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“An app can’t tell me how I feel!”

How do perimenopausal women understand themselves and their bodies  
using digital health apps?

A thesis presented in partial fulfilment of the  
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## Abstract

PeriM is predominantly understood as a biological process defined by hormonal changes that begin the transition to menopause. It starts when there are “persistent differences in cycle length of seven or more days between consecutive cycles and continues until 12 months after the last menstrual period”. There is very little research on the lived experiences of periM. Digital health apps that are periM or menopause specific are relatively new and there are not many of them, they have had little to no research on them either. How the use of these apps could inform how perimenopausal women understood themselves and their bodies was the research question for this project. A Posthuman feminist theoretical perspective and a Postfeminist healthism lens were used to look at the assemblage of woman-periM- society-technology. The research included Zoom platform meetings over 12 weeks with 7 women in the periM transitional stage. Cooperative inquiry was the methodology used as a means to collaboratively explore the entanglements of the assemblage. All participants in the meetings were co-researchers. Using Reflexive thematic analysis allowed an iterative analysis of the data gathered and identified three major themes which were: a) Lack of knowledge; b) Postfeminist & Neoliberal Healthism; and c) Self-knowledge through numbers (quantified self). The findings in this research project indicated that women’s experiences of periM were largely influenced a lack of knowledge of periM and being taken by surprise when it began and not having any support from the medical practitioners they approached. The Postfeminist and Neoliberal healthism discourse was identified as tying them into a good citizen narrative of maintaining health and improving oneself through a transformation narrative (or ‘ageless ageing’). The same discourse was applied to the entanglement of using digital health apps to gain self knowledge through numbers. Overall there was some knowledge gained by using the digital health apps but that was fleeting as they felt the apps were too demanding of their time and ‘life’ got in the way. The most awareness of themselves and their bodies they get is through relational connections with family, friends, work colleagues and with each other during the meetings.

## Acknowledgements

Firstly, thank you to the incredible women who partook in this research project with me. Your honest, open and wonderful descriptions of your periM experiences were more than appreciated, and I hope I have done justice in representing your views and experiences.

I also want to thank Sarah for providing top-notch supervision with unrelenting patience and supportive confidence. Your intuitive understanding of my process was invaluable, and I will be forever grateful for that; you enabled me to truly use my voice.

Also, to Jamie, Oli & Conor, I am so thankful for your unwavering support and confidence in my ability to do this. I have, and I appreciate that you knew I could.

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## Preface

*“As she looked up at the screen she noticed all four of the women at the meeting were laughing out loud. ~~With their heads thrown back and their mouths wide open. She felt~~ there was a moment of “wow” where she thought this totally captures the feeling of the project ~~in its essence~~. She couldn’t have even remembered why they were all laughing but it was or had to be something sarcastic or rude about perimenopause or the ridiculousness of how quiet and silent the experience actually is. ~~Right then~~ she felt a feeling of freedom and sisterhood with these women that she had never actually met. The shared freedom of not worrying about how they looked while complete emotion was being shown was enough to make her laugh again. That she was actually supposed to be transcribing their feelings of embodiment and experience was forgotten and there was a release through laughter ~~was felt deeply~~. It was as though being in perimenopause herself had meant she hadn’t laughed so hard since that meeting or even in a long time. She can’t remember when she didn’t need to laugh anymore and why it was so important. Having the ~~feelings~~ experiences of perimenopause in common produced a collective understanding she didn’t have anywhere else and it made her laugh”.*

I wanted to include this piece of writing that was done at one of the Post phenomenological reading group meetings on Zoom that I was a part of. The exercise was undertaken by myself and the other reading group participants and based on a workshop by Bronwyn Davies on Collective Biographies (Davies & Gannon, 2006).

This exercise was concerned with writing about writing, that is, writing about a specific moment in time when you are writing (research, novel, article etc) in the 3<sup>rd</sup> person, without cliches and non-stop for 8 minutes. Then we were to edit it and read it aloud to the others in the group then discuss it. This was my writing (with the edits included).

Sarah also provided some information on Collective Biographies to read and actually I did not read it before I completed the exercise. However, when I did, I found this passage that reiterated

precisely the feelings I embodied at the time because I recognised what the intra-action between the women at the meeting and myself meant to me:

This project is about exploring with women in perimenopause (periM) how the use of digital health technologies, specifically ‘apps’ supports them through this transitional stage into menopause. As a woman going through periM while finishing my GradDip (Psych), I was fascinated to find very little research on periM specifically. I also realised that my menstrual tracking app, which had been valuable in the past, was now not valuable at all as it had no ability even to recognise that I was anything but a ‘regular normal’ menstruator. It just kept counting the days and telling me how late my period was. Surely I was not alone?

## Chapter 1 Introduction



Figure 1: The meme that I would refer to as a reminder of the assemblage of woman-periM-digital health technology. <https://www.pinterest.nz/pin/514606694924397685/>

This research project explores women’s perimenopause (periM) experiences through the use of digital health apps and how that constructs these experiences or how they do not. Since 2014 when Apple’s infamous release of their Health app left out menstruation, an integral function that half of the world’s population experiences (Eveleth, 2014), menstruation tracking apps have become a highly researched topic. Areas such as technology, law, human rights, social/economic justice, activism/social movements/politics, arts/media, and anthropology all take an interest in the assemblages and entanglements of these apps and menstruation (Pichon et al., 2022a, p. 388). While the situation with Apple’s controversial Health app has highlighted the lack of research involving women, it has also highlighted a historically endemic issue wherein the female body has been assigned a certain social meaning that renders it invisible (Criado Perez, 2019), as is the case of menstruation in general and perimenopause and menopause in particular.

However, since 2014 there has been a large volume of research around Femtech, an umbrella term for technologies concerned with women’s health. Touted as a practice that promises empowerment through self-knowledge and provides the impetus to make ‘informed’ health care choices, it is generally aimed at the young and fertile to provide “affordable, convenient, and

accessible tech-based contraceptive options” (Jacobs & Evers, 2023). However, it is criticised for reproducing and reinforcing exclusionary practices, gender norms, and stereotyping of normative embodiment that contradicts the promised empowerment for many. Further, one of the criticisms is that these apps focus on fertile people, not on the needs of those who are perimenopausal or menopausal.

PeriM is predominantly understood as a biological process defined by hormonal changes that begin the transition to menopause. It starts when there are “persistent differences in cycle length of seven or more days between consecutive cycles and continues until 12 months after the last menstrual period”; together, predominant changes/irregularities in menstrual bleeding, characterised by hormonal fluctuations and a range of symptoms “including hot flushes, mood disturbance, and genitourinary issues” as well as an increased vulnerability to their chronic disease risk. (*Perimenopause or Menopausal Transition - Australasian Menopause Society*, n.d.). However, this biomedical conceptualisation is limited to biological symptomology and does not consider the psychological or social impacts of this process. A biopsychosocial conceptualisation of periM considers all of these aspects.

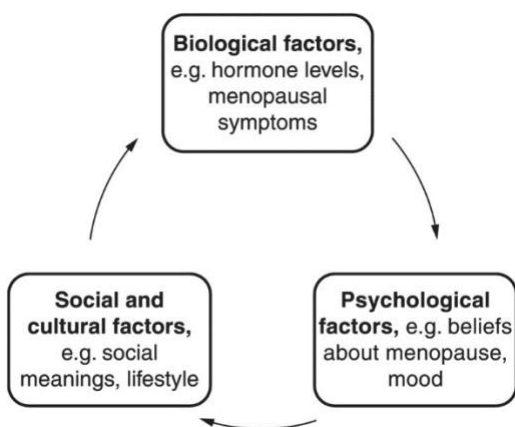


Figure 2: A biopsychosocial model of factors influencing the experience of menopause. (Hunter & Smith, 2017, p. 163)

Using a biopsychosocial perspective enables an understanding of the complexities and variable experiences of periM because periM is experienced differently by different women.

According to Dillaway (2015), what periM is and how it is experienced and talked about is complex and variable and often dependent on sociocultural attitudes and ideologies rather than strictly biology (Dillaway, 2015, p. 108). Further, the difference with which women experience physical or physiological changes is in their expectations of periM or menopause are; which is determined by their knowledge about the transition and the assemblages of other psychosocial “life contexts” (Dillaway, 2015, p. 109).

The dominant discourse of a woman’s value being in youthfulness and fertility that previously made periM problematic has been challenged with the 'menopausal turn',; a term Deborah Jermyn (2023) uses to describe the increase of "public cultural conversation and promotion...of menopause awareness" in the UK. An entanglement of cultural spaces that include "education, politics, medicine, retail, publishing, journalism and more" is a conversation worth having and is welcomed immensely. However, Jermyn points out that it could and should be more inclusive. It also perpetuates the ideal that the menopausal experience has been shown through a ‘prism’ as “primarily the terrain of white, cis-gendered, middle-class affluence” (2023, p. 1). However, growing industry and ‘menopause capitalism’ (Cahn et al., 2022, p. 1) still hold the periM and menopausal processes in a Western biomedical paradigm that can be hard to shift. The commodifying of women's bodies is not new; however, it does underpin a contemporary discourse for the construction of perimenopausal women, that of the empowered, healthy, maintained, sexy, gracefully ageing woman who is in control of her mind and body (Bauwel, 2021, p. 137). Essentially somewhat much the same construction of all ages and stages of women’s reproductive life span but without the fertility.

While there is very little research on periM specifically, there is research on menopause. It appears that periM is often conflated with menopause even though they are two distinct (though overlapping) stages of a woman’s reproductive life span (McChlery, 2021, p. 12). Research on periM and menopause from multiple disciplines points to a dynamic process of individual experiences. It also points to broader cultural discourses as being highly limiting and narrow, creating the biomedical

body 'norms' that women must negotiate to make sense of their own periM experiences. For example, in periM irregular cycles, heavy bleeding, and missed periods are considered 'abnormal' and a medical issue; in puberty, however, it is just considered a part of the constantly changing and in flux nature of a woman's life span. Moreover, little attention is paid to women's views of their periM experiences. As the biomedical model is the dominant perspective, it may be why there is little literature to be found (Dillaway, 2015, p. 109). The conundrum faced by those going through the periM process is that, on the one hand, their experiences are highly individual, variable, and often contradictory. Yet, they try to fit those experiences into a 'normal' biomedical body that may not match their reality.

Similarly, the Postfeminist healthism discourse developed by Riley et al. (2018) is focused on the intersections of gender, health and contemporary forms of neoliberalism and looks at the varying ways in which women are commodified and pathologised with an unachievable promise of being a 'good citizen' if only they can maintain a 'normal' healthy body, all the while attending to practices that are "self-transformative and consumerist" (Evans et al., 2020, p. 95). Postfeminist healthism was developed from Gill's (2007) postfeminist sensibility (as cited in Riley et al., 2017), in which a set of ideas about "female subjectivity, embodiment, and empowerment" is mediated through a range of "digital, social and traditional media" (Riley et al., 2017, p. 8). The sensibility calls for understanding how women's sense of self is mediated through contradictory and inconsistent notions (Riley et al., 2019).

The medicalisation of women and their bodies has been happening for centuries and was accomplished in the late eighteenth century with what Clancy (2023) calls the "hoarding of knowledge" when men took over from professional midwives (Clancy, 2023). Since then, the privileged and dominant science of medicine has meant that vital knowledge of women and their bodies has not even been theirs to pass on or use themselves, and still, women do not have that knowledge of their own bodies. However, research shows that this lack of knowledge of periM and

menopause also extends to contemporary medical practitioners and that GPs are inadequately knowledgeable about these experiences. A lack of knowledge of periM and menopause results in seeking support and information from different sources (Harper et al., 2022; Marnocha et al., 2011; Tariq et al., 2022). These sources are often digital and include websites, social media, YouTube, Instagram, TikTok, Facebook, and tracking apps. Tariq et al. (2022) found that the perimenopausal group in their study felt the education about menopause should be through such apps as tracking apps and fertility apps (Tariq et al., 2022, p. 12), and this could be because they are more likely to be digital natives (see pg.122)

While there was little research on periM, there is even less on experiences of periM and digital health apps. Although there are existing periM and menopause-specific apps, there is little research evaluating their impact (Tariq et al., 2022, p. 13). Homewood (2019) argues that the few apps that are periM specific are copies of menstrual self-tracking apps and tie women and their embodied periM experiences into an unrealised promise of a 'solution' to menopause and self-regulatory good citizenship. In other words, an experience of the medicalised menopausal body needing to be controlled (2019, p. 7). She also argues that quantification (or self-knowledge through numbers or the quantified self) allows for the reduction of the body into a numerical form that is not indicative of the lived experience. The relevance of such data collection to the user is negligible when self-tracking apps are geared explicitly towards predictability, and the very experience of periM and menopause is anything but predictable.

