittal advocate for a reconsideration of current principles, introspection of the individual role perpetuating the opinions, and to confront the existing state of affairs. As highlighted by Tuli et al. (2018), there are particular affordances, along with shortcomings for both, offline (comic) and online (website), mediums of Menstrupedia .

Chapter 3

Initial Research and User Identification

3.1 Semi-Structured Interviews

Interviews are a widely prevalent method of gathering descriptive data. A fully structured interview is nearly bordering on being a questionnaire, that is all questions are decided in advance. On the other hand, an unstructured interview is essentially a casual conversation, albeit one with a slight focus and direction. A semi-structured, or in-depth interview falls somewhere in this dichotomy, that is, there will be some prepared questions or, at the very least themes. However, the line of inquiry is not rigid, and may be adapted to act upon the emergence of unexpected courses of action.

Legard et al. (2003) establishes two notions for in-depth interviews. The first stems from the premise that knowledge is given and it is the researcher who has to extricate it. The second advocates that knowledge is created and established through the discourse between the interviewee and interviewer. Although they do not make use of the terminology, the two theories originate from sociology and are in a positivist and constructivist tradition, respectively (Macionis and Gerber, 2010; McKinley, 2015).

3.1.1 Research Objective

The fundamental objective of this study was to gain a better understanding of the menstrual experiences and the impact of menstrual stigma, of the South Asian menstruating population in the UK. The significant gaps in research and the anticipation of an extensive future for society was a driving motivation towards the overarching research question:

How does the South Asian menstruating population in the UK establish their menstruation knowledge, experiences, and beliefs in relation to menstruation stigma?

3.1.2 Methodology

The following sections provide information about the setting, participants and procedure used in this study.

Setting

The use of a digital interview was unavoidable due to the remote nature of the entire research. So, the interviews were conducted using the video conferencing tool MS Teams, and screen recorded after being provided consent from the participants (Appendix B).

Participants

Five women - all cisgender - were recruited to participate for the initial investigation, and aged between 22 and 28 years of age ($M = 24$, $SD = 2.09$). The participants were recruited through consecutive, and snowball sampling; where the former is when participants that meet the inclusion criteria are selected until the sample size is achieved, and the latter is when participants refer their acquaintances. The participants demographic for these interviews is reported in Table 3.1.

Procedure

Legard et al. (2003) asserts the need for six stages within the process of an interview, including *Arrival*, *Introducing the Research*, *Beginning the Interview*, *During the Interview*, *Ending the Interview*, and *After the Interview*. However, due to the remote context, the first and last stages are irrelevant for this study.

Participant	Age	Ethnicity	Religion	Interview Duration (min)
01	24	British Indian	Hinduism	72
02	23	British Pakistani	Islam	46
03	28	British Bangladeshi	Islam	53
04	22	British Pakistani	Islam	59
05	23	British Indian	Sikhism	38

Table 3.1: Demographic Table of Female Participants

1. **Introducing the Research**, involves ensuring that the participant is aware of the purpose of the research, and has given consent to be recorded and understand their liberty to withdraw.
2. **Beginning the Interview**, the early stages are to inspirit the participant and to gather any background specifics provide context for the rest of the interview.
3. **During the Interview**, the main body is formed by the themes of the research. At this stage, the participant would be comfortable enough to be thinking in a focussed manner.
4. **Ending the Interview**, a signal is given to the participant to ensure that there will not be any unresolved dialogue.

The participants, through the interview, were encouraged to talk about the aspects of menstruation: their first period, how they first learnt about menstruation, and issues they experience with menstruation. Additionally, they were asked about communication about menstruation, if the other gender thinks or assumes something about periods, and their experience with tangible menstrual products. Furthermore, they were asked a set of questions to understand if cultural norms or taboos affected their menstruation habits.

3.1.3 Results

Male Bias and Assumption

In almost every female participant's narrative, the participants were quite adamant about the lack of knowledge in the generalised population, of the other gender. Females don't talk to their male family members about their period or the implications caused by them. When communicating with friends

of the other gender, most females will only openly talk to their close friends about their personal experience. Some of the participants are willing to talk to a wider group about the broader consequences of menstruation. Lastly, most females believe that the other gender tends to assume a lot about their physical, emotional and behavioural symptoms, especially with comments such as “oh, you must be on your period”. Comments like these make the females believe that the generalised population of South Asian males, is extremely ignorant and hostile about a phenomenon that occurs to nearly half the world’s population. The overarching communication taboo surrounding menstruation reinforces a negative stigma.

I think you can't separate out genders. Guys needs to hear about period as much as girls do. It's like general awareness for people. It's important for guys in the future when they get into relationships with girls and have no awareness of it or he has a kid who is a girl and doesn't know how to address it. There are so many problems to it.

Even talking to my brother about it, will be so rare, but it might be me sharing my annoyance – “I don't really need this today because I'm on my period”. Maybe I'll mention it to my male manager too. You know what, they just shut up really quickly and don't want to know. It's not like I'll tell him any details

I don't know, I think sometimes when I'm feeling down and I may want a bit of attention, and if I want attention from my dad I would just go “Papa I feel really ill”. I wouldn't mention it to him because I would be too scared, although I think he gets what I mean. Other than that, it's not that hard for me to speak about it with my dad and I'm usually quite open about it with my friends and the rest of my female family.

Hesitancy over the Lack of Menstrual Experience

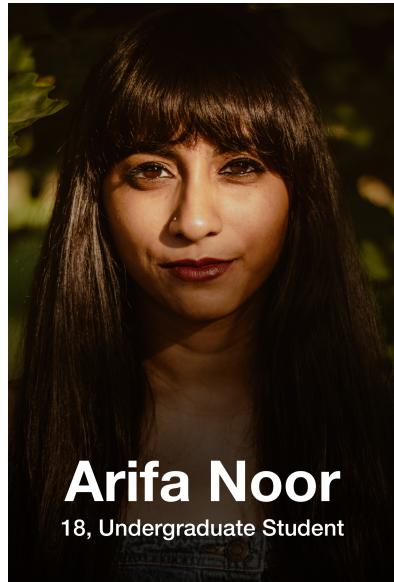
The males that volunteered to participate were already willing to take the first step towards communication about their experiences, attitudes and beliefs about menstruation. Generally, the males were not fully aware of all the implications brought on by menstruation, however, they were willing to learn about it.

I think not really a lot. Back then, I wasn't that immature about women having a completely different system to you. All of the sudden, you hear that

blood flows out of them every month. That did really bother me. When I grew up, I realised that half the world goes through it and I don't really care. I have heard stories about some guys, don't want to think about it because "it's disgusting". I always have been under the mindset that it doesn't bother me and is something that people go through.

3.2 User Personas

User Personas are fictitious, yet plausible, representations of users that are designed on the basis of real (or potential) user data. They are a technique to assist designers and developers to actualise a complex model of users, which could potentially seem abstract or one-dimensional (L. Nielsen, 2013). In the context of menstruation-related applications, there is a strong possibility of a disconnect between the researcher's perception and the users' realities. There is a need for a solution that accounts for all users, especially those with different needs, motivations and goals.



ABOUT

Arifa is a young girl born and raised in York, an English city with a small South Asian community. Her family includes her father, mother, two older brothers. She is a first-generation resident, as her parents are from Pakistan and moved to the UK. With no female siblings or any extended family, and as one of the only Muslim girls in her class, she had always felt out of place.

She felt unprepared for her first period – at eight years old before she could receive formal sex education at school in Year 7. Her mother briefly explained it and instructed her to never talk about it in front of her brothers and father. With social and behavioural restrictions on her menstrual habits, she felt confined. She is going to University of Leeds for higher education and is excited to meet people from all over the world, but especially people that she can culturally relate to.

GOALS

She wants to join the university's societies and be a part of a bigger South Asian community. She would like to be able to make new friends that she can relate to socially and culturally.

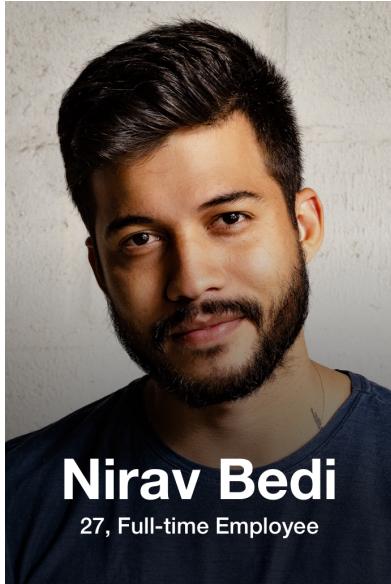
FRUSTRATIONS

She is annoyed when she can't pray or fast with her family during Ramadan, when she is on her period. It makes her sad that she is missing out on praying and breaking fast alongside her family.

Figure 3.1: 01 User Persona

Personas were developed to support user-centred design, and are a tool for resolving a few of the challenges for designing effective and usable technology. In the absence of user participation, and without insight into user's motivations,

designers are compelled to rely on their own experiences and assumptions of the users. Within the context of menstruation applications, there is a strong possibility for a disconnect between a designer's perception and the user's actualities. Cooper (1999) envisioned personas as a useful tool to address an imperfect, yet established judgement in design. Within his first publication, he claims users must not be approached as an individual homogeneous group, but rather as multiple smaller groups with discrete goals for when they interact with a digital system.



Nirav Bedi
27, Full-time Employee

ABOUT
Nirav is a young man from Watford, a city in Greater London. He is a fourth-generation born in the UK, and his family comprises of his parents and his younger sister. He went to an all boy's school and studied Electrical Engineering for his undergraduate. He canonically knows about periods, but only as a biological process. He feels like there wasn't really ever a need for him to know about it.

He will buy his younger sister sanitary napkins or chocolates during her period. He will listen to his sister and his close friends complain but doesn't engage in the discussion. He has noticed when his girlfriend withdraws away because of her period. He has felt hesitant about starting the conversation in fear of it not being his place to talk. A few days ago, his girlfriend revealed to him that she has exceptionally severe period symptoms, and has even fainted a few times because of it. He feels concerned, yet helpless, and has made it his priority to support her and learn about menstruation.

GOALS
He wants to learn more about menstruation and understand the physical, emotional and health implications surrounding it.

FRUSTRATIONS
He is bothered by how he will never truly understand how debilitating menstrual cramps can be. He is also annoyed by the lack of insightful informational spaces made available.

Figure 3.2: 02 User Persona

A goal-directed persona, effectuated by L. Nielsen (2013), contains a detailed description of a member of a smaller group of users and their urgent needs and motivations for a product. Accordingly, two user personas (Figures 3.1 & 3.2) were constructed to encompass the primary goals of the two groups of users – menstruating and non-menstruating individuals. The participants in the semi-structured interviews (Section 3.1) identified themselves as cisgender men and women, and for that reason, the user personas have been depicted as such. With the creation of the personas, the research can move to the next phase of tailoring a solution and its potential features to align with the user goals.

Chapter 4

Content Invention and Structural Design

4.1 Information Architecture

Information Architecture (IA) is an interdisciplinary field which is deep-rooted in architecture, industrial design, library science, and the social sciences to design the conceptual structure of information spaces. With the advent of technology, fields relating to information science are now immersed in the practice as well. With its roots in a multitude of topics, IA can be defined in many distinct ways (Rosenfeld and Morville, 2002). One interpretation, relevant to this project, establishes the discipline based on user experience.

This idea pertains to IA being the science of organising and structuring digital content to optimise usability and findability (IA Institute, 2013). It aims to structure content, enabling users to comprehend the functionality of a product efficiently and to find the required information effortlessly. As the intersection of users, context and content, IA can be illustrated using a Venn Diagram (Figure 4.1) and is observable as an “information ecology” (Rosenfeld and Morville, 2002).

The fundamental objective of the solution’s information architecture, in line with Morville (2012), is to allow users to be aware of “where they are, what they have found, what is around, and what to expect” (usability.gov, 2013a). A practical method to ascertain the structure of an IA is Card Sorting (Sec-

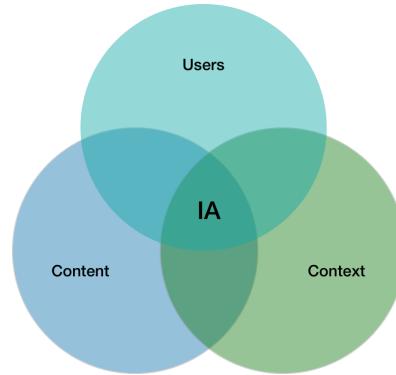


Figure 4.1: Information Architecture as the intersection of Users, Content and Context

adapted from: Source: (usability.gov, 2013a)

tion 4.2). Consequently, the information architecture will inform the content strategy, user interface design and interaction design by contributing to the wireframing and prototyping methods (Chapter 5).

4.2 Card Sorting

4.2.1 Overview

Card Sorting is a participatory, user research activity to gain an understanding of how users model content and information and deliver an information architecture which best responds to their expectations (Spencer, 2009). This method is used to elicit underlying mental models which help to design and validate an information architecture (Rosenfeld and Morville, 2002).

This elicitation technique is carried out by participants arranging a stack of cards into distinct categories based on their perception. Conventionally, a card sort is conducted in physical conditions, using tangible index cards with crucial concepts printed on them. However, it may be conducted on a laboratory computer, or online using several web-based tools. Within the fields of information science, card sorting is a “quick, inexpensive, and reliable method” (Spencer and Warfel, 2004, p. 1) to optimise the usability of a digital system.

Throughout academic disciplines of research and professional industries, the different kinds of card sorting methods are intended to produce data sets for

qualitative or quantitative analysis. There are a lot of card sorting methods that are used by information designers; however, there are two kinds used during separate stages in creating an information architecture: pre-design and post-design methods (Paul, 2008). As the name implies, pre-design methods are used preliminarily in the design process to support the creation of an information architecture. On the other hand, post-design methods are used in retrospect to validate or edit an assimilated information architecture.

Furthermore, there are two established methods for conducting card sorts (Spencer and Warfel, 2004).

Open Card Sorting: Participants are provided cards and have to create and designate their own labels and categories that they feel appropriate. After which, they are requested to describe each group.

Closed Card Sorting: Participants are provided cards and have to designate them into pre-defined card labels and categories.

The open card sort, a pre-design method, presents the participants with almost no restrictions; they are able to add or remove cards and rename cards with better labels, and if necessary, they may also place the same card in many categories. This high degree of autonomy confirms it to be one of the strongest for eliciting the underlying mental models of the participants. Contradictorily, the closed card sort, usually a post-design method, encases participants within restrictions; they must use the cards and categories provided. With the card labels and categories pre-established, researchers are easily able to ascertain patterns of similarities across card sorting data.