Dolezal and Oikkonen (2021) consider self-tracking technologies as a new conception of the human body as an assemblage of “data and information flows, genetic, molecular, vital, psychological, biological and otherwise” that simultaneously shape and affect individuals’ personal lives and the broader socio-political understandings of “health, life and the human body”. Further, they mark the fusion (or assemblage) of “information technology, biomedicine, and a neoliberal market agenda” (Dolezal & Oikkonen, 2021, p. 2).

How perimenopausal women understand themselves and their bodies through digital health apps is an important space to research for several reasons. PeriM is under-researched generally, and more specifically concerning the use of digital health apps. Therefore, producing experiential knowledge alongside understanding the entanglements that appear from the assemblage of woman-periM-digital health technology would be valuable. As technology advances and becomes more and more ubiquitous, how the dynamic process of periM is understood and conceptualised through the assemblages of this project may be a ‘road map’ for those coming next.

The big theory used in this research project was Posthuman feminism from philosopher Rosi Braidotti (2022), who builds on work by the likes of theorists and philosophers Deleuze, and Guattari and Foucault in an effort to decentre ‘man (or ‘woman’)

from the humanist scholarship of the Enlightenment to the Renaissance. Advocating an affirmative ethics while unpacking power relationships, she argues that while it is important to expose the ‘entrapping and repressive’ functions, power also has an ‘empowering and affirmative’ function that can be seen when we focus on the “potential vital forces of more-than-human assemblages” (Lupton, 2019b, p. 1999).

Lupton (2019b) also advocates using these more-than-human assemblages through feminist new materialisms (FNM) that consider several unique approaches that are used to analyse and conceptualise “human subjectivity and embodiment, agency and power relations, and the entanglements of humans with nonhumans in more-than-human worlds”. Moreover, Posthuman feminism aligns with FNM in the understanding of everything constantly changing, in flux ‘becoming’ through the intra-actions creating affective entanglements that are attended to through FNM.

Lupton (2019b) highlights the propositions of these more-than-human assemblages attended to through FNM (Lupton, 2019b, p. 2002). Further, she outlines a set of questions for qualitative researchers she has developed through her research. For the purposes of this research project, I found

the propositions of the researcher being part of the research assemblage and bringing their own perspectives, situations and lived experiences the most influential in using the perspective. Also, Lupton describes thinking with theory as a way to acknowledge the importance of the theoretical approach from the very beginning of the project and how it shapes the research, including the choice of research materials, research questions that need to be attended to and analysis. For this project, the methodological approach of Cooperative inquiry (CI), a type of Participatory action research (PAR), had similar theoretical underpinnings in questioning knowledge production, privilege and liberationist spirit. This assemblage of a Posthuman feminist perspective as the overarching big theory and then looking at the lived experiences of the women (and myself) meant a way to enter 'in' to the data and unpack how women understood periM and how their experiences situated them and how the use of digital health apps changed that understanding and situation.

Because the lack of knowledge of periM makes it somewhat confusing to research the term, I extended the parameters to menopause and, therefore, any understanding of menopause through the use of digital health apps. The majority of menopausal research has a biomedical conceptualisation of menopause, and therefore the apps tend to be designed to focus on the biological and physiological aspects. Further, the apps tend to still be tracking apps, which seems somewhat redundant, considering periM is anything but predictable.

More-than-human assemblages and entanglements with apps are important because they can work to “disrupt and challenge normative assumptions, uncover networks of power, including resistances and reinventions” (Lupton, 2019b, p. 2008). What this means for periM experiences is that it opens up the capacities of women to become their perimenopausal selves and understand how their language, stories, and experiences are understood through the use of digital health apps. As a perimenopausal woman, I became interested in this topic during my GradDip work in psychology. I found my period tracker to suddenly be of little use to me as my periods became irregular. I felt a little like I was floundering around trying to determine how to equate a massive variation in my

physical and mental well-being. Feeling a little out of control with unpredictable things happening to my body, my period tracker could not give me any ‘data’ that made sense of this situation. There must be others with the same problems in their daily lives and with their tech? I decided to find out.

For this project, I firstly searched the literature on periM, menopause and digital health apps to get a ‘feel’ for how periM is understood and where the research situates it, and, more importantly, what it said about perimenopausal women’s lived experiences. In my work as a Homeopath, I work very intuitively and iteratively. Hence, as I began to think about theoretical perspectives, I realised I wanted to do this project from an equally flexible, open and iterative standpoint. This process unfolded over time with a lot of reading and reflecting on what perspective resonated with my understanding of myself. In my methodological theory chapter, I have written in-depth on how I chose the theoretical, methodological and analytical perspectives I have used. My process in this project and thesis writing is somewhat unorthodox and not overly structured per se. However, that does not mean I was not thoroughly grounded in the theoretical and methodological underpinnings that I would keep coming back to or ‘out’ of the data to understand how it informed the experiences of periM and digital health apps.

Also somewhat unorthodox is how I am using my voice. I am not institutionalised, and I somewhat struggle to articulate what I want to say in academic language. My writing is also somewhat unorthodox, but again, it does not mean I have not attended to the ‘rules’ of academia in producing this research project.

This research project was done collaboratively with seven other women and me. I am analysing their experiences and stories as ‘data’, but it is with my interpretation of those experiences based on the entanglement of my theory, method, and reflective analysis. While paying attention to the underlying discourses of Postfeminist healthism and keeping in mind the affirmative ethics and more-than-human assemblage of Posthuman feminism, I attempted to let things ‘become’, and the

story unfolds. In this thesis I attempt to report how the stories unfolded for me and became personal experiences of 'our' selves and 'our' bodies while using digital health apps. As Braidotti (2022) says, "Posthuman feminists aspire to nurture and implement the ongoing process of unfolding alternative and transformative paths of becoming" (Braidotti, 2022, p. 8).

## Chapter 2 Literature Review

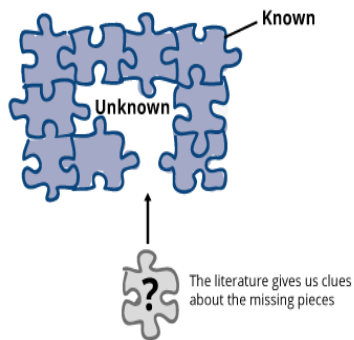


Figure 3: The purpose of a Literature Review - [https://flexiblelearning.auckland.ac.nz/biomed-lit-review/12\\_2.html](https://flexiblelearning.auckland.ac.nz/biomed-lit-review/12_2.html)

This literature review will consist of the following sections:

- 1) What is perimenopause?
- 2) Scoping review methodology.
- 3) Themes from the literature:
  - a) Lack of knowledge
  - b) Postfeminist & Neoliberal Healthism
  - c) Self-knowledge through numbers (quantified self)

The issues of periM and the apps developed to deal with it are the focus of the following literature review. This section considers existing research regarding perimenopausal women's experiences with digital health apps.

As I will show below, there is very little research concerning how perimenopausal and menopausal women understand themselves and their bodies through the use of digital health

apps, as noted in research that attends to menstruation and digital health apps; (Cronin et al., 2021; Lupton & Maslen, 2019; Lutz & Sivakumar, 2020; Tutia et al., 2019; Warke, 2021), and specifically concerning menstrual app users in Aotearoa New Zealand (there are no apps designed for the New Zealand context), (Hohmann-Marriott & Starling, 2022). However, supporting research in adjacent areas around women's use of digital health apps makes this research an important space to investigate. Therefore I will begin this literature review with an overview of what is perimenopause. I will then talk about the scoping review methodology used to review the literature and, finally, I will discuss the themes from the literature reviewed, which are: a) Lack of knowledge, b) Postfeminism & Neoliberal healthism, c) Self-knowledge through numbers (quantified self).

## 1) What is Perimenopause?

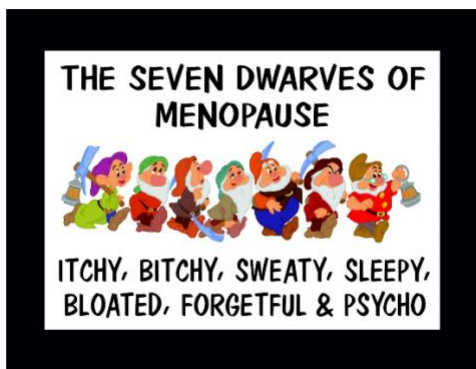


Figure 4: Perimenopause Meme that reminded me of the biopsychosocial conceptualisation of periM  
<https://www.ebay.co.uk/itm/232522389506>

Perimenopause (periM) is considered mainly in biological terms as a transitional period leading to menopause that may be characterised by symptoms such as irregular bleeding, hot flashes, and insomnia. While not actually menopause, it is sometimes described as a menopausal stage simply because it is the beginning of becoming menopausal (Dillaway, 2006, p. 34, 2015, p. 100). However, periM is also considered through its corollary feminist social approach that understands periM as a complex interaction between the biological (or biomedical body) and social and cultural factors

(Edozien & O'Brien, 2017; Hunter, 2019; Hunter & Smith, 2017; McCloskey, 2012). Firstly, I will review the biological understanding of periM, and secondly, I will review a biopsychosocial conceptualisation of periM.

In 2001 a group of 27 invited participants took part in a workshop in Utah (USA) to "address the absence of a relevant staging system for female reproductive ageing". The 27 participants had "extensive clinical and/or research experience in reproductive ageing in women." The workshop was sponsored by the American Society for Reproductive Medicine (ASRM), the National Institute of Child Health and Human Development (NICHD), the National Institute on Aging (NIA) and the North American Menopause Society (NAMS). The Stages of Reproductive Aging Workshop (STRAW) (Soules et al., 2001) was the result of this first workshop, and the subsequent STRAW+10 (Harlow et al., 2012) have tried to standardise a conceptualisation of all stages of the reproductive cycles. Placing perimenopause as a stage that starts when there are "persistent differences in cycle length of seven or more days between consecutive cycles and continues until 12 months after the last menstrual period"; and predominant changes/irregularities in menstrual bleeding, characterised by hormonal fluctuations and a range of symptoms "including hot flushes, mood disturbance, and genitourinary issues" as well as an increased vulnerability to their chronic disease risk. (*Perimenopause or Menopausal Transition - Australasian Menopause Society*, n.d.). This conceptualisation of periM as a clinical definition has become the dominant discourse emphasising the biomedical body.

The development of the biomedical body is traced by Shildrick (Shildrick, 1997), in which she describes how medicine became the "dominant form of healthcare" through a narrow and regulatory conceptualisation of a 'normal' body that is free from disease (1997, p. 17). This dominant 'normal' body or biomedical body, based on the empirical methodology practised by "men of science" with expert knowledge, broadened the scope of medicine to include such areas as sexuality and emotions. Further, this biomedical body and its accompanying discourse allow a

conceptualisation of periM and menopause to be medicalised, defining it as a medical 'problem' or a condition that requires management. The 'management' is predominantly pharmacological and pathologises women's health, reproductive, and ageing processes (Ciolfi Felice et al., 2021). This is the dominant discourse around much of the literature concerning women's health and menopause and the small amount on periM. Below I will look at the conceptualisation of periM from the feminist corollary that incorporates the biopsychosocial aspects.

While the clinical definition of periM is predicated on irregularities in the menstruation cycle, not all women experience periM symptoms only related to menstrual flow; many women experience a myriad of symptomology that may be more problematic to them other than just menstrual bleeding (Dillaway, 2015, p. 100). A clinical definition of periM is problematic because it does not capture the psychosocial elements of this stage of life and the variability in which women experience the 'signs and symptoms.' In her chapter on Menopause, Heather Dillaway (Dillaway, 2015) discusses the assumption (based on medical websites, other authoritative sources, and women themselves) that a set of symptoms that represent periM include "but are not limited to mood changes, memory problems, fatigue, hot flashes, insomnia, vaginal dryness, changes in libido, weight gain, unwanted hair growth, heart palpitations, headaches, and joint pain" (2015, p. 101). Victoria Team (Dillaway & Wershle, 2021, p. 219) suggests avoiding the dichotomous attitudes and experiences of perimenopause as either positive or negative; but to expect that throughout the transition, "women can expect to experience both positive and negative changes in different stages of perimenopause". She also considers the assemblage of women's lives (social, cultural, psychological, and hormonal) that may shape their experiences of periM and can be experienced in many different ways by different women. She gives the example of how one woman may not experience a hot flush as a negative because she has previously been cold; another woman may find a hot flush problematic (Dillaway & Wershle, 2021, pp. 219–220). In this sense, the clinical definition has a limited and narrow

understanding of a highly variable process experienced in many ways by different women from diverse sociocultural backgrounds.

The biopsychosocial perspective of menopause has been described as taking into account the impact of “hormone changes, a woman’s beliefs and attitudes, mood, social context and past experiences as well as her preferences” (Hunter & Smith, 2017, p. 166). Moreover, Jane Ussher (Ussher, 2006) notes there is no ‘natural’ reproductive body that has not been constructed through the dynamic process of discourse; that is, the enactment of femininity “within a highly regulated framework” that renders women who are in control of their “unruly reproductive body as a creature of substance”. Failing at this control, or failing at this particular performance of ‘being feminine’ throughout the reproductive life cycle, risks being seen as ‘not normal’; or, as Ussher describes it “mad or bad” and subject to a masked disciplinary action that is considered “treatment or rehabilitation to disguise its regulatory intent” (2006, p. 4). This places the onus on the perimenopausal woman to be a 'good citizen' and 'manage' her periM body in a way that is acceptable, private, controlled, and within the boundaries of having a 'normal' periM experience. According to Dillaway (2015), what periM is and how it is experienced and talked about is complex and variable and often dependent on sociocultural attitudes and ideologies rather than strictly biology (Dillaway, 2015, p. 108). Further, the difference with which women experience physical or physiological changes is in their expectations of periM or menopause are; which is determined by their knowledge about the transition and the assemblages of other psychosocial “life contexts” (Dillaway, 2015, p. 109). She also refers to feminist scholars suggesting that more women view menopause as a "positive or neutral transition because of certain life contexts.” For example, those that use contraception or choose not to reproduce may welcome menopause (Dillaway, 2015, p. 109). While the literature points to this dynamic process of individual experiences, it also points to broader cultural discourses as being highly limiting and narrow, creating the biomedical body 'norms' that women must negotiate to make sense of their own periM experiences. The conundrum faced by those going through the

periM process is that, on the one hand, their experiences are highly individual. Yet, they try to fit those experiences into a 'normal' biomedical body that may not match their reality. To see what research has been done concerning the assemblages of the biological or biomedical body perspective of periM and the biopsychosocial perspective, I undertook a scoping review methodology for my literature review.

## **2) A scoping review methodology**

As outlined above, periM is a biopsychosocial issue, and it is addressed across a range of literature in different disciplines. Therefore, I employed a scoping review methodology to broadly assess previous research in these adjacent areas (Arksey & O'Malley, 2005, p. 20)<sup>1</sup>. The strength of using a scoping review methodology is that it enables a review of interdisciplinary and comprehensive research that may identify gaps in existing research. This process is iterative, which means engaging with the areas adjacent to the research project. This process aims to achieve "in-depth and broad results" (p. 22) based on a framework that requires engagement reflexively. As Lyons and Chamberlain (2006) point out, reflexiveness requires "taking an explicit look at the broader consequences of practices within a discipline" (Lyons & Chamberlain, 2006, p. 26). It is practised by considering how the discipline may limit understanding, legitimate or marginalise certain institutions or groups, and sustains established notions (p. 26). They also point out that Health Psychology was formed when "nineteenth-century individualism and positivism" informed its practice, thereby creating a discipline highly influenced by the social and historical moment within which it was formed. Reflexivity is necessary for a cyclic manner to recognise how Health Psychology understands certain issues from a larger standpoint, then looking deeper into the problems with that perspective in mind and in a personally reflexive way. By a reflexive way, it is meant to understand what, when and

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<sup>1</sup> While Arksey & O'Malley (2005) call this method a scoping study – to maintain clarity I have referred to it as a scoping review method.

how my own internal and external responses to the research produce my understanding of the themes (considering my own situated cultural identity); and involves reflecting on how my responses can be used to critically assess what the research says about the authors understanding of their place in that same research. For example, Jootun et al. (2009) reflect on a study they conducted in 2006 and concluded that to create rigour and transparency in qualitative research, the key process is to make "the relationship between, and the influence of, the researcher and participant explicit" (Jootun et al., 2009, p. 46). In this sense, it ties in with the cooperative inquiry methodology for my research project, which is both collaborative and reflexive. In other words, engagement in the literature requires reflexivity on my part to recognise the direct relationship between the researchers and participants in the reviewed articles. To fully assess the research, it will take a balance of action and reflection that aligns with the cooperative inquiry methodology's cyclic nature. It requires looking at the research from different angles and understanding how the knowledge of the research aligns with my knowledge and experiences or does not. As in cooperative inquiry, this will enable me to decide if the research has valuable "knowing" (Reason, 1999, p. 212). To understand lived experiences of health and illness, we must consider how our social and cultural world is entangled with the underpinned concept of power, which structures our 'meaning-making.' For example, I may experience periM as a white, heterosexual, cis-gender woman living in a wealthy country quite differently to a woman who is not white, lives in a poorer country, and does not identify as a woman (Lyons & Chamberlain, 2006, p. 39).

### **3) Themes from the Literature Review**

In an effort not to 'reinvent the wheel,' this review will begin with looking at previous literature reviews completed regarding women's health, menstrual health, and digital health technologies. This will entail summarising the highlighted topics within these reviews; then looking at other research in those areas that have yet to be summarised in the literature reviews. The process

by which I came to choose these articles and the resulting topics began by first searching for articles based on my research question, which is: *How do perimenopausal women understand themselves and their bodies through the use of digital health apps?* There were no results for digital apps and perimenopausal experiences. However, six literature reviews covered some elements of my research question; namely, women's knowledge and experience of perimenopause and menopause (O'Reilly et al., 2022); women's embodied experiences of using digital health technologies (not perimenopausal specific), and understanding how the technology is meeting the needs of the end-user (Cronin et al., 2021; Del Busso et al., 2021a; Pichon et al., 2022b); representations of menstrual beliefs and practices in popular culture (Winkler & Bobel, 2021a); and, the intersection of women's health and Human-Computer Interaction (HCI) (Keyes et al., 2020). Using an iterative approach, I read through the literature reviews and the research being reviewed to consider what themes were shared and what was specific to those reviews. This approach often led to looking further at certain authors' other bodies of work, in particular, the work of some peripheral research concerning digital health apps and the law; and femtech around the actual design of the technology. In alignment with the cooperative inquiry method and the scoping review method, I also reflexively noted my engagement with the reviews to recognise how my understanding of the literature changed/evolved. During this process, I saved my initial search parameters and occasionally received alert emails when new research was uploaded to the databases. Of these alerts, I have come across the most recent research, some of which relate to my topic, and have included those received so far in this review.

As with any practice of re-reading, I became aware of more threads of commonality within the research (e.g., the neoliberal perspective of "the good citizen") that surfaced with each reading; and, at the same time, what was not common (e.g., any attendance to my research question or a perimenopausal perspective). Being reflexive also required me to continually go back to the actual research that was reviewed to not 'take for granted' the conclusions of the reviews; they may have been the conclusions of the review authors, but not necessarily what the article authors were

concluding; or at least not exactly. For me to decide the themes, a reflexive perspective of understanding who the authors were and what they were trying to achieve was just as important as what the authors of the reviews were concluding. For example, Del Busso et al. (2021) discuss the importance of reflexivity in the quality of studies and conclusion sections of the review; they also critique the lack of reflexivity in the reviewed articles. However, there is no mention of their reflexivity in the review process they undertook. Some of the literature reviews reviewed literature that was either outside the scope of my research question; or completely unrelated to my research question. Therefore, I only investigated the relevant studies that were reviewed for the most part but have briefly discussed some areas that, while they might not be specifically relevant to my topic, are important enough to be considered in the future as part of the overall experiences of perimenopause, i.e., the law and human-computer interactions (HCI) and Femtech. Through a reflexive cycle of reading and re-reading these literature reviews, it became apparent that certain themes were common in the reviews, regardless of the discipline that reviewed the research. The interdisciplinary search of the literature has meant a review of research in HCI, medical informatics, feminism and feminist media studies, medical internet research, law, gender studies, reproductive studies, public health, and mental health nursing. What also became apparent is the need for more research (within these themes) concerning perimenopause and women's general experiences of ageing. These themes are discussed below a) Lack of knowledge; b) Postfeminist & Neoliberal Healthism; c) Self-knowledge through numbers (quantified self).

As discussed below, a central theme across these different pieces of literature was the complexities of perimenopause and digital health technologies. These complexities can be seen in the often-contradictory findings of previous research. These topics also highlight the complexity of both menstruation in general and the socio-cultural implications of digital health technologies specifically concerning menstruation.

Briefly, the themes identified in the research listed below are discussed somewhat separately. However, they intersect and are entangled much like the assemblages and entanglements that Davies describes as the intra-active engagement wherein researchers are not only “of” the world but are also “in” the world; and researchers, writers, readers and reviewers are entangled in a way that affect and are affected by change (Davies, 2021. pg 2).

### **Lack of knowledge -**

As described above, periM is complex and variable and can be understood from a biomedical and biopsychosocial perspective (Edozien & O’Brien, 2017; Hunter & Smith, 2017; Tutia et al., 2019). In this section, I wanted to see what the literature says about how women understand themselves and their bodies during the periM transition.

Reviews categorised in this section include literature reviews conducted by O’Reilly et al. (O’Reilly et al., 2022), in which they reviewed 17 studies (10 quantitative and seven qualitative) to understand women's knowledge and experiences of periM and menopause; and Winkler and Bobel (Winkler & Bobel, 2021a) who examined how menstrual "beliefs and practices are represented in the popular media" by reviewing 82 articles. This review considers the perceptions of menstruation through popular media to "critically interrogate these representations and their impact on the construction of agency of menstruating women and girls" (2021a, p. 315).

Across the literature that focused on women’s experiences, periM is constructed as complex and varied. A socialised biological practice, it is understood in terms of historical, regulatory, and sociocultural terms; even the inquiry into its form and function has been socialised into being unknown and hidden (Bobel et al., 2020, p. 1). This is true of the menstrual cycles throughout the life span, and as Chris Bobel explains in the introduction to *The Palgrave Handbook of critical menstruation studies* (2020), attention to this biological process, as experienced by women everywhere:

*"surfaces broader societal issues and tensions, including gender inequality, practices and discourses of embodiment, processes of racialization and commodification, and emergent technologies as read through various disciplines (for example, history, psychology, communication studies, sociology, anthropology, art, nursing, gender studies, public health, law policy analysis – the list goes on)"* (Bobel et al., 2020, p. 4).

O'Reilly, McDermid, McInnes, and Peters (2022) explored international literature and found that women's knowledge and experiences of periM were diverse and varied substantially within countries; and are affected by "deeply embedded sociocultural patterns" (2022, p. 1). These patterns included differing ways and means of managing periM symptoms they found difficult. However, their positions of socioeconomic privilege influenced this, including "access to services, education, employment and social constructions of women" (2022, p. 10).

A lack of knowledge of periM and menopause resulted in seeking support and information from different sources (Harper et al., 2022; Marnocha et al., 2011; Tariq et al., 2022). The entanglement of this lack of knowledge and information-seeking affects how women understand their periM experiences and often leads to a negative expectation of the transition (Cooper, 2018; Harper et al., 2023; MacLellan et al., 2023; Munn et al., 2022). The reasons for this lack of knowledge have been attributed to a lack of standardised understanding of periM and menopause (Alspaugh et al., 2021; Hickey et al., 2022); feelings of embarrassment (Cooper, 2018); lack of education from school age where young people are well informed and educated about puberty but not prepared for the later reproductive stages (Alspaugh et al., 2021; Munn et al., 2022); and cultural and language differences between health care providers and ethnic minorities (MacLellan et al., 2023). Further, medicalising periM and menopause as a dysfunctional process leads to a negative discourse (Hickey et al., 2022).