Open Card Labels		Closed Card Labels	
Open Categories	Closed Categories	Open Categories	Closed Categories

Table 4.1: Variations for Card Sorting Methods

Source: *adapted from* (Conrad and Tucker, 2019)

Conrad and Tucker (2019, p. 400) define a hybrid method, comprising of “both pre-defined and participant-defined card labels, sorted against either

fixed */closed/* or open categories”. Table 4.1 shows the flexibility with which card sort activities can be designed.

Although card sorting was predominantly developed for face-to-face studies using tangible cards, online tools assist in conducting card sort activities remotely. There is an apparent lack of studies on the differences between physical and digital card sorting; however, there is an on-going discussion on the positive and negative attributes of each system (Ford, 2013).

A physical card sort enables synchronous conversation, and opportunities for participants to “think-aloud” and for the study moderator to ask follow-up questions. However, a remote card sort might induce different results, as participants will be completing the card sort in private. Regardless of the format, card sorting is able to express participants’ experiences and enable them to interact with cards presented tangibly or digitally. Given the circumstances surrounding COVID-19, this research concentrated on the digital, remote variation.

J. Nielsen (2004) outlines, “the value from card sorting comes from listening to the users’ comments as they sort the cards: knowing why people place certain cards together gives deeper insight into their mental models”. Accordingly, the card sort was remotely moderated using a video conferencing tool, hence simulating a ‘real-time’ physical card sort.

4.2.2 Rationale

This research has been conducted to fundamentally explore and understand the users’ outlook towards specific functionality of the imminent solution. Through a moderated, yet remote card sort, participants are most likely to verbalise their thoughts and request information that might be lacking. In addition to this, it provided a contingency to really understand the participants’ thought processes in response to the cards and their organisation approach.

By nature, card sorting is highly generative and exploratory; it supplies a better understanding of an existing problem but requires further investigation to lead to a definitive solution. It was essential to provide the participants with a

space to voice their opinions, and by combining open card sorting with a concluding structured discussion would lead to additional insight into the content on the cards.

Ultimately, the focus of this card sort was somewhat unconventional. In addition to generating the overall structure for the system, this activity was conducted to fully comprehend the users' judgements of certain key functions for the application, tasks and navigational items.

4.2.3 Methodology

Among the first decisions to make when conducting this study, was to select between an open or closed card sort. As previously mentioned in Section 4.2.1, open card sort is a pre-design method and closed card sort is a post-design method. Baxter et al. (2015, p. 305) assert that closed card sorts are “more appropriate when trying to improve the information architecture of an existing product”, and so the primary method for performing this card sort was selected to be open card sort.

The following sections provide information about the card content, participants and procedure used in this study.

Card Content

When designing a system, rather than a content-based website, Spencer (2009, p. 63) suggests that the content may include: menu items, essential functions, steps in a process and critical tasks. When selecting the actual sorting content, the card's capability to be grouped and its granularity were taken into account. Firstly, the cards must be consistent and similar to suggest grouping, without coherent groups, it would not be able to provide accurate insight. Second, the cards must be of the same level of granularity; this would avoid any undue influence towards the sort. As a result, a set of 30 cards (Appendix D.2) were produced, mainly accounting for provoking thoughts from the participants.

Setting

The use of a software card sort was inevitable, due to the remote nature of this entire research. However, a method to integrate the rich insight usually pro-

vided by a face-to-face activity, and the software-based sorting is using a video conferencing tool and its screen-sharing feature. Through this approach, one is able to watch the participant while they sort cards and talk to them about their thought process. The card sorting exercise was conducted by means of Microsoft Teams (Figure 4.2). Additionally, the software-based tool OptimalSort (Figure 4.3) was chosen because of its popularity, and its analysis feature.

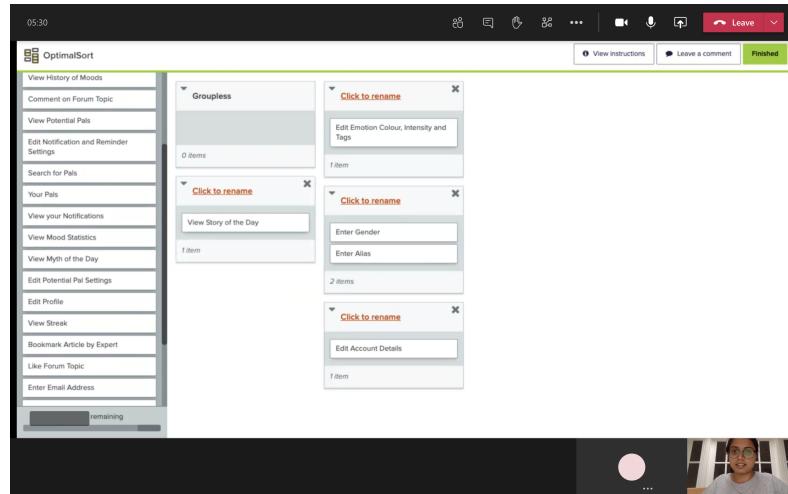


Figure 4.2: Microsoft Team's Screen Sharing Interface

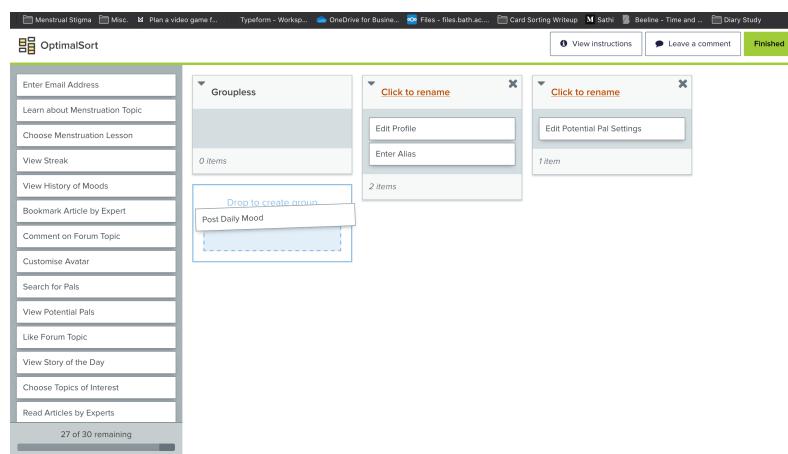


Figure 4.3: OptimalSort's Sorting Interface

Participants

Six participants were recruited, however, one withdrew for personal reasons, resulting in five participants aged between 22 and 26 years of age ($M = 23.6$, $SD = 1.35$) partaking in the study. Similar to the semi-structured interviews (Section 3.1), participants for the card sorting were recruited through consecutive and snowball sampling techniques. An information sheet (Appendix B), containing details about the study and participation, was given to potential participants; comprising the researcher's acquaintances who met the inclusion criteria, and consequently to their acquaintances.

Conclusively, two cisgender men and three cisgender women were recruited to participate in the study. With regard to their ethnicities, three participants are British Indian, one is British Sri Lankan, and one is British Pakistani. All the participants were active internet users and familiar with video conferencing tools but had to be instructed about the digital card sorting tool - OptimalSort (Optimal Product Ltd., 2007).

Procedure

The card sorting activity was conducted as a one-on-one session with each participant. Prior to the sessions, the cards were manually inputted into OptimalSort, as shown in Figure 4.4. After which, the actual sorting proceeded in the subsequent steps:

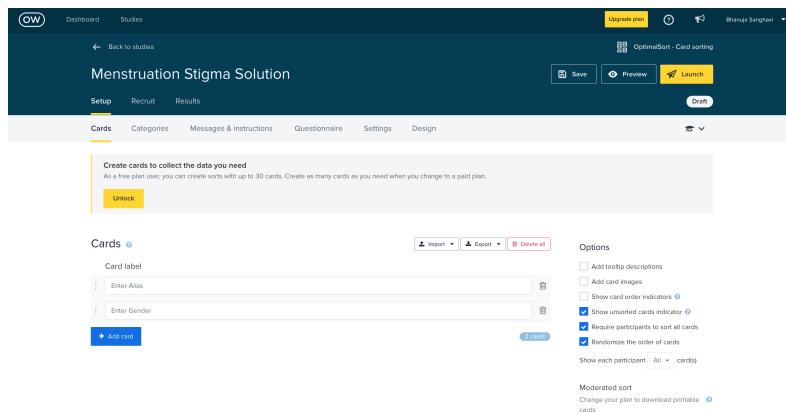


Figure 4.4: OptimalSort's Cards Interface

1. At the start of the session, the participant was given a brief description and verbal instructions of the sorting.
2. The participant was asked to share their screen and open the link to the OptimalSort study. Before starting the sort, the participant had some time to read through the cards to familiarise themselves with its contents.
3. The participant was instructed to sort the cards into groups, according to their criteria and perception. If necessary, they were provided with a ‘Groupless’ category for any cards they saw fit for the same. The cards were placed onto the spatial interface, and the participant was allowed to form as many groups as they would like.
4. After the initial sorting, the participant was provided with an opportunity to modify their groups as they felt necessary. If they had any groups with more than ten cards, they were asked to create subgroups. An example of a participant’s group is shown in Figure 4.5.
5. At the end of the session, a few questions (Appendix D.1) were asked to debrief the participant and to obtain further information about their views on their classification and the card sorting method. The video call was recorded, with the participant’s consent, and then transcribed (Appendix D.3).

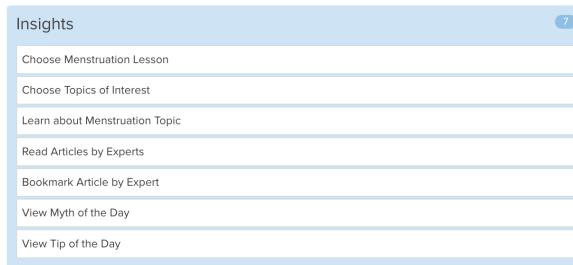


Figure 4.5: Example of a Participant’s Category

4.2.4 Findings and Analysis

Exploratory and statistical analysis for card sorting, similar to qualitative and quantitative methods, are approaches that aim to display the key patterns and to derive useful insights (Spencer, 2009).

Exploratory Analysis enables researchers to dig deep into the data and to find ideas, patterns and insights.

Statistical Analysis focuses on consistent patterns, and by using statistical algorithms highlights similarities in the data.

Subject to a study's objectives - designing a new system or redesigning an existing one - a combination of both approaches is usually employed. There are various techniques to analyse the data collected through a card sort, like a simple summary, cluster analysis, multidimensional scaling, and path analysis (Baxter et al., 2015).

Simple Summary

If a study is conducted in a situation with a small number of participants and cards, it may be feasible to simply summarise or “eyeball” the groupings. After a while, as the number of participants increase, this approach may not be precise and can very quickly become unsustainable.



Figure 4.6: Card Sort Data - by Cards

As a type of informal analysis, summarising the data helped to provide insight into areas (or gaps) that require more attention. Figure 4.6 illustrates

the participants' categories associated with each card. As ascertained by the initial "eyeballing" of the groups, three participants created seven categories, and two participants created six categories—moreover, Figure 4.7 displays the distribution of the cards for each participant's grouping.

There were a few similarities in the participants' cataloguing. For instance, three participants deliberated over the possibility of creating a separate category for 'Forum', and two participants asserted its need to be separate. One justification for the 'Forum' to have its category was, "*something that is quite specific and quite deliberate that you are entering into*".

Conversely, the participants, held different opinions about the placement of the cards: *View Myth of the Day* and *View Tip of the Day*; for instance, a participant sorted the former in an 'Education' category and the latter in a 'Social' category. In contrast to this sorting, another participant placed these same cards inversely, that is, *View Myth of the Day* in an 'Information' category and *View Tip of the Day* in the 'News Feed' category.

A consideration of the card *View Story of the Day* also ensued, a participant thought it "could be like Instagram Stories", where users temporarily share content to their social audience. Another participant gave thought to the context, "if we're talking about a social platform then I would link towards it being a Snapchat/Instagram story. Another thing that it could be is someone talking about their [menstrual] experiences".

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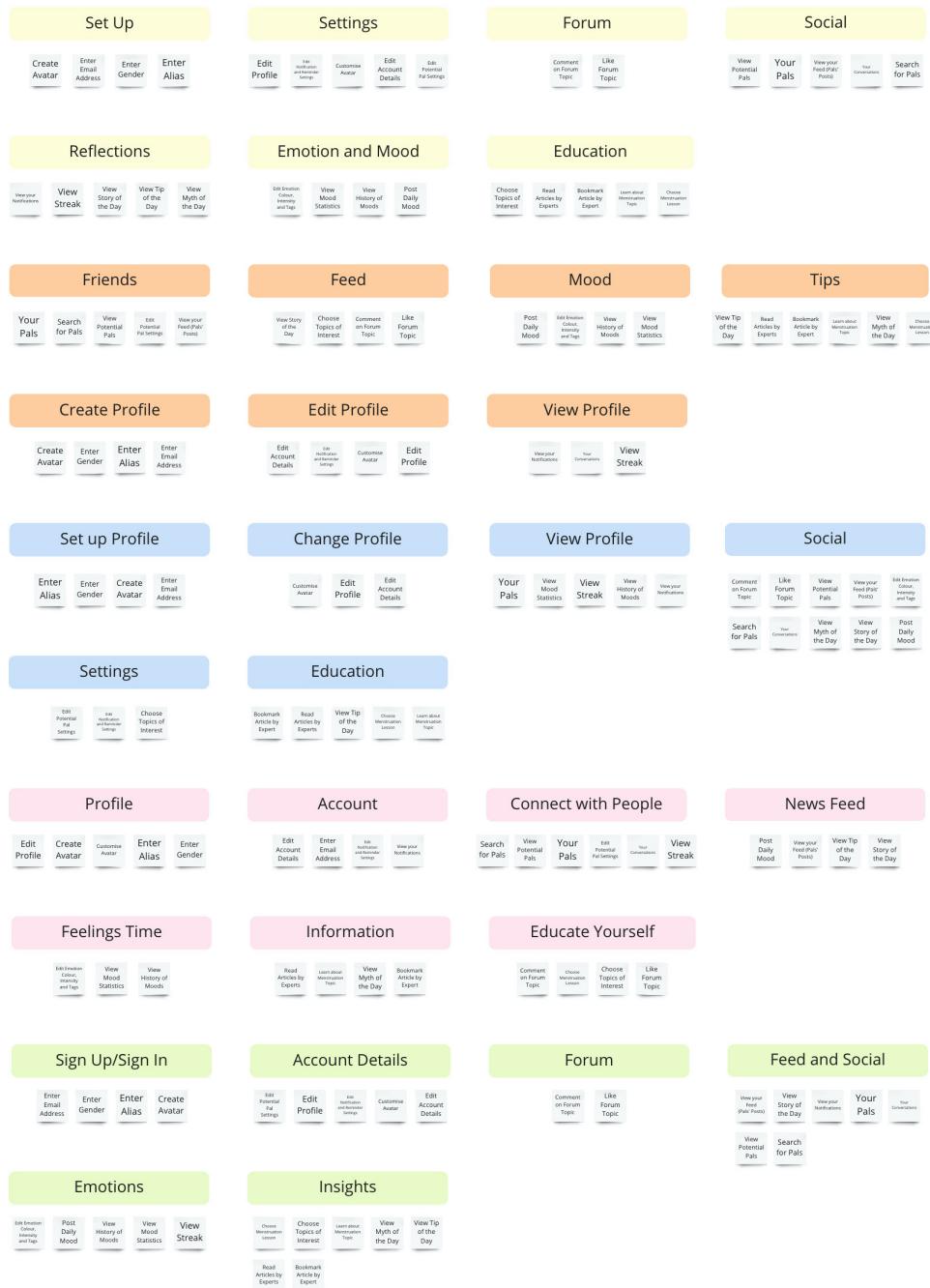


Figure 4.7: Card Sort Data - by Participant's Categories

Similarity Matrix

A similarity matrix (or distance matrix) helps to build an initial, high-level illustration of the results. The diagram allows for easier detection of data clusters or groups of cards that are more often paired together. The data is quantified and organised in Figure 4.8, and the items most commonly grouped are apparent (items with a higher number).