The literature revealed that information from various sources was offered from a heteronormative lens which could situate women in a discourse "which may negatively influence

their knowledge and experiences” (O’Reilly et al., 2022, p. 11). Further, the complex-mediated discourse of negativity around periM and menopause is underpinned by “patriarchal patterns that silently dismiss women’s health as less important” and that a woman’s value is when she is in her reproductive years. Moreover, the literature showed that women experienced a distinct lack of knowledge or understanding about the periM transition from their GPs. Notably, women reported having the experience of being offered prescription medicines or traditional hormonal treatments “rather than answers to their questions” (Marnocha et al., 2011, p. 238). Further, the lack of understanding from GPs concerning periM has led to women being misdiagnosed or receiving prescriptions for other conditions (e.g. SSRIs or antidepressants) (Harper et al., 2022, p. 15). These experiences, combined with an already 'hidden' history and the complex, confusing, and often contradictory and inconsistent information presented in media and medicine, continue to leave women wondering if they are ‘normal or abnormal’ (Harper et al., 2022; Marnocha et al., 2011; Refaei et al., 2022; Tariq et al., 2022).

The literature highlights shifts towards a more positive periM and menopause experience that encourages open discussion and moves away from the silent/hidden medicalised model that problematises a woman’s reproductive system. However, this may also have a contradictory affect on women who have difficulties with their periM experiences, where they may feel judged or 'not normal' (O’Reilly et al., 2022, p. 11). The review by O’Reilly et al. (2022) highlights how women's knowledge and experiences of periM and menopause are heterogeneous and guided by deeply entrenched sociocultural practices that vary significantly globally and within countries (O’Reilly et al., 2022, p. 1). While this review is in a clinical nursing journal, it points to the powerful medical discourse and “patriarchal patterns that silently dismiss women’s health as unimportant”. Moreover, it concludes that there needs to be further research exploring women’s knowledge and experiences to "work toward informing evidence-based strategies to promote” women’s health (O’Reilly et al., 2022, p. 11). The silence is perpetuated in complex ways entangled with culture, religion, and a biomedical

body that is at once “mad and moody” and needs to be ‘managed’ to perpetuate a more positive periM or menopause discourse (Ussher, 2006).

Regarding perimenopausal women, invisibility is connected to menstruation, ageing, and the complexities associated with the transformation imperative. There is limited research focusing on the lived experiences of perimenopausal women. However, included is research that showed periM women’s experiences were characterised by feelings of being unprepared for periM, a lack of knowledge, and confusion (Harper et al., 2022; Marnocha et al., 2011; Refaei et al., 2022; Tariq et al., 2022). Marnocha et al. (2011) reported that women wanted more information, and that was why they went to see their GP, not because they “necessarily accept the medicalised model of care” (Marnocha et al., 2011, p. 238). The research also highlights confusion due to media and medicine providing contradictory information and that women just wanted to know if their experiences were “normal or abnormal” (2011, p. 238). Harper et al. (2022) and Tariq et al. (2022) discuss how in the UK, the lack of knowledge through the narrative of a ‘hidden’ transition is further complicated because their GPs were also under-educated, and this meant that women were not being availed of the appropriate care. Similarly, Alspaugh et al. (2021) found a lack of “communication and education” concerning periM between healthcare providers and women. They noted a definitive lack of “clinical care and patient education” at the later stages in a woman’s life (2021, p. 644). However, they also considered this a “missed opportunity” for clinical implications. Their study is qualitative, with a theoretical framework of feminist poststructuralist discourse. It was undertaken to explore “global, democratic, and practical” ways of understanding the women’s experiences in the study. The study noted the limitations of any diversity being included because it was an English-speaking study in the unique US health system (2021, p. 650). However, there was no discussion of any of the sociocultural aspects of these experiences of periM (i.e. any mediated knowledge gained through other avenues), which indicates a biomedical perspective of periM.

In contrast, Winkler and Bobel (2021) reviewed articles from popular media sources on ‘menstrual myths’. Winkler and Bobel’s (2021) review found that while many of the articles had good intentions of “dispel[ling] menstrual myths” and correcting misinformation, the result was that the reviewed articles mostly misunderstood the complex and diverse meanings of “menstrual beliefs and practices” which did not acknowledge women’s and girls’ agency (2021a, p. 313). Further, they believe the articles lapsed into "sensationalized or patronizing" accounts or ridicules of cultural and religious practices, thereby disseminating Western superior knowledge and practices. They suggest that to understand the periM experience in all its complexity and variability, it is important to take into account different forms of knowledge in an attempt to "make sense of political, social, medical and/or biological processes, and the recursive work embedded in the menstrual cycles myriad social constructions” (2020, p. 3).

Examining mediated knowledge places Western modernity as superior and what that means is undertaken by Winkler and Bobel (2021b) in their literature review on menstrual beliefs and practices in popular media related to menstruation ‘myths’ around the world. They analysed eighty-two online articles that sought to “dispel menstrual myths.” In this review, they examined how this perception of Western modernity impacts "the construction of agency of menstruating women and girls" (2021b, p. 315). They critique the saviour mentality that much of the literature and media analysed perpetuates a normalising of menstruation for those in the global South; alongside a silencing of woman’s and girl’s “agency, choices, and preferences” on how to experience menstruation within their cultures, religions, and personal right to choose whether or not to participate in their religious, cultural menstruation practices. This authoritative conceptualisation of a ‘normal’ menstruation experience further silences and hides the varied and complex experiences of menstruation and marginalises the freedoms supposedly being fought for. While they acknowledge the significant obstacles to realising the global rights of women and girls to experience menstruation in their own ways, they also highlight how these obstacles "are deeply intertwined [entangled?] with

sociocultural norms that often position women as inferior" (2021b, p. 332). What they point to as being critically important is listening; that is for those in the global North to stop trying to give "voice to the voiceless" but to hear their voices and undertake to 'unlearn' the role of the global North's participation in creating a "monolithic third world woman" (Spikvak (1985;32) as cited in Winkler & Bobel, 2021b, p. 333). This will open us to the many complex and variable understandings of the lived experiences of periM, considering the diverse meanings within the historical, religious, and sociocultural assemblages. The popular discourse is seen to have positive impacts that are happening wherein those in the global South who are "promot[ing] menstrual literacy and tackl[ing] menstrual stigma" are changing menstrual discourse to be "menstruator-centric and agentic without privileging the West as superior or normative" (Winkler & Bobel, 2021b, p. 333). As Bryndl Hohmann-Mariott suggests, indigenous approaches to both menstruation and data "offer collective and supportive alternatives to neoliberal citizenship and surveillance capitalism." Therefore more collaborative and indigenous-led research initiatives may "decolonise our understandings of menstruation" (Hohmann-Marriott, 2021, p. 16).

Other perspectives brought to light through attention to menstruation can be seen in legal issues relating to perimenopause, menopause, and post-menopause (Cahn, 2021; Cahn et al., 2022). Again the complexity of menstruation and embodiment is seen in the intersection of the law and the under-researched body (Cahn et al., 2022). Historically, limited research has shown that experiences of the transition through to menopause are a complex mechanism involving and influenced by both the biological processes and social and cultural constructions of the process (Cahn et al., 2022; Hunter, 2019; Hunter & Smith, 2017; Ilankoon et al., 2021; McCloskey, 2012).

The complexities of ageing have been socially constructed in terms of medicalisation (Zola, 2009), wherein perimenopause, menopause, and post-menopausal women can maintain their 'femininity' through treating these transitional stages of the life span as a medical 'disorder' that needs managing. This medicalisation is reinforced by the marketing of products and services under the guise

of empowerment, that Cahn et al. (2022) call “menopause capitalism” (p. 24). This dichotomy portrays menstrual health as a negative embodiment that needs to be managed while framing management as positive, empowering, and demonstrating good citizenship. Cahn (2021) suggests 'normalising' menopause into more positive and agentic experiences not based on Western stereotypes perpetuating stigma and the medicalised notions of disability and gender (p. 1). In particular, the "decoupling” of gender identity from the capacity of reproduction is an area that can herald new jurisprudence in areas related to human rights generally and for trans and gender nonbinary persons (p. 51).

The literature has shown how menstruation, perimenopause, and menopause are as complex and varied as the many different people who experience them. These experiences are influenced in complex and nuanced ways, including biology, physiology, and psychosocial factors like culture, religion, and socioeconomic factors (Hunter & Smith, 2017). The complexities of the periM experience are underpinned by a multifaceted assemblage of a biomedical body that constructs periM as a medical disorder, a sociocultural perspective of a mad, moody, leaky, and messy body that needs to be managed/hidden. This assemblage is underpinned by a dominant discourse of postfeminist healthism that shapes women’s understandings of their bodies and ties them into expectations to work on their health and appearance, as seen in the literature concerning the discourse of 'ageless ageing' through the transformation imperative as described by Riley et al (Riley et al., 2022) The conceptualisation of periM within a dominant discourse of medicalisation and the neoliberal healthism that underpins this discourse is seen in literature that will be discussed in the next theme. Some of the literature reviewed shows a lack of knowledge of periM (Harper et al., 2022; O’Reilly et al., 2022; Tariq et al., 2022). It is a lack of knowledge expressed by the women experiencing periM and by the medical practitioners consulted by women in this later stage of their reproductive lives.

## **a) Postfeminism and neoliberal healthism**

In this section, I wanted to see how the literature addressed the discourses of postfeminist healthism and neoliberal healthism that I used in my project as part of the theoretical perspective that Riley et al. (2018) developed. Further, I wanted to see how these underpinning discourses produced wider discourses of sense-making that women used to understand their bodies and the expectations to work on their health (and appearance). The literature reviewed highlights these discourses in areas such as the transformation imperative and ‘ageless ageing’ that drives a normative expectation “for women to be confident, sexually agentic and efficacious and successful in their life plans” (Riley et al., 2018, p. 6). Further, neoliberalism’s consumerism discourse enables healthism to understand that we need constant ‘management’, defined as maintaining good health and, therefore, good citizenship (2018, p. 9).

The dominant discourses of the medicalisation of periM, the associated good citizen discourse, and the discourse of ageless ageing underpinned by Postfeminism and neoliberal healthism narratives have been highlighted in the literature reviewed. Postfeminism and neoliberal healthism facilitate the empowerment discourse where women work on themselves (transform?) to meet cultural ideals (Riley et al., 2018, p. 6). These discourses are mediated in many ways and are often conflated with understanding ourselves as ‘authentic’ when partaking in them. However, they are not ‘static messages’ that stay inside the media but inform the way we understand ourselves and others, often in gendered ways (Riley et al., 2018, p. 6). For instance, Wolf (1998), as cited in Muhlbauer and Chrisler (2007), stated that even though women are now more powerful and have more money and recognition, they are often worse off physically as “the cults of weight and age feed the terror of ageing”. She also argues that the double standard of men being encouraged to be sexually active (often with younger women) and women considered to be “past the acceptable age for sexual activity” is socially constructed and is still highly restrictive for women (Muhlbauer & Chrisler, 2007, p. 99). It has been

sixteen years since this was written. Nevertheless, it is still circulated in popular media where these discourses also tie women into understanding themselves and their bodies through the mediated knowledge that shapes their experiences.

Mediated knowledge is often achieved through popular media such as television, movies, books, etc., and as Livingstone (1999) says: “The modern mass media possess .....power to encode, preserve, manipulate, reproduce and circulate symbolic representations of knowledge” (Livingstone, 1999). As such, the conceptualisation of ageing women has been researched through areas such as gender and sexuality, media and cultural studies, and ageing and feminist theory (Bauwel, 2021; Fiedler & Casey, 2021; Jermyn, 2023; Orgad & Rottenberg, 2023; Ross, 2021).

The contradictions around how ageing women are portrayed in popular media have been addressed through various studies of the Netflix show *Grace and Frankie* (Bauwel, 2021; Fiedler & Casey, 2021; Ross, 2021). Fiedler and Casey (2021) note that popular media forms are fundamental in providing aspiring “models of how to perform gender, ..and standards of self-perception”, and as such, the show is both positive and empowering in its presentation of ageing women on the one hand and on the other hand reinforces “neoliberal and postfeminist constructs of identity, with consumerism, individual agency, self-improvement, entrepreneurialism and cultural sexualisation dominant thematic concerns” (2021, p. 949). Ross and van Bauwel draw on postfeminism concepts in their analysis of older women on screen in television and movies (Bauwel, 2021; Ross, 2021). On the surface, the discourse is positive and empowering, yet the underlying discourse is often of stereotypical healthy, energetic, wealthy, and age-defying 'super seniors' (Bauwel, 2021, p. 137). Further, van Bauwel (2021) identify a set of three discourses of ageing in their study; 1) masking ageing, 2) losing femininity, and 3) gaining wisdom with age. Masking of ageing can be seen as underpinned by a neo-liberal postfeminist discourse that comes with the expectation that to age well means "obeying and conforming to the normative

expectations of 'appropriate' femininity" in which a focus on fashion, food, and appearance are popular media's tools for consumption because "real style is truly ageless... [and yet] real style costs real money" (Ross, 2021, p. 180). Losing femininity is more negative and is linked to expressions of "shame and the theme of menopause." The third discourse in popular media representations of ageing women is the wisdom of ageing, and it has been noted by Ross to be less dominant than the other two and yet is a positive and empowering discourse (2021, p. 142). For example, Ussher (2006) describes several factors that some women attribute to "flying in the face of myths of the menopausal woman as the epitome of the abject, monstrous feminine" (2006, p. 147). These factors include moving away from the conventional "feminine position within the heterosexual matrix"; so women who are in stable relationships and not defined by their ability to 'attract a man'; women who have strong social networks with other women; a sense of freedom from giving up the "control they always tried to have over their lives" and the nurturing roles of motherhood or caregiving and self-sacrifice (Ussher, 2006, pp. 146–148).

Also drawing on postfeminist sensibility, Jermyn (2018) discusses the fashion industry's embrace of "women of a certain age" and the complexities that lie within a seemingly positive 'turn' from the disenchantment and invisibility endured by older women, not just in fashion but also in popular media in general (Jermyn, 2018). Eluding to the underlying postfeminist sensibility in her caution to the lack of diversity around the fashion industry's shift in culture because "many of the women invoked here are white, the possessors of class privilege and very often the kind of svelte bodies that women are pressurised to attain and maintain whatever their age, and representing brands that are outside the economic reach of most women" (Jermyn, 2018).

More recently, Jermyn (2023) looks at the 'menopausal turn' in contemporary UK culture and notes how menopause can be identified in operation in several places and spaces, including education, politics, medicine, retail, publishing, and journalism, among others. Particularly the documentary *Davina McCall: Sex, myths, and the menopause* is used to exemplify this 'turn.'

Whilst she notes it is positive and encouraging, she warns that it would be naive to think that all of the attention in many different areas could be conflated with inclusivity, that much of the new understanding of menopause is seen through a celebrity ‘prism’ wherein it is primarily “the terrain of white, cis-gendered, middle-class affluence” (Jermyn, 2023, p. 1). In a similar vein to Jermyn’s (2023) ‘menopausal turn’, Orgad and Rottenberg (2023) also reference the documentary *Davina McCall: sex, myths and the menopause* (Orgad & Rottenberg, 2023) but show how the documentary, while invoking feminist terms and considering “crucial structural conditions that underpin the continued stigma and shame around menopause” there is a significant disconnect between such conditions and the continual emphasis on the “individualised and privatised solutions” that highlight the underlying neoliberal and biomedical logics that curtail any progress (2023).

Understanding the periM experiences needs to come from those who are experiencing them, and to unpack their experiences begins with listening to those experiences and looking at them through a lens that can identify the complex underpinning entanglements of the socialised, politicised, commodified periM body and experiences.

### **b) Self-knowledge through numbers (quantified self)**

Much like periM, digital health technologies are also experienced in complex and nuanced ways. There are an extensive array of digital devices and software available for women to monitor their health and such related interests as sleep, stress and mood levels, physical activities and bodily functions (ovulation, menstruation cycles, pregnancy and breastfeeding) (Lupton, 2020a, p. 983). Although there are many digital health technologies (e.g., wearables, jewellery, Internet of Things (IoT) and downloadable apps), I will focus on downloadable apps for smartphones, laptops and tablets. Also, I wanted to understand how the literature around these entanglements was positioned

regarding a feminist understanding of Femtech, which is hailed as a response to the androcentrism of technology.

Digital health technologies promise women knowledge production and understanding of their bodies in an empowering process by enabling them to take control of their bodies and impel them to engage in healthy habits (Lupton, 2020a, p. 984). Therefore, it makes sense to talk to the users of these digital technologies to find out how they produce this knowledge of their bodies and in what context. Further, I wanted to understand what the literature had to say about how women's understandings of themselves and their bodies were determined or changed, or not, by their use of apps; while keeping in mind the underpinning theoretical perspective of posthuman feminism through FNM that identifies and emphasises "the relational engagements of people with nonhumans as well as with other people, and the dynamic nature of these engagements" (Lupton, 2020a, p. 984). The literature in this review was chosen to evaluate if the research has taken this perspective.

For this section, I will begin with an overview of what the literature says about how knowledge is produced through numbers for women who use digital health apps, what Femtech is and how it is used, including how it situates women's experiences of embodied practices. To begin with, I read four literature reviews on digital health technologies and menopause, menstruation, women's health, and women's embodied experiences. Cronin, Hungerford, and Wilson (2021) reviewed the literature on menopause in the workplace and was published in the *Mental Health Nursing Journal*; Pichon et al. (2021) reviewed the literature on menstrual tracking apps for the *Journal of the American Medical Informatics Association*; Keyes et al. (2020) reviewed the literature concerning women's health and human-computer interaction (HCI) in *ACM Transactions on Computer-Human Interaction journal*; Del Busso et al (2021) reviewed the literature on women's embodied experiences of using wearable digital self-tracking devices for the *Health Care for Women International Journal*. Overall the reviews produced knowledge that situates digital health technologies as both empowering and promising embodied understanding of self through numbers on the one hand, but that they also have

the potential to disempower and undermine the users' experience and embodiment of their periM or menopause experiences on the other hand. Furthermore, using these digital health technologies can facilitate further medicalisation of periM; exploiting the users' data and privacy issues and the commercial interests that shape the users' experience are a concern for researchers (but not always of concern to the user).

Lupton takes a loose social constructionist perspective describing the types of knowledge concerning health, illness, and health care that are considered "assemblages of beliefs that are created through human interaction and pre-existing meanings." In other words, how we understand ourselves and our bodies is shaped by "our specific location in society and culture" (Lupton, 2000, p. 50). Further, as social beings in a social world, the discourses we use to shape our realities are produced through repeating shared definitions of knowledge "through social interaction and socialisation" that are constantly changing (pp. 50-51). Therefore, digital health technologies play a role in producing knowledge (sociocultural products) through the discourse of both the users and the technologies themselves. In particular, Lupton points to the self-surveillance that users of digital health technologies partake in, which results in an enactment of body/self that is both "subject and product" of what she calls "'scientific' measurement and interpretation" (Lupton, 2015, pp. 445–446); understanding oneself and one's body through numbers (also known as the quantified self-movement). It can be seen when we self-survey ourselves and our bodies and translate these experiences into numbers and then 'compare' them with historical data we have already collected; our friends and family; the social networks we use; the companies that own the digital health technologies we use; and (often unwittingly) third party users that buy our data. Understanding the body as an assemblage and

Self-tracking, or "knowing yourself through numbers", can be powerful data (Lupton, 2016). The Quantified self-movement considers this 'self-regulation through numbers' where apps urge people to "think about their bodies and their selves through numbers" (Lupton, 2015, p. 446). In the

case of women's bodies, the focus is often on medicalisation and ranges of 'normal' menstruation, fertility, exercise, and so on, which attempts to use data to "impose order on otherwise disorderly [if the numbers are outside the 'normal'] or chaotic female bodies." The rhetoric behind app promotion as producing knowledge of their bodies is both neutral and promising but also values digital data over women's own "embodied knowledge of their bodies" (2015, p. 447). These 'numbers' create patterns and solely explicit 'knowledge' which may reinforce inequities; support "highly reductive and normative ideas" and gender stereotypes (Lupton, 2015, p. 447); and limit those already disadvantaged by exclusion and accessibility and literacy. Further, the numbers, or the self-tracking behaviours promoted, comply "with an increasing focus in neoliberal politics on emphasising the personal behaviour and self-responsibility of citizens" (2015, p. 449) or 'good citizenship. Dolezal and Oikkonen (2021) consider self-tracking technologies as a new conception of the human body as an assemblage of "data and information flows, genetic, molecular, vital, psychological, biological and otherwise" that simultaneously shape and affect individuals' personal lives and the broader socio-political understandings of "health, life and the human body". Further, they mark the fusion of "information technology, biomedicine, and a neoliberal market agenda" (Dolezal & Oikkonen, 2021, p. 2).

Self-tracking apps create data that is both personally meaningful and empowering but also political. Self-tracking has a dual action wherein it may "enable and disrupt normative expectations and configurations of health and embodied differences" (Dolezal & Oikkonen, 2021, p. 2). This dichotomous action has been attended to through research that delves into unpacking tensions and contradictions of a technology that, on the one hand, offers empowerment through self-knowledge through numbers and, on the other, perpetuates societal and cultural 'norms' that are almost passive-aggressive in its perceived goal of the 'good citizen' (Baum et al., 2014; Dolezal & Oikkonen, 2021; Keyes et al., 2020). The 'good citizen' is a theme in much of the literature and is an important aspect of the underpinning neoliberal paradigm concerning digital health technology. It is considered (in the

section concerning postfeminism and neoliberal healthism). However, it is such a permeating concept that it can be seen in all the themes considered in this scoping review. The ‘good citizen’ concept is underpinned by the ideal of a ‘normal’ body that functions correctly and is understood (in contemporary Western society) “as the product of careful self-regulation and self-discipline.” This discourse encourages an inward medical gaze in which lifestyle choices are considered to be in the individual’s control and, promoted by public health initiatives, therefore, the individual’s responsibility to ‘maintain’ a controlled and ‘civilised body’ (Lupton, 2000, p. 57). This idea of the ‘good citizen’ is also promulgated by the divisive ‘othering’ that occurs alongside the contrasting ‘uncivilised body’ wherein practices outside the cultural, social ‘norms’ are ‘other.’ In anthropology, Mary Douglas’s<sup>2</sup> work has influenced much of the social constructionist concepts of control both at the level of the individual human body and the socialised cultural boundaries that ‘manage’ the body politic (Lupton, 2000, p. 57). Therefore, a ‘good citizen’ is an individual who controls their body’s boundaries in a personal (embodied) manner that fits within their social and cultural boundaries. In other words, a healthy, clean-living individual is seen to be in control of their body. This message is a popular discourse in digital health technologies by offering empowerment, embodiment, and agency, mainly through self-management techniques offered through apps. Of course, the flip side to this empowerment, agency, and embodiment through apps is that if you do not fit the ‘civilised body’ criteria, does that make you an ‘uncivilised body’? Moreover, who gets to be or have a ‘civilised’ body?

Apps are digital health technologies that are also “sociocultural products” (Lupton, 2015) that may also “interact with and reinforce ...social determinants of health” (Baum et al., 2014, p. 349). Social determinants of health are those conditions that influence health, including employment,

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<sup>2</sup> Mary Douglas was a British Anthropologist whom I came across during my undergraduate Social Anthropology studies. Her seminal work *Purity and Danger: An Analysis of Concepts of Pollution and Taboo* (1966) is influential in both her views of what is pure and taboo with a reflexive lens that highlights social construction and context as being informative.

housing, transportation, education, and communities. This can be seen as a factor where digital health technologies may be affecting the social determinants of health that Baum et al. (2014) describe as “vicious” through the use of digital health technologies, particularly regarding access, exclusion, and literacy (Baum et al., 2014, pp. 350–351). Access and exclusion have a complicated entangled interaction that Baum et al. (2014) call a “vicious cycle” wherein a lack of access to digital health technologies leads to an inability to utilise these technologies that perpetuates the cycle of disadvantage (p. 357). The participants in Baum’s study were considered to have lower socioeconomic status and included men, women, housing assisted, Aboriginals, and African refugees. They were aged 25-55 and resided in the outer suburban and inner-city areas of Adelaide, Australia. Some of the participants noted that they had difficulty reading and writing, so even accessing the internet was difficult; that the internet was a ‘luxury’ and not affordable; access to computers was not an option as they could not afford one, and even if they could they struggled to use one (pp. 354, 356). This then influences how digital technologies are utilised. Baum et al. (2014) conclude that to be inclusive, it is important to address the interaction between digital literacy, health, and fundamental literacy (Baum et al., 2014, p. 357). The understanding of digital literacy is as follows:

*“Digital literacy requires a variety of strategies and skills, including critical thinking — questioning how authentic, valid and useful digital information is; communicating and collaborating with others in the digital space using digital tools to design and create compelling original content; using digital tools to access, use and share information.”*

(Why Digital Literacy Matters, n.d.) <https://natlib.govt.nz/schools/digital-literacy/understanding-digital-literacy/why-digital-literacy-matters>.