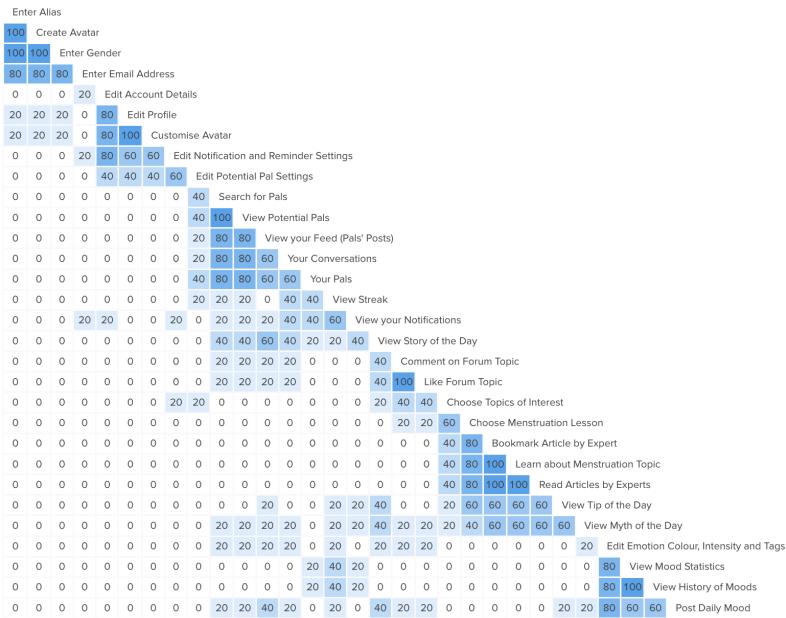


Figure 4.8: Similarity Matrix (*all five participants*) using OptimalSort

For instance, based on the presented data, it is expected that *Edit Profile* and *Customise Avatar* are close together conceptually, while *Read Articles by Experts* and *Post Daily Mood* to be far apart conceptually. This data can be further analysed using cluster analysis.

Cluster Analysis

Cluster analysis permits the quantification of the data, similar to the Similarity Matrix (Figure 4.8). However, it also calculates the strength of the perceived similarities between pairs of cards that tend to be grouped. Specifically, it serves to resolve the frequency of cards being grouped, and as a result, are assumed to be either similar or dissimilar. The results are presented in a dendrogram, as shown in Figure 4.9.

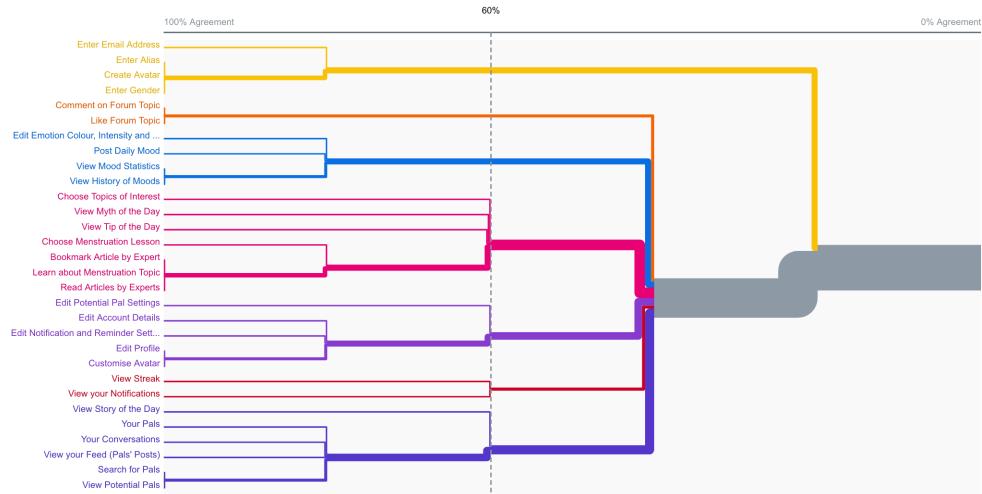


Figure 4.9: Dendrogram (*all five participants*) using OptimalSort

The manner of reading the dendrogram is moderately straightforward. All the cards are listed vertically, and their order indicates the relationship between all items. That is, cards placed vertically adjacent to each other are more similar than items placed further. Moreover, the horizontal lines extending from each item that join other items vertically demonstrate the cards grouped at higher levels of similarity. For instance, *Edit Potential Pal Settings* joins *Edit Account Details*, *Edit Notification and Reminder Settings*, *Edit Profile* and *Customise Avatar* after they have already been associated.

In comparison to the Actual Agreement Method dendrogram, which presents only factual associations between cards, the Best Merge Method (BMM) displays the percentage of participants that agree to some aspects of the grouping. The above screen capture (Figure 4.9) is that of the BMM dendrogram for this card sort, and it shows that 60% of participants agree that the lowermost cards belong to a ‘Social’ category.

4.2.5 Discussion

This study holds two significant limitations. First, the content on the cards was leading; that is, there was an overuse of particular words. It is evident in certain situations that the participants were often categorising on pattern matching of the words. This gives participants an easy, yet potentially misleading, way to

group content. Second, the study was conducted with only five participants. There is an ongoing debate about the number of participants to include in a card sorting study, especially for open card sorting. Tullis and L. Wood (2004) have noted that a minimum of twenty participants is required in order to gather meaningful data. However, some literature suggests the minimum to be about ten to fifteen participants (J. Nielsen, 2004), and some even suggest as few as four to six (Robertson, 2002). Although more participants provide consistent results, a higher number of participants also increases the costs.

4.3 User Flow

A User Flow is designed to attain the primary goal of optimising users' ability to accomplish their task, ensuring a seamless experience. At this stage, the concern was on the user's interactions with the application and their navigation between its various content sections, rather than on the design of the individual screens.

There were two consequential reasons for scheming out the solution into a user flow. Firstly, the map makes certain that all requisite user tasks are capable of being achieved, with it all features are represented. Secondly, the flow is employed in an effort to cover every possible outcome and to mitigate unforeseen circumstances. With the findings and analysis from the Card Sort (Section 4.2.4), a user flow was created. The flow diagram, as shown in Figure 4.10, details the critical paths to be taken to achieve the identified user end goals.

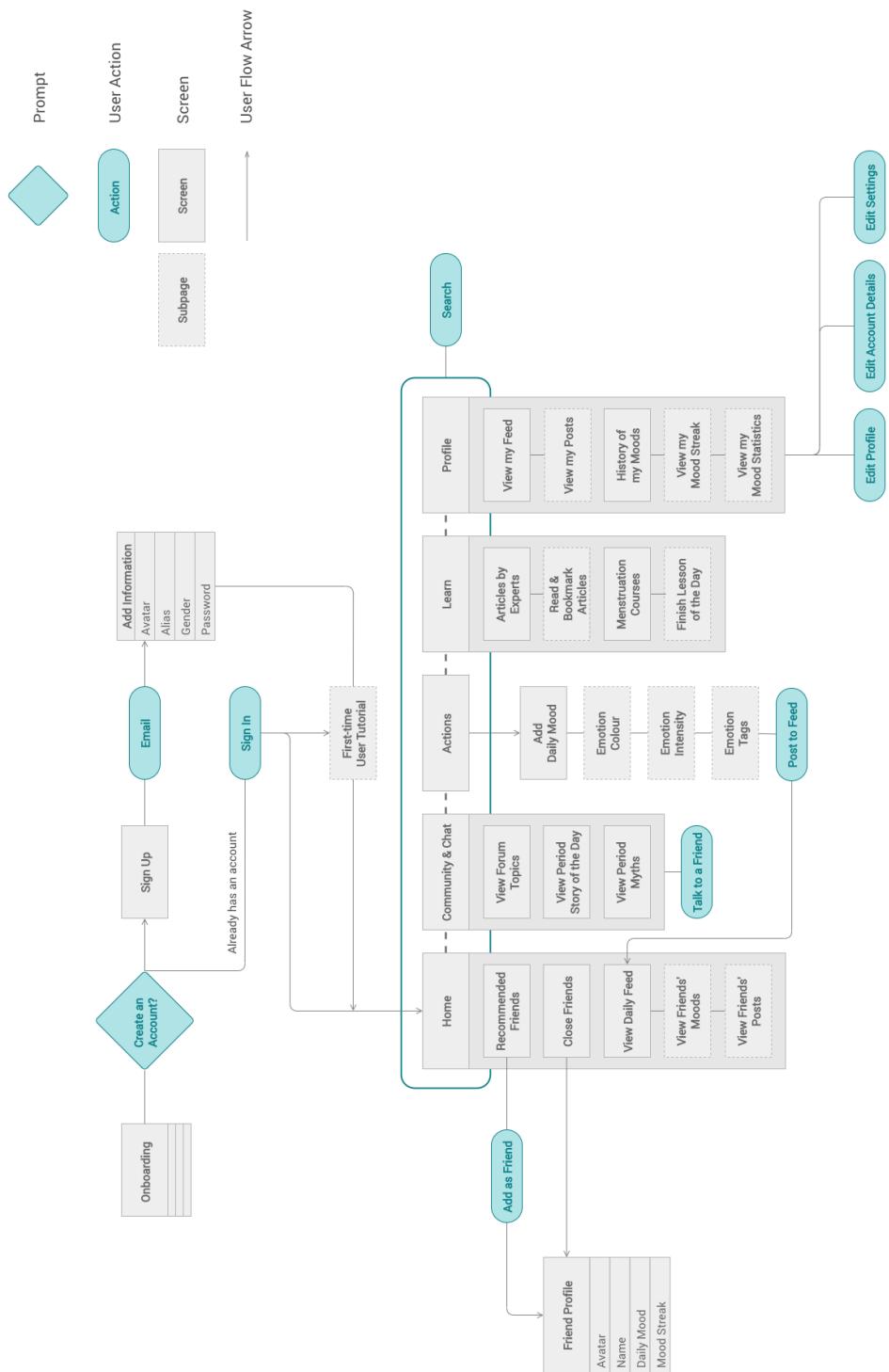


Figure 4.10: User Flow Diagram

Chapter 5

Wireframing and Med-Fi Prototyping

This chapter displays the structural layout of the solution, in the form of a low-fidelity wireframe. In addition to this, it presents the design solution for this project, a medium-fidelity prototype that is, an interactive prototype but with limited functionality.

5.1 Low-Fidelity Wireframing

5.1.1 Overview

Wireframes are a two-dimensional visualisation of an interface, and representing its structural framework. The predominant intent of wireframing is to bridge the aforementioned information architecture (Chapter 4) to an imminent high-level visual design, by displaying the structural flow between each screen. A wireframe flow diagram is shown in Figure 5.1. The wireframing process, in itself, is mainly focussed on prioritisation and organisation of content, the functionalities and the intended behaviour of the system (usability.gov, 2013b). On account of these reasons, the wireframes typically lack typographic style, colour and visual graphics (Brown, 2010).

Consequently, Garrett (2010) affirms that the wireframe for a system can be categorised into three components: interface design, navigation design, and information design.



Figure 5.1: Wireframe Flow Diagram

Interface Design comprises the selection and placement of interface elements, which in turn effectively enables users to interact with the system's functionalities.

Navigation Design presents the characterisation of core navigational methods and allows users to instinctively understand the relationship between links, buttons or tabs to move within a system.

Information Design includes the prioritisation of information in a manner that facilitates the user's understanding.

Through the collation of the three elements, the wireframe details a schematic which develops on the structural information architecture and emphasises advancing towards the surface design and interactive prototype (Garrett, 2010).

5.1.2 Key Screens

The low-level design of the wireframes was developed by taking into account the findings from the Card Sorting exercise (Section 4.2) and general usability. The following features were crucial for the design of the final solution, and each screen has a specific purpose which contribute to the next phase of the design process.

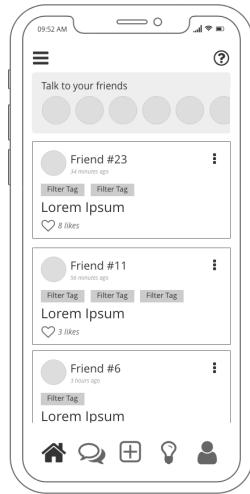


Figure 5.2: Home Screen



Figure 5.3: Forum Screen

Home

Once the user signs into the application, they will be presented with the first screen - Home (Figure 5.2). The home page displays a feed of the user's friends' posts. These posts would detail the mood that their friend is feeling at the point of posting it. The interface plan uses a global navigation system that is visible on all fundamental screens, and the user is provided with a key set of access points which they need to navigate to all sections of the interface.

Forum

With the intent to communicate with a broader group of users, beyond their social circle, the user will have to use the Forum (Figure 5.3). The forum allows the user to have a detailed and media-rich discussion with other users. The importance of a forum is how it helps people to develop their knowledge, build connections with other members, and for the context of menstruation – reach out to users who have comparable experiences. The interface enables users to filter posts by specific tags and even search for specific keywords with a search field.

Private Chat

On occasion, the user might want to interact with a close friend, especially if the friend is in a particular mood. They can use the One-on-One Chat (Figure

5.4) to begin a conversation with their friend, and here they will be given a selection of predictive quick-replies to prompt a discussion in a simple, yet guided manner.