For instance, Hohmann-Marriott (2021) interviewed Aotearoa New Zealand app users and found they were either complacent, ambivalent, or unconcerned about their data being made available to others or the fact that they could become identifiable (even without providing identifiable information). The indications were that regardless of a relatively high level of education, digital

literacy is important to users of digital technologies to understand how their data is used once collected (2021, p. 15).

Agency is also a common perspective within these reviews; how this is understood depends on the lens through which it is viewed. For example, in looking at digital health apps, Del Busso et al., 2021 argued that “women experienced becoming bodily knowledgeable, agentic selves through their self-tracking”. However, this same agency or self-empowerment can also be understood as a way in which to ‘self-monitor’ that positions the ‘user’ as a good citizen or regulated; the body fits into a specific cultural norm of femininity and is reminiscent of Foucault’s disciplinary power (p. 3).

The reviews have also highlighted certain themes that are pertinent to the research done so far, including menstrual health; the aims and designs of the apps and possible issues with those designs; the “tensions and contradictions” (Del Busso et al., 2021a, p. 17) of embodied experiences of women; and, how the market for digital health apps, or ‘femtech’ has taken off and is set to be a \$50 billion industry by 2025 (‘Femtech—Time for a Digital Revolution in the Women’s Health Market’, 2018). A term from Ida Tin (the creator of the Clue menstrual tracking app and entrepreneur) that refers to all things digital in the women's health sector. The Cambridge Dictionary refers to femtech as [an]:

*"abbreviation for female technology: electronic devices, software, or other technology relating to women's health, for example, software that records information about menstruation (= the monthly changes in a woman's body) and fertility (= the possibility that she will become pregnant)".*

<https://dictionary.cambridge.org/dictionary/english/femtech>).

This definition in itself points to the trend of self-tracking for fertility purposes that neglects any other stages of the lifespan and perpetuates gendered ‘norms’ wherein a “binary, embodied and hetero-cis-normative model of gender” is produced (Keyes et al., 2020, p. 25:2).

This knowledge production requires disrupting the gendered norms and stereotypical ‘menstruator’ only concerned with fertility and the resulting individual responsibility to adhere to this stereotype or ‘good citizenship.’

To do this, Keyes et al. (2020) argue that researchers themselves need to be reflexive in their part of this perpetuation, to particularly and specifically “grapple” with the “tensions and exclusions” of their work to open design spaces that are inclusive and open to dialogue concerning gender, health, and technology (p. 25:34-35). Further, literature concerned with the design of digital health technologies has also prompted a focus on feminist perspectives in their design that is not biological or ‘normalising’ of menstruation experiences; and delinking gender from menstruation (Ciolfi Felice et al., 2021; Homewood 2018b; N. G. et al., 2020; Søndergaard & Hansen, 2017; Tutia et al., 2019; Warke, 2021). Little attention to the design of apps for periM and menopause has been undertaken. However, three design articles reviewed looked at different apps, wearables, or other technological designs for menopausal women. Two have a feminist perspective that aims to avoid medicalising or problematising the later stages of a woman’s reproductive life and calls attention to embodied experiences by talking to those experiencing periM and menopause (Ciolfi Felice et al., 2021; Tutia et al., 2019; Warke, 2021). However, Warke (2021) took more of a biomedical approach and is an example of a designer’s bias, with an aim for ‘management’ and “evoking behaviour change[s] to lead to a healthier and more mindful lifestyle, and more positive attitudes toward life during and after menopause” (Warke, 2021, p. 4). Further, Almeida et al. (2020) introduce a special issue within which they address the issues faced by HCI and interaction design concerning the human body and women’s health in the *ACM Transactions on Computer-Human Interaction Journal*. The process of becoming and the dynamic process of the research is important to women’s health research within HCI. Significant is a way in which to avoid “reify[ing] gender binarism and to marginalise people” by finding ways to improve research language, but without “turning our backs” on the women whose labour “helped to establish and legitimise the very emancipatory frameworks that are now being used

to critique them in turn”. Almeida et al. (2020) also emphasise the importance of responsibility for the words used and how the research is framed, including who is left out. A way of doing this, they argue, is from a feminist perspective wherein a collaborative community is created that “allows for new things to come forward, as imperfect as they are” (Almeida et al., 2020, p. 27) in a manner that is open to the dynamic process of research in HCI.

Designing apps for women that work as intended may be as simple as having a woman on the design team, but it is equally important to have research that points towards what women require the app to do. For example, an app designed for community health workers in Cape Town appeared to have a brilliant design for usability that excited the community health workers. Once it was launched, it was a “flop” because the designers had not realised that the female community health workers would conceal their valuables when travelling to areas they felt unsafe; the phone was too large to fit in their bra (the only safe place to keep it) so they did not use it. Gender matters when it comes to design (Criado Perez, 2019).

Understanding how women use apps is more than an effort to improve future design or fully understand social, cultural, and political implications. It is also a means to understand how popular discourse surrounding menstruation and embodiment is constructed in a complex and nuanced manner. To fully understand these complexities, it is important to understand the lived experiences of the ‘user’ of the app. Whilst it is valuable to utilise “non-traditional and reflexive data gathering and methods of analysis” to understand the complexities of embodiment and data tracking, Del Busso et al. (2021) reviewed studies that lacked a certain amount of “researcher reflexivity”. Further, while advocating for more creative methods to uncover “accounts of what it is like to use and embody wearable digital self-tracking technology that is rich in experiential detail” that would include participatory action research, there is a lack of critique of underlying neoliberal discourses that make up the theoretical perspectives of participatory action research. They conclude that this should include the researcher as a component of the research, implementing more experiential, reflexive

methodological approaches to "produce knowledge and offer further complexity and nuance" (2021b, p. 21). However, given that this review has, on the one hand, advocated for more researcher reflexivity and the adoption of more experiential approaches for future research without the underlying theoretical perspectives, i.e. the social, cultural, and popular understanding of knowledge production and an understanding of political and power constructions within the knowledge, it makes it difficult to understand what exactly their goal is. They conclude that using more reflexive and experiential methods would "produce knowledge that offer further complexity and nuance", but to what end? There is no mention of any form of social change, only that it will support understanding "what it is like to embody wearable digital self-tracking technology" (Del Busso et al., 2021b, p. 22).

Keyes et al. (2020) conclude that the current work on women's health within HCI primarily concerns "reproductive issues and technologies assuming individual responsibility". They also argue that the default body in HCI is also cis male, and it is high time that the field moves beyond this and begins addressing the issues of gendered health and technology (2020, p. 34). Further, they argue for a collaborative effort to understand the complexities of feminist work that entails grappling with the tensions and exclusions, trade-offs and limitations that make up the entanglements of researching knowledge and bodies in the messy, complicated world we live in, much like Braidotti's call to action (2020, p. 33). Similarly, Homewood (2018) notes how certain methodologies can strengthen feminism, for example, participatory designs, with their ability to expose the "influence of the researchers own lens of bias and privilege on knowledge produced" (Homewood, 2018b, p. 510) and has been the cause of the increased improved research on women's health and technologies. Drawing on Sandra Harding's work (as cited in Homewood, 2018b, p. 510), she also points out that androcentrism and bias may inadvertently be a key concern in the definition of the problem area of design in HCI; for example, if it is the designer who create and define what is a design problem; then the individual designer's "social and cultural positions and beliefs and politics" will determine what is problematic. Therefore the androcentrism that has been critiqued in the literature concerning digital

health technologies for women, designers “can choose to either re-enact or challenge prejudices and inequalities” in framing their design problems (Homewood, 2018b, p. 515), most notably by re-defining normal and de-linking gender to menstruation.

In order to understand what periM or menopause-specific apps are available, I came across a review of 22 mHealth apps focused on menopause (Gkrozou et al., 2019). This review situates menopause within a biomedical discourse, and the review aimed to identify apps that addressed menopause with a “focused view on the documented evidence base (EB) and degree of medical professional involvement (MPI) in design” (Gkrozou et al. 2019, p. 192). While the diversity of individual women’s experiences of menopause is acknowledged, the authors conclude that they believe there is a lack of ‘regulation’ of these apps in terms of medical authority and that this should be put into place in order to provide “more medical staff in their development and by establishing clear regulation around the development and the context of an mHealth app” (Gkrozou et al., 2019, p. 196). Their conclusion clearly places knowledge gained through the assemblages of periM and digital health apps needs to be regulated and kept in the biomedical institution.

Digital technologies have been experienced in ways that avail users with feelings of agency and control on the one hand and frustration and disappointment when they do not work as expected on the other hand (Hohmann-Marriott, 2021; Lupton & Maslen, 2019). Further, the design of digital technologies has been undertaken in such a way that it affects or influences our emotions and moods. Therefore, the physiological processes that produce these moods and emotions are also affected (Homewood, 2018a, p. 3). In other words, using these digital artefacts can influence users’ feelings, subsequently impacting their behaviour, data input, and the outcomes received.

Kressbach (2021) argues that tracking and fertility apps reinforce discourses of “menstrual concealment and bodily alienation”. However, the argument is used as a stepping-off point to argue further that if demographic information were collected more transparently along with “framing users

as collaborators, stressing the possibilities for participating in large-scale data analysis”, then addressing the aesthetic and epistemological limitations of the apps would “ideally mobilise their data for future menstrual health research” (Kressbach, 2021, p. 257). Also, I am unsure about her definition of humanists that she believes should be collaborated with, nor does she describe a theoretical underpinning to her research; therefore, it is difficult to understand her standpoint. Many biomedical articles were atheoretical, which made sense to me in some ways.

Gilman (2021) critiques the dichotomy of Femtech’s feminist participatory philosophy of empowerment and agency by pointing to the ‘surveillance’ paradigm in which user’s data is not in the control of the menstruator but is being used as a means to control their purchasing decisions by on-selling the data to third parties (Gilman, 2021, p. 41). In contrast, according to Hohmann-Marriott (2021), the users in her study largely viewed their data as powerful and tracking their cycles as empowering (Hohmann-Marriott, 2021, p. 14) because they valued the “app ovulation predictions” to understand their cycles. However, the users did not necessarily understand how the apps produced these predictions. Further, Lupton (2019) found that the use of all manner of digital health technologies afforded women the capacity “to seek and generate information and create a better sense of knowledge and expertise about bodies, illness and healthcare” (Lupton, 2019a, p. 46). In line with the good citizenship discourse, Lupton (2019a) describes a “digitally engaged patient” discourse (Lupton, 2013) that was embraced by the women in her report as an ideal responsible citizen that also used these technologies for other members of the family. The women’s empowerment was in deciding if their concerns about their bodies or that of other family members were warranted and if they could deal with it themselves or needed a medical appointment (Lupton, 2019a, p. 46). According to Lupton (2021), Australian participants did not express excessive worry about their online privacy but instead pragmatically acknowledged the prevalence of data profiling and targeted advertising. The participants also rejected the idea that they were constituted by data only and that any digital data profile would only be partial and fragmentary and “not the real me” (Lupton, 2021, p. 17).

Lupton (Lupton, 2020b) used a 'more-than-human approach' to find out what people's understandings were concerning their digitised personal information and found that whilst they were well aware of "data profiling and algorithmic processes", they were primarily undaunted by this and indeed, felt that 'datafication and dataveillance' could not access their 'real selves' (2020b, p. 3165). They found the customisation or personalisation helpful. With little knowledge of data inequities, and the majority being in a younger age group, this may be because they are 'digital natives' and are quite comfortable with using technologies ubiquitously. However, the more-than-human approach is a means of understanding the human-data assemblages and the entanglements that occur and how users understand themselves through these entanglements. However, in this study, of the forty participants, 22 were women, and there were only 12 over forty years of age and two over 60 years of age (it is unclear how many of the 12 were women). There is a gap between users' experiences and critical researchers' understandings, but could this be because the users are unaware of what happens to their data?