Figure 5.4: Private Chat Screen Figure 5.5: Add Mood Screen

Add Mood

The critical feature which characterises this solution is the ability for users to Add Mood (Figure 5.5). A typical menstruation-related applications focus on the tracking of menstrual cycles, and additional functionality includes tracking emotional and physical symptoms, for instance the application Clue (Druet, 2017). The input of emotional symptoms plays a significant part in this situation; users of different genders can inform their social circle by adding their daily moods. Using the psychological properties of colours (Mikellides, 2012), users will learn to associate moods with colours. The user can drag the slider according to their overarching mood, and then by selecting specific mood tags, they can prompt their social circle to converse with them. After a period of time, users might be able to understand their friends' moods and vice versa, according to their posted colour, effortlessly.

Featured Insights

This screen offers users daily Featured Insights (Figure 5.6), and content might be in the form of articles, videos, or even interactive opinion polls; and they

will be allowed to save content for later reading or watching. With features related to communicative modes of learning about menstruation, the Insights compel the users to acquire new information through self-directed learning.

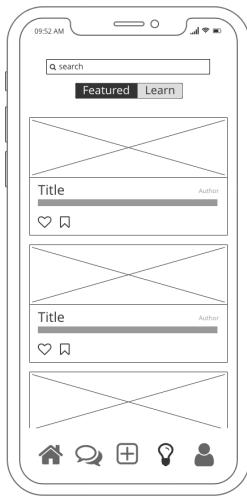


Figure 5.6: Featured Insights Screen

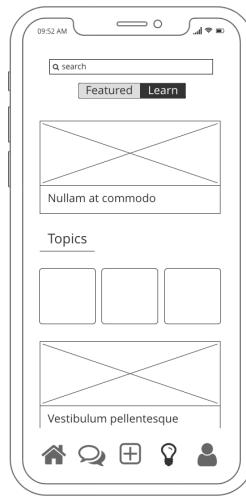


Figure 5.7: Learn Screen

Learn

The fundamental contributors towards menstruation stigma, within urban societies, is the lack of general awareness and communication, both closely associated. With the Learn feature (Figure 5.7), users can enhance their learning in solitude. Similar to Featured Insights, Learn will comprise of diverse media content, such as interactive learning exercises. The user can access these by selecting on a specific menstruation topic, after which they will be prompted to Select a Lesson, or subtopics, to accomplish.

Profile

To be able to reflect on their learning, users can view their past posts, saved educational content, mood statistics, and achievements on their Profile (Figures 5.8 & 5.9). When viewing their posts, they will be informed of a specified number of users that are feeling the same way as them. This feature will not be visible to anyone bar the user, enabling them with an opportunity to reach out to someone without hesitation.



Figure 5.8: Entries Screen

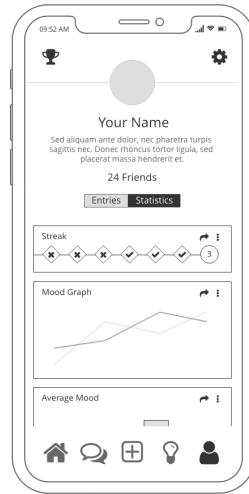


Figure 5.9: Statistics Screen

5.1.3 Summary

To summarise, the various factors, such as cost, effort and rapidity of creation involved during the design of low-fidelity wireframes contributed to particular design insights. It was used mainly to develop a deep understanding of the system and its functionalities, but also to augment the former ideas, interactions, design and content.

5.2 Medium-Fidelity Prototyping

5.2.1 Overview

Prototypes are tangible artefacts designed to enable intuitive communication between users and designers. In addition to this, they are a simple and experimental representation of a solution and may be used to test design assumption, to explore options and to gain insight. Only two kinds of prototyping fidelity are typically recognised in literature: low-fidelity and high-fidelity (Rudd et al., 1996; Virzi et al., 1996). However, Coyette et al. (2007) details Medium-Fidelity Prototyping, an intermediate category and includes it into the classification. A med-fi prototype has characteristics distinct from the two limits and is a prototype with limited functionality but with interactive features. The interactivity presents participants with navigational possibilities through the interfaces.

5.2.2 Key Screens

The key screens added, instead of just modifying to be visually attractive are: Onboarding (Figures ??, 5.10),) Avatar Creation (Figure ??)

interactive prototyping is a critical phase in the design of a digital system, it enables the validation of the pre-conceived notions and concepts. Although a User Test had been constructed, and a few test sessions had taken place, due to time constraints they have been excluded from this project. However, the User Test Script and a Transcript are available in Appendix E.

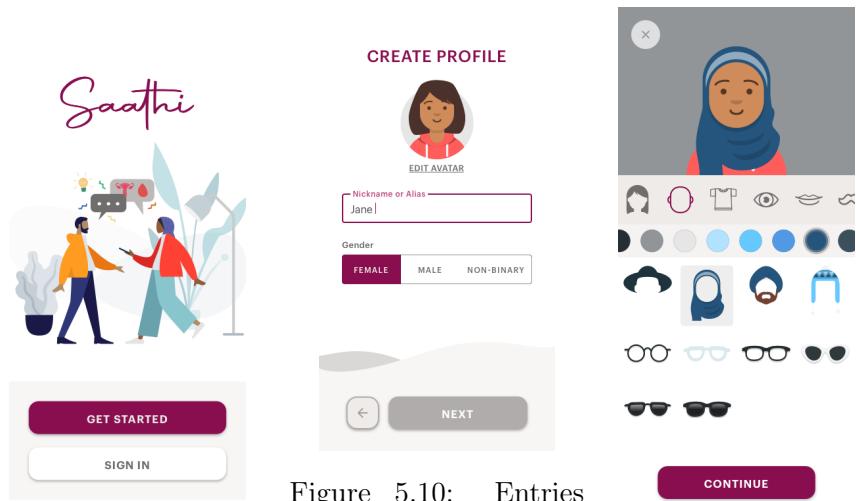
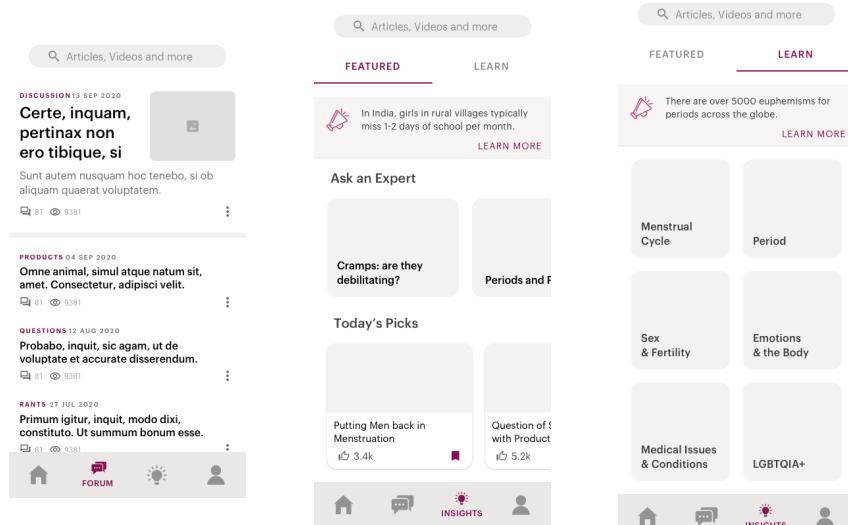
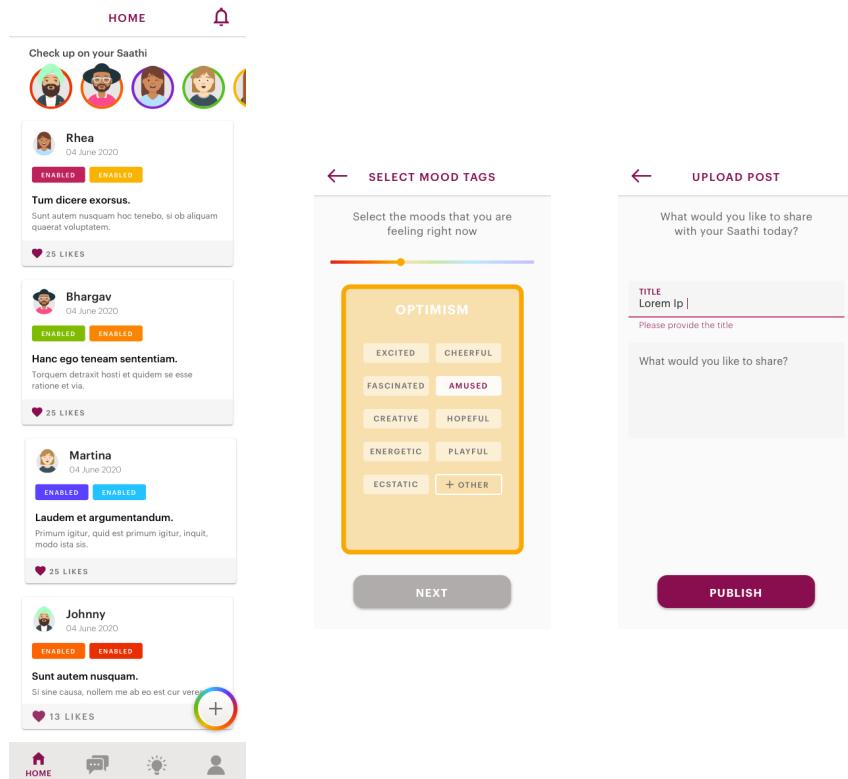
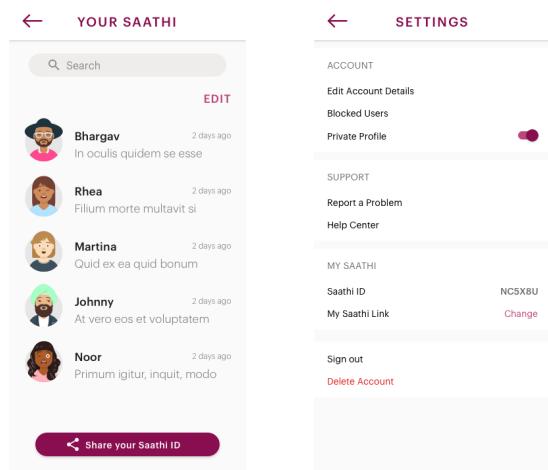
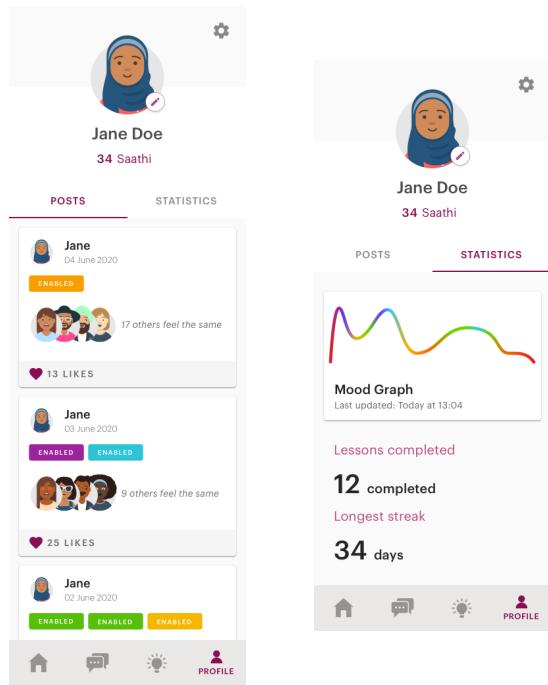


Figure 5.10: Entries Screen





Chapter 6

Reflections

6.1 Limitations

It is crucial to point the limitations of this project. As previously mentioned in the Introduction (Section 1.5), the personal interests and motivations have, at an outset, affected this dissertation. However, a few specific issues, were limiting factors. This research, overall, follows a qualitative approach to achieve its objective. It can be viewed as a combination of three separate studies: Semi-Structured Interviews, Card Sorting and Interactive Prototype Testing. The fundamental limitation of this research would have to be its generalisability. That is to say, given the exploratory nature of this research, it was simply not feasible to conduct hypothesis testing experiments. The approach employed in this dissertation emphasises on the importance of the emergence of phenomena, rather than studying predefined phenomena.

Another limitation was the difficulty in the recruitment of participants during COVID-19. To take advantage of snowball sampling's ability to locate hidden population, it was chosen as the main technique. However, as the project progressed, it became evident that there was a severe community bias. Additionally, the participants who volunteered to participate in the research, were already ones who were willing to take the step to break the communication taboo surrounding menstruation.

6.2 Future Work

Firstly, the participants recruited for the studies were all over the age of 18, and ethical reasons prevented me from reaching a wider participant demographic of school children. A future research using Saathi would involve a longitudinal study with participants still in school; such a study would allow for greater diversity and representation within the panel, allowing for students from a variety of backgrounds to be interviewed at a similar stage. Furthermore, the male participants involved in this study presented a certain level of awareness and recognition of the issues surrounding menstruation; their very participation in the study testifies to their willingness to eliminate biases and negative menstruation narratives. With difficult and unforeseen constraints, a wider male panel could not be assembled here; further study ought to further explore a less open side of the narrative.

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Appendix A

12-Point Ethics Checklist

The primary ethical concern with this project was to ensure that all participants were thoroughly informed about the project's objectives and their role within the research.

Within the Department of Computer Science, the code of ethics is conveyed as a 12-Point Ethics Checklist. This list on the following pages allowed me to carry out the investigation in a manner which safeguards the interests of all those involved in the research.

Student: Bhanuja Sanghavi
Academic Year: 2019 – 2020
Supervisor: Dr Bhagyashree Patil



UNIVERSITY OF
BATH

Does your project involve people for the collection of data other than you and your supervisor(s)?

YES / NO

1. **Have you prepared a briefing script for volunteers?**

YES / NO

I have created an Information Sheet for the participants which includes all the details of the study along with additional information regarding the anonymisation of data and confidentiality of the observations.

2. **Will the participants be informed that they could withdraw at any time?**

YES / NO

It is stated in the Information Sheet, under the section “Do I have to take part?”. Additionally, it is mentioned that they are allowed to specifically exclude consent for any recordings and/or data.

3. **Is there any intentional deception of the participants?**

YES / NO

4. **Will participants be de-briefed?**

YES / NO

The participants will be de-briefed, according to the type of observation. When there is a possible risk of bias (when de-briefed), I will refrain from informing the participant about specific details. At the end of the study, if they would like further information, they are free to contact me using details provided on the Information Sheet.

5. **Will participants voluntarily give informed consent?**

YES / NO

I have created a Consent Form for the study, it confirms that the participant has read and understood the Information Sheet and they agree to the audio/video recording of their interviews and observations.

6. **Will the participants be exposed to any risks greater than those encountered in their normal work life (e.g. through the use of non-standard equipment)?**

YES / NO

There are no foreseeable risks in participating in the study.

7. **Are you offering any incentive to the participants?**

YES / NO

8. **Are you in the position of authority or influence over any of your participants?**

YES / NO

9. **Are any of your participants under the age of 16?**

YES / NO

10. Do any of your participants have an impairment that will limit their understanding or communication? YES / NO
11. Will the participants be informed of your contact details? YES / NO
My contact details along with my supervisor's details have been provided in the Information Sheet. The participant is informed to contact the supervisor in the case of any complaints about the conduct of the study.
12. Do you have a data management plan for all recorded data? YES / NO

Appendix B

Information Sheet & Consent Form

INFORMATION SHEET FOR PARTICIPANTS



UNIVERSITY OF
BATH

Researcher: Bhanuja Sanghavi

Supervisor: Dr Bhagyashree Patil

Title of Study

Exploration of a Digital Solution for Menstruation Health and Taboo

I want to invite you to participate in a research study. You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide if you wish to take part, you need to understand why the research is being done and what your participation will involve. Take time to read the following information carefully and ask me if there is anything that is not clear or if you would like more information.

Purpose of the Study

This research project aims to discover and understand the factors which affect Menstruation Health Education (MHE) and Taboo within the South Asian community residing in the United Kingdom (UK). Additionally, the purpose of this study is to challenge the mindsets and behaviours that encourage stigma around menstruation, in order to design a solution and to create change. This will involve gathering data from questionnaires, semi-structured interviews, and observing the participants.

Why have I been invited?

You are being invited to participate in this study because you are identified as a British South Asian and are aged 18 and above.

Do I have to take part?

Your participation is voluntary. You should read this information sheet, and if you have any questions, you should ask the researcher. If you do not wish to be recorded/filmed at any point, please indicate this and such data will be excluded from any transcriptions. You may withdraw at any stage, without providing a reason.

If you wish to withdraw, please contact me within two weeks, after which all anonymised data collected from you will be deleted and not used for the study.

What would taking part involve for me?

If you decide to take part, you will be given this information sheet to keep and will be asked to sign a consent form. The questionnaire, interview, or observation procedure will be explained to you along with arrangements of a meeting time of your preference. During the study, your personal views will be sought through the process of the study.

The online questionnaire is estimated to not last longer than 15 minutes. You may wish to agree to an interview, and this semi-structured interview should not last longer than 30 minutes. It will, with your permission, be recorded and subsequently analysed and transcribed.

No one other than the researcher and their supervisor will have access to the data and interview material. Even if you have decided to take part, you are still free to stop your

participation at any time and choose not to return any forms. Subject to your agreement, we will contact you to participate in the next phase of the study.

What if I change my mind about my participation?

You are free to withdraw from the study, including during the questionnaire, interview or observation, without having to give a reason. Withdrawing from the study will not affect you in any manner. You are able to withdraw from the study, up until July 2020, when the analysis will be written up. If you choose to withdraw from the study, I will not retain the information you have provided so far.

What are the possible benefits of taking part?

I don't expect there to be any direct benefits to you taking part in this research. However, I hope that the results of this study will contribute to change for those who have experienced menstruation stigma. So, your participation and the information we get from the study will help me understand the needs and to design a solution. There are no foreseeable risks in participating in the study.

What are the possible risks of taking part?

It is very important that you feel safe and supported during your participation in this study. Reflecting on experiences of menstruation could bring up distressing memories or feelings, especially if you find it to be a difficult topic. I will do my best to create an empathetic and safe experience for you.

During the interview, you can take breaks or, if you would like to end it. After the interview, I will check in with you, and give you information about services that are available to you, if you would like to access support.

Will my taking part be kept confidential?

Yes, your data will be processed in accordance with the General Data Protection Regulation (GDPR) and will be deleted after the end of the research project. During the research, your name and personal details will be kept securely and separately from your anonymised transcript. At all times, there will be no possibility of you as an individual being linked with the data. All data for analysis will be anonymised, and no information that could identify you will be published.

No data will be accessed by anyone other than me, and anonymity of the material will be protected by using false names. No data will be able to be linked back to any individual taking part in the study.

What will happen to the results of the study?

The results will be summarised in the final dissertation as part of the requirements of a master's degree. You will not be identifiable in any outputs from the study. If you like, you can receive a summary of the study results by email. You can indicate on the consent form whether you would like to receive this information.

Whom should I contact for further information?

If you have any questions or require more information about this study, please contact me using the following contact details:

Bhanuja Sanghavi
bs689@bath.ac.uk

What if I have further questions, or if something goes wrong?

If this study has harmed you in any way, or if you wish to make a complaint about the conduct of the study, you can contact the University of Bath using the details below for further advice and information.

Dr Bhagyashree Patil
1 West 4.14
Department of Computer Science
bp397@bath.ac.uk

Thank you for reading this information sheet and for considering taking part in this research.

CONSENT FORM

Researcher: Bhanuja Sanghavi
Supervisor: Dr Bhagyashree Patil



UNIVERSITY OF
BATH

Title of Study

Exploration of a Digital Solution for Menstruation Health and Taboo

Thank you for considering taking part in this research. The person organising the research must explain the project to you before you agree to take part. If you have any questions arising from the Information Sheet or explanation already given to you, please ask the researcher before you decide whether to participate. Thank you for your participation!

I confirm that I understand that by ticking/initialling each box, I am consenting to this element of the study. I understand that it will be assumed that unticked/uninitialled boxes mean that I do not consent to that element. I understand that by not giving consent for any one element, I may be deemed ineligible for the study.

1. I agree to participate in the research study. I understand the purpose and nature of this study and I am participating voluntarily. I understand that I can withdraw from the study at any time, without any penalty or consequences.
2. I consent to the processing of my personal information for the purposes explained to me. I understand that such information will be handled in accordance with the General Data Protection Regulation (GDPR) and will be deleted after the end of the research project.
3. I consent for the data generated from my participation to be used in the researcher's publications on this topic. I understand that confidentiality and anonymity will be maintained, and it will not be possible to identify me in any publications.
4. I consent for my participation sessions to be (audio/video) recorded and saved for purpose of review by the researcher and their dissertation supervisor.
5. I consent for the researcher to use direct, non-attributable quotations from my participation.
6. I agree to be contacted in the future by the researcher who would like to invite me to participate in follow up research for this project. Please provide your contact details below.

By signing this form, you are indicating that you have read the description of the study, are over the age of 18, and that you agree to the terms as described.

Full Name

Signed

Contact Details (where relevant)

If you have any questions, please contact me at bs689@bath.ac.uk.

Appendix C

Semi-Structured Interviews

C.1 Female Script

Semi-Structured Interview (F)

Information Sheet

<https://bhanuja.com/dissertation/informationsheet.pdf>

Consent Form

<https://bhanujasanghavi.typeform.com/to/kaONBK>

Demographic Survey

<https://bhanujasanghavi.typeform.com/to/pN9X1Fz>

General Experience

- 01 How would you describe what a period is?
- 02 How would you talk about your period to someone in public? Is there any specific word/phrasing that you use?
- 03 What are some words/phrases that you or people around you use or might use to describe periods? For example, in Spanish, you could paraphrase periods with La prima Roja or “the red cousin”.
- 04 Could you tell me about your first period? Do you remember it? What age were you?
- 05 How prepared were you, and how did you feel about it?

Menstruation Education and Products

- 06 When did you first learn about periods and who taught you about menstruation?
- 07 Where else have you learnt about periods?
- 08 What would you change about the way you were taught?
- 09 Who do you talk to about periods?
- 10 Who would you like to/would have wanted to talk to about periods?
- 11 If you talk to your family about periods, what do you talk about?
- 12 Do you ever talk to the other gender about your period? Who are they? What do you talk to them about? What do you think they know about periods? What do you think they think or assume about periods?
- 13 When did you learn about menstrual products and from whom?
- 14 Have you heard about any other products? What do you think about them? Do you have any worries regarding these products?
- 15 Has there been a time where you didn't have a period product? What did you use? What happened? How did you feel?
- 16 Who would you ask if you didn't have a period product?

Cultural Taboos and Norms

- 17 What do you avoid or are not allowed to do during your period?
- 18 How much do you think your religion or culture affects your feelings and attitudes about menstruation?
- 19 Are there any positive attitudes to menstruation that you've seen or heard?
- 20 Are there any negative attitudes to menstruation that you've seen or heard?
- 21 How do you think periods are portrayed in media, advertisements?
- 22 What do you find challenging or difficult about having your period? What do you do regarding these issues?
- 23 What would you like to see change, in terms of the culture and attitudes around menstruation?

C.2 Female Transcript

Participant 01

General Experience

- 01 How would you describe what a period is?

It's something that female body goes through every month for a week. Period system is like that where you experience release of blood, you could be quite hormonal every week and it's related to ovulation and is quite painful. You'll have mood swings and it's a massive part of people's growing up lives. Having to work out how to deal with it and it might seem quite basic, but it is actually a lot of emotions and a lot of social issues and problems that stem from it. It's a massive taboo too. That's what I think about.

- 02 How would you talk about your period to someone in public? Is there any specific word/phrasing that you use?

Now not really. If me and my friends are at a park and talking about periods. We would say I was on my period last week. When I was younger, I would say when I was "on". I didn't really know about it and was awkward about it. I think now there is an open conversation about it. You feel that you can actually be part of that talk without it being too awkward about it. Also, if you don't start it, then it always going to be this very awkward thing continues for people generation to generation. Now, no not really.

- 03 What are some words/phrases that you or people around you use or might use to describe periods? For example, in Spanish, you could paraphrase periods with La prima Roja or "the red cousin".

I haven't heard of any. When I was younger, a lot of people would say they're "on" as even I used to say that.

- 04 Could you tell me about your first period? Do you remember what happened? What age were you?

It was quite dramatic. I was 10 and I was little and haven't had that conversation with my mum since I was little. One day I came back from school, I felt something weird: "have I shat myself", "am I dying". I didn't know what was going on. I didn't know what was going on at that situation. I thought to myself that: "maybe this is just a one-off thing", "maybe something has gone wrong today". Ignored it and tried to sort everything. So, I continued the next day and the same thing happened the next day. This is weird now and I went up to my mum told her about it. She then said, "you call it a period". I kind of knew very little about it, they spoke to us about it in school very briefly. It was more like a playground talk because on one had got any sex education talk yet or spoken about menstruation. In my head, it was this horrifying thing. When my mum told about it, I went into my room and wept. I couldn't stop myself from weeping and it hadn't been addressed in school. No one in school had been on it. It was awful. I couldn't really speak to anyone about it and kept it a secret in school as I didn't know how to address it. As much as it was quite open at home, in school it wasn't quite addressed properly since we were quite small. My school did this weird thing, for year 5 & year 6 toilets, there was only one cubicle with the sanitary products disposable bin. I kept going to that one and people got to know since I was just using that cubicle. When other girls came "on" it, that's when we all started speaking about it more. It was quite upsetting in the beginning. I think they should have the conversation earlier as when the talk was coming formally in school, I had already got it. I was talking to mum about it and she told me that she got it when she was 8, that was way earlier than me.

05 How prepared were you, and how did you feel about it?

I was not prepared at all. I think when I was settled a bit with it. I was very grown up about it. I wasn't well so it took my body a while to get adjusted. I used to get really bad cramps when I was younger maybe it was more painful then. Now, I know what to do whereas then I didn't know better. It used to be so painful in school. I used to get headaches because of the pain. Sometimes my headaches used to get worse because of it. When my flow was heavy, I used to be irritated and annoyed at it when I tried doing stuff. It was difficult to juggle. It was quite good having it early, now it's like second nature to you. I was able to help my friends out since I got earlier. It gotten really comfortable then to talk about it and advise them about it and tell them what they should do to make things better.

Menstrual Education and Products

- 06 You said that you first learnt about it in primary, who taught you about menstruation? What did she explain to you?

When I was 10, I had gotten it earlier that year and it was later that year when it was talked about in school. It was useful to hear what they had to say as well. I remember, they had separated the boys and girls out, which is already a problem. At school, it was a mixed, used have boys saying, "if I get period, it's disgusting", that not helping anyone.

It was mum initially. She was really helpful with different types of sanitary products out there, what ones you find comfortable, which ones I might use based on heaviness and what to take for the pain as well. Dad wasn't awkward about it.

- 07 Where else have you learnt about periods?

School, home and at university. Through different charities. One charity "Free the flow", has different branches at different unis. I got engaged with them at events. They talk about taboo. One of my best friends, whose uncle runs this company that sell sanitary products that are environmentally friendly as well and its through her as well, we speak a lot about it. There have been quite a few talks I did recently about "Let's talk sex" in the South Asian and the Black demographic at York. People in the panel talk about how it's not ever addressed in these communities and taboos related to it. People consider this to be a problem now and they're willing to open up a style which is really good to see.

- 08 What would you change about the way you were taught?

I think you can't separate out genders. Guys needs to hear about period as much as girls do. It's like general awareness for people. It's important for guys in the future when they get into relationships with girls and have no awareness of it or he has a kid who is a girl and doesn't know how to address it. There are so many problems to it. If it's a mixed school, I think they should sit both the genders down and state it clearly what it is. Going beyond the concept of it. With us they were very technical about it and they rarely talked about the emotional bit of it. I guess, that's where the wellbeing thing comes in, you need to be a bit like you've got a gist of the different products they show you and this comes every month, there is a calendar for that, they show videos in every school has to show. That's fine, basic information is useful I think they need to speak to you about the fact that if you need any help or if you find it difficult to deal with you can do to so and so in our school or there are different places online that you can get help or let's try work out the ways as a school we can make less of a taboo where you can mention it rather than something you keep under the carpet. I think if they did that for us when we were 8, then if it happened, whenever it happened, you would know about it rather than being there stuck with no support system. Some mechanisms to help you would have been useful.

- 09 Who do you talk to about your periods?

My mum, my friends and now it's so much part of your life that I don't talk about it much. My best friend used to get really bad PMS and I used get bad PMS. I found things that helped me, and I told her of those things. She would tell me about the things she used.

- 10 Who would you like to or want to have talked about periods?