The issues of human rights, "menstrual justice, feminist jurisprudence, and developments in the law of ageing" (Cahn, 2021, p. 1) are being contributed to within much of the menstruation research that has been undertaken wherein the common agendas are trying to change "cultural attitudes of stigma and shame" (p. 4). In doing so, the agency and autonomy are 'hidden' and further accentuate a 'leaky and messy' body that needs to be 'managed' (Bobel et al., 2020; Holst et al., 2022; Winkler, 2021; Winkler et al., 2020). Cahn, Crawford & Waldman (2022) point to the complexities and paradoxes found in the current discourse of menopause needing to be attended to more openly and yet more privacy protections being available to those who use digital tracking apps; together with the complexity of menopause being pathologised or medicalised on the one hand and yet it should also be seen as an "inevitable biological process" (Cahn et al., 2022, p. 49) notwithstanding the need to continue research and treatment for those that require it (for symptomology) to have equitable

opportunities in the workforce (read, communities but this article was explicitly focused on menopause and justice in the workplace).

The literature has no clean and clear perspective of embodiment, empowerment, and agency. This is because of the often dichotomous thinking and analysis of these issues that highlights the complexities and variations dependent upon the perspective of the researchers and their discipline. It is clear that digital health apps are embedded with certain assumptions that, whilst promoting embodiment, empowerment, and agency, they are concerned mainly with the reproductive body, and the lack of literature concerning perimenopause/menopause quite literally excludes an ageing body. This leaves a large group of people that have yet to be given a voice or place within digital health apps to experience empowerment, embodiment, and agency, i.e., those in the latter stages of the life span. While there are now some apps specific to these later stages in life, there is very little literature concerning the use of these and even less concerning the lived experiences of perimenopausal women. This provides an excellent opportunity for my research to be relevant in this area.

the use of digital health technologies produced a knowing or 'becoming' (in this case perimenopausal woman) through knowledge and making accessible information that was previously 'hidden.' However, the technology continued to tie them into 'managing' their monstrous bodies through the discourse of a good citizen and control of their symptoms under the guise of 'normalising' a messy, leaky, and in some cases dirty, menstruating body (Del Busso et al., 2021a; Cronin et al., 2021; Pichon et al., 2022b; Winkler & Bobel, 2021b; Keyes et al., 2020).

Cronin, Hungerford & Wilson (2021) concluded that more research is required with perimenopausal and menopausal women, and in their opinion, the research necessary needs to be supportive of women with the use of "effective and trustworthy" digital health technologies (Cronin et al., 2021, p. 546).

With any digital technology, design is the first and foremost aspect that will address how the technology is intended to be used. Pichon, Jackman, Winkler, Bobel, and Elhadad (2022) conducted a review of articles together with images and descriptions "of menstrual tracking apps collected from the Google and Apple app stores" (Pichon et al., 2022b, p. 385). They identified two wide-reaching themes in the literature using a scoping review methodology. Firstly, "who are menstruators?" and, secondly, "what are the needs of menstruators?" (p. 385). They concluded that the gaps in the design of menstrual tracking apps concern the normalisation of menstrual regularity and an embodiment of a "leaky" menstruation experience. Regulating the reproductive body is a concept that Ussher (2006) richly and deeply discusses while tracing the practices of positioning and 'normalising' menstruators throughout the lifespan. Historically situated as 'hidden', the female body has been regulated and 'controlled' through discourses of femininity that include the 'ideal' of youth, beauty, fertility, and emotional stability. Should that control not be maintained throughout each stage of the lifecycle, failing to perform this femininity is seen as "mad or bad, and subjected to discipline or punishment, which masquerades as treatment or rehabilitation to disguise its regulatory intent" (Ussher, 2006, p. 4). The intersection of culture, ethnicity, religion, and socio-economic circumstances shape the experiences of the menstrual lifecycle, a menstrual identity. The underlying discourse of femininity that shapes that identity is most often associated with a 'normal' menstrual experience; anything 'abnormal', irregular, or 'other' is outside of the dominant feminine discourse that needs to be understood through these intersections as well as an understanding of the complexities of "oppressive experiences and disadvantages (or privileges or advantages)" (Pichon et al., 2022b, p. 386). A 'leaking' or menstruating body can be considered 'messy' or 'leaky' in both the physiological process and how it is situated within a complex, convoluted sociocultural space (p. 386).

Therefore, Pichon et al.'s (2022) review determined that these gaps concerned three 'messy' gaps in the design of menstrual tracking apps:

*“1). Irregularity is the norm, but apps are designed to treat users as ‘regular menstruators;’ 2). Menstruation is an embodied, leaky experience, but apps flatten the experience and compel menstruators to hide and control their menses; 3). Menstruators have varied biologies, identities, and goals, but users of menstrual tracking apps are represented as flat with monolithic experiences.”*

(Pichon et al., 2022b, p. 388).

This was concluded with an overarching 'messy gap' where they considered the design of these apps to require more privacy, transparency, and a “human-centred artificial intelligence approach” (pp. 393-5). Privacy is a topic addressed in this case, not to the privacy of their data (certainly a legal issue) but concerning the 'secrecy' and discreteness of the user's menstrual cycle that perpetuates the hidden and silenced 'normative' nature of socially constructed menstruation. For an app to be “precise and reliable,” a user with an irregular menstrual cycle will be encouraged to 'track' more often. The premise that more data equates to better predictability and insightful self-knowledge needs to be clarified; what is clear is that more data for the tech company equates to more app engagement and datasets for analytics (p. 395). Gender bias is inherent in artificial intelligence (AI) and does not account for information other than binary, regular datasets, making the predictive accuracy debatable (p. 385). There is some interesting literature covering design with a social justice skew from Scandinavian countries, wherein it is traditional to use participatory design in HCI and centres the lived experiences and bodies of the end-user (Ciolfi Felice et al., 2021; Homewood, 2018a, 2019; Søndergaard et al., 2021; Søndergaard & Hansen, 2017). Recognising that menstrual technologies can deliver menstruation education on digital platforms, there is the potential to be gender normative, exclusionary, and “embody harmful essentialised articulations of embodiment and gender” (Søndergaard et al., 2021). To ‘resist the medicalisation of menstruation’, designing digital technologies can be complex when considering the effects on the end-user. Design is ideological and political with the potential to be an act of power; to perpetuate gender normativity; to exclude those

who are considered 'other' concerning menstruation; to be open to bias based on the designer's privileged position (Ciolfi Felice et al., 2021; Homewood, 2019; Søndergaard & Hansen, 2017). To resist the medicalisation of the menopause narrative, it is important to reconceptualise menopause as a transitional period; to acknowledge an embodied and lived experience (even with the mess, blood, and pain); and to have agency or autonomy (Ciolfi Felice et al., 2021; Homewood, 2019).

In a manner of reflection, Homewood (2019) has written about the complexities of how designing self-tracking apps creates influencing entanglements where the apps "influence both the social construction of the body and also the lived experience of the self-tracker" and came to a decision not to design for menopause was the way to avoid designing "harmful or inappropriate technologies" (2019, p. 3). As there are so few apps specific for periM and menopause, it is an interesting stance to take. Homewood (2019) argues that the few apps that are periM specific are copies of menstrual self-tracking apps and tie women and their embodied periM experiences into an unrealised promise of a 'solution' to menopause and self-regulatory good citizenship. In other words, an experience of the medicalised menopausal body needing to be controlled (2019, p. 7). She also argues that quantification allows for the reduction of the body into a numerical form not indicative of the lived experience. The relevance of such data collection to the user when self-tracking apps are geared explicitly towards predictability, and the very experience of periM and menopause is anything but predictable. She also discusses the time it takes to continually enter data into the app when, apart from goal achievement, it returns very little that cannot be found on websites and other online media in line with the unpaid labour argument discussed below.

Siapka and Biasin (2021) have pointed out a genuine and historically acceptable case for the unpaid labour argument. They point out that issues of power perpetuate 'norms' that become embedded and eventually accepted into law, which in turn legitimise "the distribution of power in society" (Siapka & Biasin, 2021, p. 10). They mainly draw on concepts such as Johan Gault's structural violence, Foucault's disciplinary power, and self-surveillance (although not specifically

mentioned) to highlight the paradox of private/public use of digital spaces. This is where the private user contributes to public data that produces ‘value’ for the app providers. However, their ‘work’ is legally considered in the private sphere of unpaid domestic labour. The law is, yet only concerned with data protection and consumer protection. At the same time, the discourse is attending to such considerations as "vulnerability, transparency, and consent"; it is insufficient to address the power imbalances and perpetuate them (p. 20). The authors conclude that an approach that considers discussions towards theory and “practical scaffolding” that could potentially both “value users’ ‘bleeding’ data.. and... curtail the ‘leaky’ processing activities that app providers deploy” (p. 21).

Privacy concerning data is also a particularly relevant topic that can be addressed through law, digital design, activism, and Femtech. Once again, it is a complex dichotomous construct wrapped in a comforting promise of self-knowledge and empowerment, particularly in areas that have long been unrecognised, underfunded, understudied, and even ignored in mainstream health sectors and research. Data privacy laws (in the US) are based on the concept of notice and consent. This is the ‘fine print’ that is often incomprehensible, time-consuming, and non-negotiable, leading to what Gilman refers to as "menstrual surveillance" (Gilman, 2021). That is not to say that all femtech products are in the ‘surveillance’ business, but it is easy to see how this juggernaut can continue to grow without critical evaluation if the end-user does not have a space to be heard; that their experiences are invaluable in determining how these technologies are used and designed, then they can be truly empowering.

The law is somewhat outside of my purview; however, as my scoping review is multidisciplinary, some of the research concerning menstruation and digital health apps within the law had some overlap and, in the case of one article, some very interesting perspectives (Cahn et al., 2022). The increased attention to menstruation through popular media and research has, among other perspectives, framed menstruation as an issue of human rights (Winkler, 2021) and what Cahn calls “menopause capitalism”, in which she claims that digital products and services capitalise on the needs

of primarily cisgender women highlighting ideals of "youthfulness, attractiveness, and sexual desirability" (Cahn et al., 2022, p. 4). Interestingly this is the exact argument that was made for the Health and Her app research project by Andrews and Lancaster Bache and Lacey (2023). They concluded that "greater weekly engagement with the app was associated with greater reductions in symptoms over a 2-month period". This study was done using the data that was collected from users (including Health and Her supplement sales) (Andrews et al., 2023). This drives users to engage more often and deeply with the app on a weekly basis.

In alignment with Riley et al.'s (2018, p. 6) postfeminist healthism, these products and services structure how perimenopausal women make sense of themselves and their bodies through Femtech's promise of empowerment, autonomy, and a sense of community and by being involved in the use of digital health apps that provide self-knowledge through numbers.