Maybe it would have been with my twin brother more. Maybe, had it been addressed more at school it would have been easier. When mum talked to me about it. She talked to Kush about it as well. Mum explained that I was going through my period and both of us were going through the awkwardness of working it out at the same time. If at home or at school it was addressed sooner, I don't blame my parents, I think they haven't thought about it either. I think for me as a mum whenever I'll be one, I would want to address it with my kids earlier even

when they're like 7. I would like them to be aware of it and just be like some kind of conversation. If it's in the consciousness of the kid, it's less of a taboo when you get to it.

11 **If you talk to your family about periods, what do you talk about?**

When I first got it, it was more like we talk about the logistics of it: you have to change it regularly. Mum was like, "let me know when you're on", "Keep an eye on the amount of stuff we've got at home, if it goes down, we can get more", "Always make sure you have stock before you go *on* it". Then we talk about cramps, what you can take to feel better, different medicines that have worked and not worked. I speak to her about my friends who've come *on* it in school. If I have forgotten about any of her recommendations, about a particular medicine that helped me or something, I would advise my friends who might be in pain. Also, 4-5 years ago, I was using *Always* sanitary towels, I just found them to really uncomfortable. So, I started using *Bodyform* ones, they are more comfortable for me. So, I had a conversation with mum about the *Always* towels that we've already got. Now you can donate them to charities. I gave them away and changed them new ones. Now mum conscious of getting *Bodyform* ones. Now, I would still tell her when I'm *on*. She's aware of it. I think now my relationship with periods has changed since I've been on a contraceptive pill. I can monitor it when it comes on & off, I can be aware of it which is much easier to deal with especially my mood swings. For e.g. now I notice that I'm going to come *on*, I know that naturally my system feels a bit blue 3-4 days before maybe. Sometimes I randomly cry, I'll be like, "What are you breaking down for?" if I'm anxious about something, I tend to overcomplicate more in my head before my period starts. Why do I normally do this, my mental health is quite strong. Then I'm like I know why, periods. I think one thing I've learned the most is to let your body respond to it, so let yourself be: if you're craving a chocolate, just have it; if you don't want to go to that party, just stay at home. You have to listen to it. You have to work with your system. I know now that I can monitor it more now. My relationship with it has got much healthier and especially when I started taking pill, it became much more comfortable and natural even at home.

12 **Do you ever talk to the other gender about your period? Who are they? What do you talk to them about?**

Sometimes, I wouldn't get advice from them. It was more advise based thing from mum then. Now, mood swings and cramps are not as bad, and I can monitor it a lot better. When I was younger, me and dad would sit down, ask me "Are you alright?" I'll be like "No". He would just hug me, and it was fine. With Kush and me, we were swimming once on a holiday and I wasn't on the pill and I was like I can't it and yeah, we speak about that kind of thing. I think, like I was saying to you before, If I have a family, from experience I would like to break it down sooner for everyone, every gender both boys and girls, just to make it less awkward for everyone growing up. Also, there is so many conversations feed from that. If you deal with that fine. As you grow up, so many things come up like pill, first interaction in a sexual way or if someone likes you: all these different things, to address it, that's like the first step for so many people. If you can address that fine and is comfortable at home to talk about. Then all the other things which is more complicated or more emotional or maybe more awkward, you can start to work on that too. It's like a good domino effect.

What do you think they know about periods?

I think most people might probably understand why women need to have their periods. I think the massive stereotype is when women are really moody because they're *on* it. There are so many saying like "oh she's angry because she's on her period." This is bad because sometimes people are just angry, and it's not related to this. I know a lot of people, especially boys or who are brothers or boyfriends find the concept of blood coming out of someone a bit uncomfortable. I remember at school, they were like, "Ah, so you like bleed?", I'm was like, "Yea!". I don't really think people understand the ins and out of this, in terms of people getting accustomed to it. I think if you can address the societal taboo, it'll be easier. Especially,

majority of guys who let their kids go to state schools, have not properly had the conversation around this. I think I might talk to Kush about this, I can't remember what they told him. I should ask him how they had a separate conversation: Did they even address periods to them or not? The fact that they don't get as informed as you don't help, and it also doesn't help to break down the taboo. If you think about it, most guys have to deal with that, that's been their education. So, I don't really think, there has been much awareness about the nuances of it, the general stuff might be there, but they don't really understand it completely.

What do you think they think or assume about periods?

Mood swings would be the biggest one. Also, the fact that its same for everyone. When I'm talking to friends, everyone has a different relationship with it. Also, in terms of pain and actually happening of the period is not the same for every person like the heaviness of the flow or if they have headaches or not is all different. Also, they don't really know about the fact that everyone's openness with it might also be different. Let's say a guy has been brought up with lots of sisters where they're really open about it and talk about it. Then he might interact with a girl or something later in life and he think that she might also be open about it too or maybe she isn't because she had a different upbringing. So how much an upbringing can affect the way you're open about it. Also, it might be different for people depending on who they have been brought up by. Let's say, your mum isn't around, and you had an awkwardness talking about it with your dad who was your main carer.

13 When did you learn about menstrual products and from whom?

I knew we had some at home before I came on my period. I'd see a cute little pink packet lying at home. I got to know more, when I started, and mum talked me through different types: "there is pads, tampons and certain people prefer this and I personally prefer this". Mum told about different stories about different people's preferences, even people I knew. It was quite nice. She would say, "Your mami uses this and your masi uses this". It was good to know that.

14 Have you heard about any other products? What do you think about them? Do you have any worries regarding these products?

Yes, I have heard about the *mooncup*. I haven't used it but quite a lot of my friends use it now. Obviously because its very environmentally friendly. I never used tampons going up. I was horrified to use it as my mum told me a horror story about it and she shouldn't have done that to me. I wouldn't do that to my kids. It was a harmless story; it was about this girl in school and she got it stuck and couldn't get the tampon out and they had to call an ambulance to school. That played in my head all the time as I didn't want to be that girl in school who got it stuck in her and calls the ambulance. Even if mum didn't prefer to use it but selling me that wasn't really helpful. I think it was meant to be funny, but they didn't know how it would go into my head. Part of me wants to use it as its sufficient. To this day, I have never been able to use it because of that story. I just can't do it to myself. Maybe more so now, since my relationship with sex is better, the thought of something going up you was a bit awkward as when you're younger, you don't know what to do. Then, my friends sometimes would say that they use a pad with that because sometimes it would leak. So, I would think what's the point, you might as well use the pad. Maybe now, that is not a problem anymore, now I'd be more intrigued or open to using it because now I'm more open to anything related to that. Maybe I should have a go. But I'm so used to this now and have a routine. I should try it.

Also, everyone has a different relationship with it. Like for you, that you never go back to pads and I wouldn't really know any different. I find them really comfortable. Everyone has got a different thing with it. It's great that there are so many different period products and options because you can try and find out the ones for you. The *mooncup*, my friends love it so much that they could never go back anything which I think is great.

The tampon worry because of the story. I feel like it's engrained in me but I'm willing to get over it. Other than that, not really. I hate the fact it's expensive that's really bad and the fact

that it's inaccessible to people. They are so pricey and even on a deal, when I see them, I get them. It costs 6 quid otherwise. I grab them. That really makes me annoyed. I know in York, they are trying to find ways to like with *free the flow*, it's a massive organisation globally and in York, they are talking about ending period poverty on campus. Can we make period products accessible on campus? There are these boxes on campus where you can put your products in for other people. They will give it around to other students. That's great there are finding way to help people. Especially if you are in a financial situation where you can't afford it, you can't help it. It's ridiculous to think you get contraceptive pill for free and yet can't get period product. Well, if anything, period products should be more priority than the pill.

- 15 Has there been a time where you didn't have a period product? What did you use? What happened? How did you feel?

Yeah, at the time during the conference. I think I realised after presenting the paper but if I had realised it before, I would have panicked. Other than that, I don't think there has been any other times. I always have kept some in my bag. I am on a routine with it now as I used to get bad cramps when I was small, so I started put one in and have paracetamol and ibuprofen whenever I'm on it, it stops the cramps from developing. Now, I also pre-empt it. For e.g. with the pill, normally it comes the day it says it'll come, sometimes it doesn't, sometimes it'll be either sides of that day. So, I'll just put one in around that time even if rocks up in the middle of lecturer, I'll have some support.

Have you ever leaked completely through your clothes?

I think so but I can't remember well. When I was younger probably, would have leaked couple of times. When I was younger, it used to really heavy and I had problems coming out of the shower on my period and it was quite disastrous with the bath mat a couple of times. Leaking was fine as I always layered up which is not to worry about it. Recently actually, one of friends came to my house, post covid, when you were allowed to visit one friend. She was just hanging out in my room in York and she was on her period. We decided to get some take way and she was feeling really crapped. She left after all that. There was a stain on my bed. It was certainly not me because I had just got off it. I was like It's you. I cleaned up but I was thinking what would, that have been if I was younger and I also wonder what had happened if she'd realised. I think it would have been fine as we were so close. I reckon, she would have naturally been embarrassed anyway in someone else's room.

- 16 Who would you ask if you didn't have a period product?

If I was at home, I would probably ask my mum if you've got any other ones in your bag or something. If I was at Uni, I would ask one of my girls, I think. I reckon if I get to a position where I am in a seminar, I would ask my close friends for it there. If there weren't any then I'm sure, I'll feel quite open about it. If someone I knew but not that well, I would ask them.

** At school once I remember, I used to have and still have this bag where I put my products in. I always used to carry a spare underwear just in case, you never know what might happen to you. Then I remember telling my girls about it at school once, they were like that's great, that's funny that you have a spare underwear with you, and we laugh about it. Then once, a friend comes up to me during P.E and said, "I've had a disaster, can I borrow your underwear?" I said "of course". She borrowed it. So, it was helpful.

Cultural Taboos and Norms

- 17 What do you avoid or are not allowed to do during your period?

Nothing. There are no problems. Even when we were in India, a lot of people say that you're not allowed in the kitchen. That never happened to me. For my *nana* and *nani*, it was never an issue. At home, there has never really been a problem. I didn't really swim a lot during it because I didn't know how to use a tampon. Also, when I was younger, it was quite painful,

so exercising was tough at the time. Other than that, nothing. People use to tell me that, exercise help a lot during period. When I was younger it was all so painful, and the cramps got better over time. Now even if there is a dull pain, I still go to my exercise classes. I do feel better and it lets off a lot of endorphins. Nowadays I know it's only going to be on the first two days, I am bit emotional and heavy. After which its fine. The pill helps with so much and I know how to deal with it better.

Are you a very religious person?

I think not really. It's more the cultural connect. We do celebrate *Diwali* and *Raksha Bandhan*. I don't really believe that there are that many gods and the fact they symbolise with different things. I love what they can teach me. I love the idea that one represents wisdom and you've got *Natraj* for dance. So, growing up, I used to find it very interesting to understand the value system and philosophies that your family would help to distil into you, via these different figures. I don't really believe. They're more of a cultural connect, however, when I fill out forms, I still put *Hindu* as down. That's just naturally what I put down. Since dad is *Sikh*, we have blend of the two. Sometimes, I'd put both down otherwise, I'd put *Hindu* as we're more practising *Hindu* family. We still do *Diwali*. On the *Sikh* note, my grandparents used to take us to *Gurudwaras* when we were younger, we don't that as much anymore. Then again, I think its more culture really.

18 How much do you think your religion affects feelings and attitudes about menstruation?

Because I'm not very religious, it does not affect it really. I think it is more cultural side of things, I think, I've been quite lucky that I didn't have to really deal with anything difficult with it. We've always been quite open about it. I still there could be more openness about it. I think as well, with families, periods and anything related to sex, if they have never been addressed by people's family before, how is the next generation be able to address it? For e.g. if my *nani-nana* didn't address it properly with my mum, how on earth would it go down properly. In some ways, the more this generation now deals with it, it'll be better as you go up. You are the experience you've had. If you don't know how to address that in a family context, where do people get advice from, out of thin air. Even when you grow up, your relationship with periods changes and you get accustomed to it, you don't really think about , maybe I should have told my daughter about this sooner because you forget that it happened to you when you were younger. Relationship with it changes. I think religion hasn't really played a massive part because I am not practicing either.

How much do you think your culture affects feelings and attitudes about menstruation?

I think it affects, especially South Asian culture has massive taboos around periods, sex and anything in between. I think that does definitely affect it. I think because your grandparents probably didn't address it as well as they could have, for their own problems as well. Like I said, you can't really blame them because the same thing happened to them before them. It goes down generations it's no one's fault, it's a cultural- societal issue with a certain demographic of people. It's a big taboo around it, I think as much, even at home, as much we try to combat that and break away from it. It definitely is still there, in some respects it's not more so in other maybe in other departments and other things. For me, one thing I learned from the sex panel I did that time, is how important sex education is for your child as much as your education to them about schooling and about eating well and mental health. Sex is just as an important thing. That's one thing as a parent, I would want to open that up so quickly and so fast. I want them to be able to come to me, be like, "mum, I am sleeping with so and so". Yeah, it's a bit awkward with your mum, if they can't tell you, who would they go to. I want them to come to me and be like, "What do I do?". I would be like, "these are types of contraception, be safe, do this, do that...." I want that conversation. It is important to have that with people, where else would they get any advice: the internet? I also think, there are so many problems there too, because you've got stuff like, a lot of people breaking away a bit

more now with the new generation but no sex before marriage and this kind of stuff. People just don't talk about it; it's just never discussed. It's just an important conversation to have. You have to remember cultural differences as well. When your friend turns around and says, "my mum gave me a condom." I understand that they're obviously going to be cultural differences, but I think every person needs to find a way to be better than their generation before them and be open about it to improve and help next set of people. I think, as a parent, I would want my kids to feel that I'm their outlet to anything, like they can come and speak to me about anything like awkward sexual experiences or whatever. Yeah, I'm their mum and might be uncomfortable. Like I said, if they can't tell you, who are they going to? who's going to help them? Also, if you go to a friend, what do they know? They are as same as you. It's nicer to have someone older than you who has been through much more experience than that. Who can give me a very good emotional advice as well as practical advice.

As you face your own taboos and problems you put on yourself about it as well, it gets less awkward. Other societal things like people who might have lost their virginity before you did, or you haven't lost it yet. All of this is just societal pressures that are not true and it's about how your own personal relationship are with different things, it doesn't matter. Letting that go into you can be hard, like confidence across this department is a massive thing. I'll be telling my kids to be confident and open and tell me things.

19 Are there any positive attitudes to menstruation that you've seen or heard?

I think the panels are the biggest that I've seen are really good. People have different experiences, like I said and not everyone from South Asian, middle- eastern background might not have the same experiences as you. Maybe for them, they would have been open. A lot of people have some sort of issues whether they haven't had any problems, but their friends did and lots of their friends had a lot of issues as issues culturally for you, why am I having problems and not you. Seeing people actually confront their issues and talk about it. The fact that there is actually this panel, it was called *let's talk about sex*, was put all over Instagram and Facebook and everyone was sharing it. It all these different societies that came together, we had like Arabic society, Caribbean, Indian society come together. There were spokespersons from each on and everyone had different sexual experiences. We covered sexual experience, mental health, body count and others that may be other connotations, breaking them down, what does it mean? what do people think of this? People openly asking questions about stuff and in a very safe space. It was loads of people and I think it is very important for things like that happen. People feel like they can have a safe space to talk about things. The number of stories that came out then were quite troubling and sad. That is obviously difficult but at least they have spaces like that where they can address it and speak to people about it. Also not ignoring the fact that there is a taboo in their society and not ignoring the problem and willing to face it. I think seeing that being faced is really positive. Also, initiatives like *free the flow*, period being normalised and seeing that normalised across campuses, different genders addressing it, different people coming to panels is really good. Also think the environmental side is very positive, like the *mooncup*, my friend's uncle's company who is trying to make these environmentally friendly products. There are other effects of period as well on an environmental note. Seeing lots of affirmations across the board for it on emotions, cultural and economic levels. It's really good.

20 Are they any negative attitudes to menstruation that you've seen or heard?

Seeing the way in terms they teach it is worse. The way both genders gets split is really bad and the way they speak to you about it. The thing that guys don't need to know, that a problem. Also, sad stories from friends, people who've said that culturally, not being allowed to enter the kitchen or not being allowed to sit with family or thinking that people think you're dirty. Nothing direct but these stories from people.

21 How do you think periods are portrayed in media and advertisements?

I think it's getting better. Seeing people from South Asian backgrounds address it, putting it on social media, transcend boundaries in terms of countries and become globalised. Even small things, seeing small adverts on tube, seeing *always* product being advertised is really good as well. Different apps are really great as well. Stuff to track your period. Doctors having more discussions on PMS, that's great. I had to go see my doctor about that, they said my issues around, PMS, acne and planning on getting contraceptive. We'll roll that into one and the openness about that as well. When I was younger, I didn't want to speak about my period and contraception to male doctors but now, when I ring the doctor and they say to me, "do you have preference on who to speak to?", I don't mind now. Most of the time, when I go see the doctor, he is mostly a guy, I don't mind talking about periods and contraception with them. The more you can combat the openness about that, the better it can be. One of my friends, recently told me that the pill that she was on was dodgy to her and she felt weird in her insides and womb. I was scared because I think I use that one, Then I went to go see the doctor, they we're like "no no, That's wrong. For her it did that because something's up with her system and reaction with that is an issue. You don't have to worry." That doctor was a guy, imagine him answering such a dumb question but I'm just going to ask him because I don't know the answer. So, I think it is improving.

22 What do you find challenging or difficult about having your period? What do you do regarding these issues?

I think building in time. If I know I'm going to be a bit busy and I know it can make me feel exhausted and if I have to build that in, it can be a bit difficult. If you've got a lot going on, deadline, a lot of Uni stuff happening or socially, that can be difficult. Also, because I don't tend to continue using the pill, I won't do it just for the jokes. It's going to have an actual reason like a deadline or a holiday or something. I think that and also trying to juggle it. I also think, if you already know what your body needs, like I try to tell myself if my body need a certain thing- if my body needs to rest and need to relax. Then, building that in, can be difficult. Also, even emotionally, sometimes it'll be worse than other times. So, if I am feeling overly sensitive, I might have provisions to help me now. Like I might have other outlets, I know where I can go to. Mental health and periods also come hand in hand at some points as well. I know what helps me with my mental health like if I sing or listen to music. So, I can use that as an outlet. Then, if you build up an anxiety about a situation, it's difficult to bring yourself back down from it when you're then on your period as it heightens it even more. So Sometimes, it can be difficult and if you're feeling naturally insecure, if it can heighten any anxieties, your insecurities can be heightened sometimes, having to deal with that as well can be hard.

Having to keep changing pads is another issue. Sporting and commitments, I used to dance quite a lot last year, so juggling it with that as well.

I have come to manage time better now. Sometimes, I forget that I'm not a robot, I'm a human being. Having to say no to people or understanding when to not socialise and learning how to balance things. Because I've gotten better at that now, consequently, I think, me then going, I'm on my period and I socially now, realise I need some time to myself like I need an evening when I could just relax, it's important for me. I think the rest of the week my period would be better. Now I find better ways of doing that by saying no to people to hang out when I need some time. I exercise as well and if it's really painful, I just leave it obviously don't want to make it worse but if it's a dull pain, Like I said before, it helps me with the release of endorphins and I would just go to those classes. I think self- care is a massive thing. When I was in York, I used to go to 5 different exercise classes a week. It used to be my time to myself and I'm quite bad at that, I'm better at home, naturally your environment is like that, you have more time to you but in York, I'm bad at that, I actually need to build in the time. It makes

me a bit more reflective to exercise always used to be my time to do my thing and if I know, I need more time like that during my period, I make sure I go to those things more.

23 What would you like to see change, in terms of the culture and attitudes around menstruation?

The biggest is the taboos around it and the way that can be resolved is having open and honest conversations about it. I think if a parent didn't really think they can address that issue really well because their parents haven't addressed it with them. The parent vocalising that like talking about it. Even if your parents were really honest and said, "I never had this conversation with my mum, I'm rubbish at it, I'm learning it as well." Stuff like that. I think the fact that society doesn't let culturally people own up to their insecurities with it, is a problem. Also, maybe the things they've never addressed, Like I said, you carry that taboo with you in your own way. So, seeing people address those things that they are not very good at will be quite a good thing at the same time. The openness talking about it, breaking that down. How important is it to see the knock on effect of it, being able to address other things because of that. Thinking about it in the same way as you're planning, if your kid is about to move to new school and your thinking of different school, you're thinking of sending them to. As much as that is important for them while growing up, what about when you're thinking about talking about periods- is should be a massive bit about education of a kid that you shouldn't neglect. Also, letting your kid know about the fact that even when teachers teach you about this, everyone's experience would be different. Realising that when you're going to speak to them. If you're going to have a conversation about it with a friend, don't assume that their experience will be same as yours. Think about how you approach the situation.

Education, like I said, the ways it can be reformed and changed. More panel discussions I think, have more people have more open conversations about it and maybe across cultures more. If you had a massive diverse panel of people, someone from different backgrounds talking: some from *White British, South Asian*. Getting people to become more culturally aware of different responses to periods would be really good. Obviously that one person can't represent that whole demographic of people, it would be interesting for things to be vocalised more. It's through breaking down of stigmas.

C.3 Male Script

Semi-Structured Interview (M)

Information Sheet

<https://bhanuja.com/dissertation/informationsheet.pdf>

Consent Form

<https://bhanujasanghavi.typeform.com/to/kaONBK>

Demographic Survey

<https://bhanujasanghavi.typeform.com/to/pN9X1Fz>

- 01 How would you describe what a period is?
- 02 What are some things that you know about menstruation?
- 03 When did you first learn about menstruation? How old were you? Where did you learn about it? Who did you learn from?
- 04 Where else have you learned about periods?
- 05 What are some of the things that you have learnt about periods, over time?
- 06 How do you feel about the things that you were taught and have learnt?
- 07 Has your knowledge about menstruation changed over time?
- 08 As a person who doesn't menstruate, do you ever feel it to be important to know about menstruation? Why or why not? In what ways do you think it is important or not important?
- 09 Of all the possible women in your life: mother, sister, partner and friends? Who are you closest to?
- 10 Do you ever talk about menstruation with anyone in your life?
- 11 Are there any positive attitudes that you've seen or heard about menstruation?
- 12 Are there any negative attitudes?
- 13 How would you change that, if you wanted to?
- 14 What do you wish you knew about menstruation?

C.4 Male Transcript

Participant 01

- 01 How would you describe what a period is?
Blood comes out of the vagina every month normally.
- 02 What are some things that you know about menstruation?
I hear women go through pains and cramps, some of them say, it affects their moods, and some say it affects differently. From the biological view, I remember things about what hormones change and when during the cycle.
- 03 When did you first learn about menstruation? How old were you? Where did you learn about it? Who did you learn from?
I think I would have known about it at the age of 7 or 8. I understood that women go through this in a monthly system. First time I learned about it formally was in year 5, when we had sex education lesson. They explained these things to us then.
- How was your class structured when sex education lessons were delivered?**
My class wasn't split up. In terms of the lesson, it wasn't much structure as they put in a video or DVD in class. We just sat there and watched it. Prior to that, the school needed consent from parents for their child to receive sex ed. Beyond that the teachers didn't explain much on top of the video. Everyone just sat there awkwardly and listened.
- No one in your class had questions about sex ed?**
No. If they did, they might have asked privately. We had a similar lesson in year 6, exact same set up on one day of the year. It was only until year 7 in secondary school, when we were given PSHE lessons and that's when sex education topic came up and it was over a couple of weeks that they taught things and they did an anonymous question system. That's when I think more people had answers to what they wanted to ask.
- 04 Where else have you learn about periods?
Through friends and mostly through girls. When you get into a comfortable friendship stage, you get curious and ask some questions. Beyond that, I haven't gone onto the internet and researched about it. Its more either learning from friends or from formal textbooks.
- 05 What are some of the things that you have learnt about periods, over time?
That's when I learned about what they go through and how they feel about it. When they mention about their cramp or not being in the best of moods. Learned more the emotional side I picked up.
- 06 How do you feel about the things that you were taught and have learnt?
I think not really a lot. Back then, I wasn't that immature about women having a completely different system to you. All of the sudden, you hear that blood flows out of them every month. That did really bother me. When I grew up, I realised that half the world goes through it and I don't really care. I have heard stories about some guys, don't want to think about it because "it's disgusting". I always have been under the mindset that it doesn't bother me and is something that people go through.
- 07 Has your knowledge about menstruation changed over time?
Yes, in terms to my feeling changing over time, I feel now I'm more sympathetic about it. I understand if some girls have their periods and it causes them intense pain and I feel sorry for them and think that you don't have to go through anything similar of the case every month. Similarly, to buy all the products which aren't even tax free. In what world are these not essential products. Things like that get to you. I have had a few friends not being as regular

and obviously, that's symptom of more complicated issues. Part of that, I've heard people are not able to conceive a child. Irregularity now may lead to severe complications. That sort of knowledge and understanding makes me more sympathetic to people in such conditions.

- 08 As a person who doesn't menstruate, do you ever feel it to be important to know about menstruation? Why or why not? In what ways do you think it is important or not important?

I think to an extent, I know a fair bit of knowledge and there are some bits that I don't know about but may be curious, but I don't think it'll affect me. As long as there is a level of understanding from my bit and not be like some who are totally oblivious to it or be disgusted. I think it's okay, its more with the actual products that I'm less not aware of.

In what other ways, do you think it might be important or might not be important to know about it?

If someone is on birth control and from a guy's perspective, they don't have any other option beyond condoms. I think most guys as much about the available options and what changes the woman goes through. How does it affect their cycle? For eg: if they're on a pill, you might have to remind them to take it and just be mindful of your responsibility in it as well.

- 09 Of all the possible women in your life: mother, sister, partner and friends? Who are you closest to?

I'd say my mother and partner, for sure.

- 10 Do you ever talk about menstruation with anyone in your life?

Partner. Currently beyond partner, I wouldn't shy away from conversation with a friend or family but in my situation., it is easiest to talk to the partner and I'm fairly comfortable to talk to my friends about it but if my family for whatsoever reason bring it up, I'll be comfortable but I don't think they will be. Hence, why we haven't had any conversation. I think that's when especially in Asian communities where the stigma come in that "Boys shouldn't be learning that from his parents"

- 11 Are there any positive attitudes that you've seen or heard about menstruation?

I wouldn't say positive but more neutral. It's just one of those things that just happens. As long as you're in that mindset that its normal thing that happens to all the females every month. For me that's positive attitude I've heard.

- 12 Are there any negative attitudes?

Not really, not from the people around me like from friends but I've seen a lot on the internet. The most I've seen from friends is perhaps the inconvenience that time of the month causes them in terms of what they can't do. I never really heard anything more negative. I think more on the internet, when you just hear people not really understanding the process and either not being sympathetic towards products or just being disgusted by the process but not in my friendship circle.

In terms of the culture and religion, have seen/ heard any positive or negative attitude towards menstruation?

Not really, the difference there is, how open people are there to talk about it. If they were more open communication, whether or not they were positive or negative, I don't know. Negative part is not really having the opportunity to see because I think within my culture, If I try to speak to my mum about that, there will be some sort of shyness from the conversation: "Why are you asking this?" , " you don't need to know this."

If you were to change the conversation about menstruation, how will you?

I don't know. I think it's difficult because it links to so many other issues like its more about how, will I change the general relationship with my parents to have more conversations openly are perhaps awkward. You expect them to do it initially, the older you get the lesser you realise they will. Specifically, I don't think I have a need to have a conversation related to this. So, I don't think I would make any changes. Yeah, just related to general culture and other issues, that's more like I would sit them down and have a proper conversation.

What about open communication with everyone other than your parents?

I think that just comes from education. The earlier you're taught about it, the less it impacts you. For me, it was in year 5 when we first were taught about it from school, prior to that everything you hear is like rumours from friends, siblings, they don't really know much, they have already formed their opinions. If one of my friends back then had the impression that was like something disgusting, at that young age, that'll be what I am going to think for the next couple of years until school steps in and start teaching about it properly. I think year 5 or later, there were rumours going around in my school then that certain girls had started earlier, it would have only helped then if they had been prepared earlier and everyone else had been prepared mentally in the way if a girl speaks about it, it's not an issue. It's one of those things that happens and there's nothing wrong with it. If that gets drawn into your brain at a young age, then older you get you will have that belief going forward. I think it's easier to change a child's belief than it is to change an adult's who has gone through their life thinking it's disgusting and trying them to think that it's not.

13 What do you wish you knew about menstruation?

I think if I had known the products out there and how they work, and I still don't know.

Appendix D

Card Sorting

D.1 Script

CARD SORTING SCRIPT

INTRODUCTION

Hi, thank you for taking the time to talk to me today. I really appreciate it. We should be on the call for about 30 minutes, is that okay?

I'm in the process of designing a digital solution for tackling menstruation stigma, and I want to make sure that real users – you – can be presented with a solution that has all the aspects required. The stigma is perpetuated by the lack of conversation and so this solution must enable everyone to candidly discuss menstruation, and the various social, religious, physical and emotional factors framing it.

This is a Card Sorting exercise, where I would like you to organise a set of given cards into categories, based on what you think go together.

There are no right or wrong answers, I'm just interested in how you think the items should be grouped. At the moment, I don't want you to think about the hierarchy of cards within a group, just which items fit together. The results of this study will help me to design the structure of the solution.

I would like you to think out loud, that means would like you to tell me what you're thinking as you sort the cards. For instance, if anything seems hard to sort, or if you are trying to work out where something fits, say those out loud. I would also like you to explain what you think a card would do.

Do you have any questions for me? Could I also confirm that you are still okay with this session being recorded?

[PRESS RECORD]

The cards will be placed as a list of items on the left side of your screen. You can create categories by dragging and dropping a card from the left into the space on the right.

[SHARE LINK]

<https://dr1gezq4.optimalworkshop.com/optimalsort/87ks8o30>

Issues that might occur during the sort:

If participant thinks card should go in two places

I'd like you to choose the one you think it fits best in, and I'll make note of the other location so I can use this information in my analysis later.

If participant asks how many groups to create

You can create as many groups as you want.

Issues that might occur after the sort:

If groups larger than 10 items after placement, ask to regroup

I notice that you've got a pile there with a lot of cards in it. Can you split that pile out into smaller groups?

DEBRIEFING

Now, I'd like you to tell me about the groups you have created.

- 1 **What is the overall pattern here?**
What structure did they use/emerged as the basis for the groups?
- 2 **Were any groups difficult to create? Why was that?**
Suggests items that may not fit well together
- 3 **Were any cards difficult to put in a group? Why was that?**
Suggests items that may not be structurally related
- 4 **Looking at the completed card sort. What would be the feature that you would be most likely to use? Why is that?**

Thank you for your participation, you have been very helpful! Do you have any questions for me?

D.2 Cards

Enter Alias	Edit Notification and Reminder Settings	View your Feed (Pals' Posts)
Edit Emotion Colour, Intensity and Tags	Learn about Menstruation Topic	Enter Gender
Choose Topics of Interest	View Tip of the Day	Like Forum Topic
View Myth of the Day	Post Daily Mood	Edit Potential Pal Settings
Create Avatar	View Story of the Day	Enter Email Address
Your Pals	View Streak	View Mood Statistics
Bookmark Article by Expert	Choose Menstruation Lesson	Read Articles by Experts
Edit Profile	View Potential Pals	View History of Moods
Search for Pals	Your Conversations	Edit Account Details
Customise Avatar	Comment on Forum Topic	View your Notifications

D.3 Transcript

The following pages display Participant 1's transcript, the rest of the transcripts are in the .zip file submitted alongside this paper. The rest of the transcripts are within a .zip file submitted alongside this dissertation.

PARTICIPANT ONE

Participant Overview:

Male, 21–24, British Indian, Postgraduate Student

Mid-Session Thoughts:

EMOTION AND MOOD

Emotion is...you're categorising more. What the precise feeling is, using a particular word or colour to demarcate something. Whereas, viewing history of moods and statistics might be more complicated than simplifying it into one colour and tag.

FORUM

As someone who doesn't menstruate, I'm going to have some hesitations about the way I should go about it. It's probably worthwhile having a category that is just Forum – something that is quite specific and quite deliberate that you are entering into.

Debriefing:

What is the overall pattern here?

All the cards that allow you to change your Settings, your profile and the way your app and network functions is all in one place. Because the questions of Emotions and Mood are quite significant, they merit their own category. There's the general Set Up that you would have to do before you did any other things. Reflections is where you're just reflecting on stories and general notifications. Then there needs to be a deliberate effort to do the educating part, where you're reading articles and doing courses. There's the Social bit where you can talk to friends and then there's a Forum where you can engage in discussions.

Depending on what you are using the app for at the given moment...are you going to do some social stuff, are you part of a forum, are you reading about it or just checking...these different bits have been sub-divided for your ease of use.

So, I never used the word application. What made you think about an app instead of a website (which also might have the same features)?

I would expect this to be something that works as an app. You know, if you have the app on your phone, you have the social part where you're talking to people, then you have a debate forum, you can also learn something. It has all the characteristics for an app, that you would have on your phone which allows you to learn, reflect, scroll, hang out with people virtually. It seems more complication and multi-layered than a conventional website would be.

I think an app is a good way about this, you can personalise the way you navigate it. Then there's a social touch to it, and with notifications and streaks you almost build a routine in which you engage with it.

Were any groups difficult to create? Why was that?

I think the hardest one to create, is probably Emotion and Mood one. I'm debating it because it doesn't come under general Settings nor do they come under Set Up.

Were any cards difficult to put in a group? Why was that?

No, I think it's pretty self-explanatory [...] if you go by the objective of what each function is then you can fit them together.

Looking at the completed card sort. What would be the feature that you would be most likely to use? Why is that?

I think it's between the Articles by Expert and the Emotion/Mood. As a South Asian male, I think we don't talk enough about men's emotions and if this menstruation application can also tackle "toxic masculinity" within our community, that would be great [laughs].

Categories:

Education

5

Choose Topics of Interest

Read Articles by Experts

Bookmark Article by Expert

Learn about Menstruation Topic

Choose Menstruation Lesson

Emotion and Mood

4

Edit Emotion Colour, Intensity and Tags

View Mood Statistics

View History of Moods

Post Daily Mood

Forum

2

Comment on Forum Topic

Like Forum Topic

Reflections

5

View your Notifications

View Streak

View Story of the Day

View Tip of the Day

View Myth of the Day

Set Up

4

Create Avatar

Enter Email Address

Enter Gender

Enter Alias

Settings

5

Edit Profile

Edit Notification and Reminder Settings

Customise Avatar

Edit Account Details

Edit Potential Pal Settings

Social

5

View Potential Pals

Your Pals

View your Feed (Pals' Posts)

Your Conversations

Search for Pals

D.4 Card Sort Data

The board for the “Card Sort Data - by Cards”, is available at – [*https://miro.com/app/board/o9J_kkLsRCc=/*](https://miro.com/app/board/o9J_kkLsRCc=/)

The board for the “Card Sort Data - by Participant’s Categories”, is available at – [*https://miro.com/app/board/o9J_kkTSByk=/*](https://miro.com/app/board/o9J_kkTSByk=/)

Appendix E

User Testing

E.1 Script

Participant 01

Female, 21–24, British Pakistani, Graduate

SCREENS

00 Onboarding

01 Avatar Creation

02 Home Page

03 Post your Mood

04 Forum

05 Insights – Featured

06 Insights – Learn

07 Profile – Posts

08 Profile – Statistics

09 Your Saathi

10 Settings

POST-TEST INTERVIEW

- 1 What do you think about this process you just went through? How would you describe your overall experience?
- 2 How likely are you to use this application?
- 3 What did you like the most?
- 4 What did you like the least?
- 5 What, if anything, surprised you?
- 6 What, if anything, bothered you?

E.2 Transcript

Participant 01

Female, 21–24, British Pakistani, Graduate

SCREENS

00 Onboarding

(Start Screen) “that looks really nice, I love that”

(Enter Nickname or Alias) I think that's a good idea, and from what I see you're trying to get men involved in the conversation. I think for some people, they might want to learn but feel fear of embarrassment, but they're still willing to learn.

[SUGGESTION] – *Menu option for more genders, e.g. Female would open to Transwoman*

For trans people, there are differing opinions – trans women, still women and trans men, still men – but, some trans people like to recognise their identity. If you could include that option.

01 Avatar Creation

I like how even though the avatar looks like a cartoon, I like that you can have like actually personalised add-ons. I remember, back in the day on PlayStation or Xbox, you could only have two skin colours with no in between. Here, even though I can't click on them, I see you've got different shades of skin colour, hairstyles and even religious headgear.

02 Home Page

What do you think this might be?

Is this like your news feed? Those are posts from people that you follow.

(Check up on your Saathi) Maybe it could be that it's different people's profiles that you can quickly hop to, see what they're up to. The colours could represent their mood for the day; red for frustration, green for happy, blue for sad...

03 Post your Mood

You've got the moods listed which is good, and you've got an *Other* option where you could either get more options to choose from or you could type them in.

Which one would you like it to be – other listed options or typing it in?

I would want to type it in myself, just because I'd get frustrated if another list came up and it still didn't have the mood that I was feeling.

[SUGGESTION] – *Predictive Search*

Perhaps, it could be a mixture of both. If I wanted to type in Sad, it would recognise what I was typing, and I'd get a list of options to choose from.

(Slider) “the intensity of emotions”

In aesthetics, red and blue are on the opposite sides of the spectrum.

04 Forum

What do you see?

It feels like there's different topics: Rants, Questions, Products and Discussion.

- Products would include everything that you would need to have, tangibly, related to periods.
- Questions would include stuff like "can I go swimming on my period".
- Rants is definitely a good way to put it. Sometimes you just want a place to post about something that's bothering you, and someone will see it and maybe connect with you.
- Discussion could be about the hot topics, or current affairs – obviously relating to periods.

Is there anything you would change about this page?

I think the four topics you've got here are really good.

[SUGGESTION] – *Create tags for more specific topics*

Allow people to specifically target issues that they might not feel comfortable sharing in a general setting, such as products. It might be something like leaking, and it could be its own topic. It's the equivalent of hashtag, but in forum terms. Like, don't get rid of what you've got but build on it, have the added functionality of searching specific terms as, say hashtags, and having those topics be filtered.

05 Insights – Featured

"It almost looks like a news app, looks very educational"

(Shoutout Bar) I like the fact of the day, in-built feature.

The topics could be something that they've looked at before, or something that the application has learnt to tailor it to you.

What is your opinion about this page?

I really like the Insights tab; it is clearly educational and it's where you go to gain insight. I like how it has achieved its goal as an Insights tab.

06 Insights – Learn

What is your initial reaction?

I feel like if I was a guy, and I didn't know anything about menstruation, I would be overwhelmed by what Ovulation & Fertile Window might be.

First thing, for someone wanting to learn I don't know having it displayed in this way is the best thing. Imagine, there's a boy, has two brothers and lives with his mum and dad, not around women who openly talk about periods – he's not going to know what ovulation is.

[SUGGESTION] – *Different stages of learning*

For example, in Duolingo when you select a language, it asks you if you're a beginner, intermediate, or novice, maybe you could have something like that. You can scroll through different topics, and list them in categories.

When you click Menstrual Cycle, you would be able to choose between the stages – beginner might be “What is a period?” and then intermediate could have the different hormonal phases of the cycle, and advanced could have family planning and all that stuff.

Is there anything you would change about this page?

To me, Menstrual Cycle and Period sound the same to me. I could figure out the difference, but again because this is a Learn page it would be confusing who are learning for the first time. I like the inclusivity with the LGBTQIA+, it says that not everyone is cis gendered.

[SUGGESTION] – A topic Socio-Cultural Issues

You've got the nitty gritty of Sex, Blood, Health Issues, but have a social and cultural learning box as well. Instead of just the “a period cycle is 28 days long...”, have how different cultures deal with periods differently.

[SUGGESTION] – Illustrations for each learning box.

A little cartoon drawing or something, or you could have specific icons – medical issues could have a stethoscope.

07 Profile – Posts

What is your initial reaction?

This would be me looking at my own posts.

(34 Saathi) I'm guessing on Saathi, you can only add someone, if its mutual. To be able to have that connection with someone, they've to connect with you too. Not like Instagram.

Would you want it to be like Instagram?

I prefer your version, because the purpose of this app is to connect with people and Saathi, it's your companion, you are there for them and they are there for you.

08 Profile – Statistics

What is your opinion about this page?

Mood Graph shows the different moods you've been having however long you've had the app. If I press it, I would expect a scattered graph, and when you press each dot, it would expand and provide details. I like the mood graph, because it helps people keep track of what they've uploaded.

I would change the Streak statistic to not be about lessons learnt. I think because it's about becoming more knowledgeable and not receiving a certification, it might not make sense. Instead of that, maybe you could have achievements. It could be a cool way of reinforcing knowledge, and for people to acknowledge that they are more informed now than they were before. Instead of just mood progress, you can also have knowledge progress.

09 Your Saathi

What do you see?

These are people that have wanted to connect with you and share your Saathi ID you can click it and send it to other people.

10 Settings

What is your initial reaction?

Looks like a standard Settings page. It's good that you allow for a Private Profile option and blocking users.

[SUGGESTION] – *Support after My Saathi*

I think Support should go after My Saathi. It makes more sense...brain wise.

[SUGGESTION] – *Multiple accounts*

There's pros and cons, if you want to learn things – as people, you can't help being prejudiced and if a man is asking a question on his profile, and you can tell it's a man; he might get a different reaction to making that statement if he was not a man.

Adding multiple aliases, could have the potential to enhance your experience, if you're eager to learn without being subjected to other people's prejudices. However, I can see it also going wrong, because some people aren't capable of doing the right thing.

If it was me, I would make this application anonymous. I think it's a good idea to have your profile as anonymous, but if you have really close friends on the app you could add them with your ID, essentially unlock a new part of your profile.

[SUGGESTION] – *Edit Saathi's nicknames*

When you connect with a friend on the application – you send them your Saathi link – when they accept it, you get to edit their nickname. So, if their alias is Jane Doe, but her real name is, say Joan, you could edit it to say that. Something just for your own eyes, like your own personal settings.

POST-TEST INTERVIEW

1 **What do you think about this process you just went through? How would you describe your overall experience?**

I really like this it. I think the colours are really inclusive, I like the fact that you can customise your avatar and it still looks personalised, even though it's a cartoon. I think that's really great that you can talk to your close and they can see your personal moods, without you having to tell them.

I like the app, my experience going through it with you, it has been exciting to go through it. It's also made me think a little bit more about what would be good for everyone – those who want to remain anonymous, those want to be able to connect with friends – and to be able to have that all within one app. I think it's important to realise that not everyone is going to use it in the correct way, there's always going to be trolls everywhere. So, I think to be able to make the app that can combat against that, but also remain super user friendly it's tough, but I think what you've done so far is such a good job.

2 **How likely are you to use this application?**

Oh, very likely, see even just reading the heading of these 'articles', I want to learn more from the Insights tab. I'm excited to know what would be within the different learning boxes, aside from Menstrual Cycle. What happens when you press it?

3 **What did you like the most?**

I really like the personalisation of the avatar, it's really cute.

4 **What did you like the least?**

Probably the layout for the Learn, for learning it needs to be as easy as possible. I would assume that people wouldn't have the knowledge, especially if they've downloaded this app. It might be intimidating for some.

5 **What, if anything, surprised you?**

The emotions around your Saathi. I can now see it in action, and I really like that. It's not something that caught my eye, probably because I've never seen an app do that before, but that's a good thing.

6 **What, if anything, bothered you?**

I don't think anything bothered me, maybe the Streak statistic.