This sense-making discourse is not new, however. Cahn et al. (2022) make a case for the medicalisation of menopausal women with the example of the 1960's explosion of menopausal replacement therapy with physician-backed promises of "femininity forever" (2022, p. 8). And so began the saga of HRT when Robert Wilson first published an article, along with his wife, a nurse, wherein they proclaimed a woman's "ovaries became *inadequate*", and the solution was "oestrogen therapy to cure estrogen-deficiency" (emphasis in Cahn et al. 2022). Wilson published *Feminine Forever: A revolutionary breakthrough in 1966*, purportedly selling 140,000 copies in its first year (2022, p. 8)<sup>3</sup>

Although Femtech's stakeholders always have some vested commercial interests of their own, the female body has been commodified for decades. Seen in the contemporary discourse of 'self-care' or 'self-help' that promises being "better" (Riley et al., 2019), there are many examples of texts, apps,

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<sup>3</sup> For a fuller description of the history of medicalisation of women's health see Elinor Cleghorn's *Unwell Women: Misdiagnosis and myth in a man-made world* (Cleghorn, 2021). Also concerning the history of the invisibility of women (not just their health) Caroline Criado Perez's *Invisible Women: Exposing data bias in a world designed for men* (Criado Perez, 2019).

television shows, podcasts, products and online subscriptions that commodify the periM and menopausal experiences. As Lyons and Griffin (2003) noted in their review of self-help books in 2003, the menopausal experience was framed as women needing expert help, knowledge and ‘real’ research to help them ‘manage’ a turbulent time. However, the social aspects were not acknowledged to play a part in women’s experiences of menopause, ageing, health and disease (Lyons & Griffin, 2003, p. 1641). While not specifically related to women or menopause, it is interesting to note that twenty years later, a review of self-help literature published in *Feminism & Psychology* by Riley et al. (2019) similarly problematises self-help discourse. In particular, Riley et al. (2019) note that the trope of “individualistic ideal-self” is at the cost of seeking collective, feminist, and politicised activist solutions; and the problematic gendering of women being “in need of improvement” (Riley et al., 2019, p. 3). Further, De Graeve and De Vuyst (2022) also review menopause self-help books (in the context of Dutch-speaking Belgium and the Netherlands) and conclude that none of the books they reviewed disrupted the “prevailing oppressive discourses that devalue ageing women” (De Graeve & De Vuyst, 2022, p. 438). The self-help-care discourse is predicated on promising empowerment but through ‘transformation’ and being ‘better’ in order to sell (more books, products?) the ideal of a symptom-free, healthy, ageless periM or menopausal woman that is merely repair work of a neoliberal and self-responsibilising discourse (De Graeve & De Vuyst, 2022, p. 450). Since 1998, at least 46 books have been published concerning periM and/or menopause; two are by Aotearoa New Zealand authors (Bezzant, 2022; Pellegrino, 2022). They are not reviewed here as to any disruption to the ‘normalising’ of the white, cis-gender, privileged woman they may have done or attempted to do; they do not form part of the literature that informs my research project. However, it is interesting to note how many there are available and how they indicate the ‘turn’ to bringing this later stage of women’s reproductive life into the open and, at the least, give attention to women’s lived experiences (for my own interest I compiled a list of books published since 2019 and is attached as Appendix 4).

O'Reilly et al. (2022) also conclude that research requires more attention to the lived experience of periM and menopausal women to assess what knowledge and information is circulating to deliver better health information. They call for challenging the stigma of hidden bodies that perpetuate the place of women's health as less valuable. In a cautionary review of 'menstrual myths' Winkler and Bobel (2021) warn that such articles may unwittingly promote the normalisation of menstruation based on superior Western knowledge while ignoring the experiences of the Global South. They also conclude that the way to stop women's experiences from being silenced and stigmatised is important for the menstrual discourse to become menstruator-centred and agentic without privileging Western knowledge as superior; in other words, women's experiences within their own cultures, religions, and socioeconomic situations matter. Cronin et al. (2020) consider periM and menopause in the workplace and call for the design of "safe, effective and trustworthy digital health technologies and interventions". This literature review, on the one hand, recognises the importance of psychosocial entanglements and the stigma of embarrassment and silence of women's lived experiences of menopause. However, on the other hand, they appear to take the view of menopause being a medical condition that could be better 'managed' using digital technologies.

### **Conclusion of Literature Review:**

There is very little literature on periM and none (that I found) concerning perimenopausal women's experiences using digital health apps. Of the literature I reviewed, the research shows how periM is complex and variable in that it is understood as both a natural transitional stage and as a medical 'condition'. Western superiority is the dominant source of knowledge. However, the biomedical paradigm/discourse keeps the transition itself and Perimenopausal women's bodies 'hidden and silent' This perpetuates a discourse of a medicalised body in which knowledge is withheld and not passed on except through biomedical discourses. However, this is problematic as many health professionals are inadequately educated in periM. The periM body is hidden and

historically shrouded in stigma and shame and, without ‘management’, situates the perimenopausal woman as mad, bad, moody, irrational, messy, dirty, and uncontrolled.

The complexities of digital health apps and the conceptualisation of the above periM body are entangled within an assemblage of these understandings that have the effect of being produced within a Postfeminist Neoliberal perspective of an assumed normal, controlled, regular, healthy, feminine, youthful, and fertile woman. These wider forms of sense-making shape women’s understandings of their bodies, mainly through popular mediated knowledge. This mediated knowledge produces a ‘transformation imperative’ entangled with the ‘good citizen’ discourse, further tying women into working on their health (and appearance) under the guise of empowerment and ‘ageless ageing’.

This conception of a periM woman guides the design of many tracking technologies (Fox et al., 2020, p. 19). Further, the designs do not consider cultural, religious, race, non-binary, or transgender menstruators, nor the biopsychosocial aspect of periM. There is also a stereotypical normative assumption of the periM woman being white, cisgender, heterosexual, and privileged with access to such digital technologies. The quantified self-discourse (self-knowledge through numbers) is entangled with Femtech, and appears to be more focused on the young and fertile body through tracking apps and what little is created for periM and menopause bodies is generally still a tracking app in nature which does not account for the complexities and varied way in which periM is experienced by different women in different ways.

There is very little research on periM in particular and what there is may be conflated with menopause because even though they are two distinct stages the terms are often interchangeable which makes it difficult to make distinctions for researching the literature. There is very little, if any, literature on digital health apps and lived experiences of perimenopausal women.

However, there are certain themes that turned up in the adjacent areas of that I reviewed. They were a lack of knowledge concerning periM and/or menopause; Postfeminist and Neoliberal

healthism; and self-knowledge through numbers (quantified self). These themes situate periM as a biopsychosocial transitional time in a woman's life predicated on a biomedical body that is in need of regulating and periM being treated as a dysfunction. Postfeminist and Neoliberal healthism situates a perimenopausal woman's body as tied into a narrow and limited conceptualisation that ties women into 'doing' femininity through the transformation imperative in order to be a 'good citizen' that adheres to a western, white, slim, wealthy and agentic, sexy older woman; in other word 'ageless ageing'. The self-knowledge through numbers theme is tied into the Postfeminist and Neoliberal discourse of regulating an unruly body through the transformation imperative but through Femtech's promise of empowerment, knowledge and a 'better you'.

## Chapter 3 Methodological Theory



Figure 5: Marilyn Monroe Kirkland Smith (2009). <https://columbiometro.com/article/the-arrangement-of-art/Kirkland-Smith-is-known-for-her-impressive-assemblages-constructed-entirely-of-used-repurposed-materials>.

### Methodological Theory (the principles)

*“...the present... both the record of what we are ceasing to be and the seed of what we are in the process of becoming, simultaneously, the actual and the virtual... ceasing to be men and ceasing to be Anthropos, becoming a thousand other things”*

Rosi Braidotti (Harvard GSD, 2019)

The menstrual life span is a complex dynamic process experienced in many different ways by different women. While the biological mechanisms may be the same, they are not experienced in the same way or even at exact chronological times or ages. The use of digital health technologies is also complex and experienced in many different ways. For example, Clark and Lupton (2022) discuss the implications of both the negative and positive aspects of using digital health apps for tracking health behaviours. They argue that tensions can be created in the user if, for example, they fail to reach a goal or target. The self-tracking apps may produce feelings of “guilt, shame, disappointment or frustration, and sometimes boredom” (Clark & Lupton, 2022, p. 400).

It was important to this project to have a theoretical framework open to the complexities and nuances inherent in studying gender, bodies, and technology. That is, a lens to bring into focus the

intersections, dynamic processes and fluid nature of gender, bodies, and technologies without the need to categorise neatly; after all, gender and bodies are mercurial and ‘messy’ (Pichon et al., 2022a) and continuously cycling through change; as are technologies continuously developing and changing.

I wanted to undertake a project that engaged with practical problems about women’s health understood through a feminist lens to include not just the body but the assemblage of the political, social and (in)equity of gender. In order to do this, I have used a broader posthuman feminist lens to theorise the dynamic nature of women’s bodies within technology, a postfeminist healthism lens to locate those dynamics within the broader social-political discourses of health and Feminist new materialisms (FNM) as a means to identify binary oppositions, the agency and vitality of human and non-human entities and material object in a more-than-human world. Using the research method of Cooperative inquiry (CI) will allow me to create a feminist-informed research design with, at its core, a participatory approach with the goal of worthwhile knowledge production. I will unpack these separately below.

Literature shows that in order to understand women’s experiences of periM through the use of digital health apps, I required a methodological theory that conceptualised a more than human perspective of both a woman’s body and her lived experience of periM, together with a way to understand the entanglements of those lived experiences with a digital health app. What was also required was a way of understanding how that assemblage and consequent entanglements produced affects in our understanding of both the periM experiences and use of the apps.

Having a theoretical approach is essential for any research project because it grounds the research in an aim or goal for what you want the research to ‘do’ or ‘say’ or ‘become’. An underpinning theory can be used as a guide and supportive framework with immanent methodologies to “enable conceptual and practical relationships” that are changing and transforming (Sancho-Gil & Hernández-Hernández, 2020, p. 3).

Further, when researching as a process to ‘becoming’, the “placing of oneself in this ‘becoming’ leads to paying attention to the diverse, the material and the emerging”. (Sancho-Gil & Hernández-Hernández, 2020, p. 10). Alongside thinking with theory, that is, an attempt not to follow a particular method or become entrenched in ‘methodolatry’; but to consider “what counts as knowledge, what counts as “real”...and who has the authority to determine this” (Jackson & Mazzei, 2017, p. 720). It was also important to consider the theoretical framework and methodology as equally flexible, open, emergent, and where there is no formula but as a new analytic for qualitative inquiry (Jackson & Mazzei, 2017, p. iii). It also requires a flexible, reflexive, and collective methodology that allows a fluid, dynamic process to evolve or ‘become’ simultaneously recognising the intra-actions within the assemblages. In this instance, the assemblages of the women (and myself) in meetings through the Zoom platform and the otter.ai programme that ran in the background for transcribing purposes. Co-operative inquiry (CI) is the methodology used for the research project alongside a Bricolage methodology and Reflexive Thematic Analysis (RTA) to analyse the data gathered, enabling the dynamic process to unfold in this research project.

For this project, it was important to look at the intersection of gender, bodies, and technology. So, to begin with, I asked myself about ontology and epistemology; that is, what do I know about gender, bodies, and technology; then? How do I know about gender, bodies, and technology? To not get bogged down or too entrenched in what Chamberlain (2000) calls methodolatry<sup>4</sup>, I wanted to begin with what I know and how I know it, as well as expand this thinking from those that participated in the project to see what they knew and how they knew it; or conversely, what they did not know and wanted to know. As mentioned previously, there is little research on perimenopause, and many women “wished they’d known more about what to expect” (Bezzant, 2022, p. 9).

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<sup>4</sup> Murray and Chamberlain (1999) describe how it developed in response to the criticism of “researchers who deviated from the strict methodological guidelines were dismissed as unscientific” (Murray & Chamberlain, 1999, p. 4). Chamberlain (2000) describes methodolatry as: “the privileging of methodological concerns over other considerations in qualitative health research” (Chamberlain, 2000); in other words, it does not focus on the ever-changing process of the research project and other facets, for example, interpretation.

## Posthuman Feminism



*Figure 6: From Westworld, this picture encapsulates the posthuman assemblage of decentring of man, digital technologies and a desolate environment in need of attention.*

<https://medium.com/nerd-for-tech/from-a-vitruvian-man-to-a-primo-post-human-understanding-posthumanism-ffa0c6d0c662>

I used Braidotti's Posthuman feminism (2022) because it aims to avoid 'forgone conclusions' about 'man' [or 'woman'], disrupt the humanist view and open up the idea that humans are 'becoming' more than human. To this end, I also required an equally flexible way to analyse the data to understand how perimenopausal women experienced themselves and their bodies through digital health apps. To enable the dynamic process of the data to appear or 'become' it was important to keep in mind what Braidotti (Angažovana misao / Engaged Thought, 2022) refers to as the philosophy that underlies the critiquing of both humanism and the Anthropocene; that is the feminist new materialism (FNM) approach in which to produce new knowledge and ethical accountability while simultaneously "keeping in mind always, the environmental, digital, technological and ecological" (Angažovana misao / Engaged Thought, 2022), to analyse and conceptualise "human subjectivity and embodiment, agency and power relations, and the entanglements of humans and non-humans in more-than-human worlds" (Lupton, 2019b).

Jay David Bolter (Bolter 2016) gives a succinct and informative overview of posthumanism. In particular, the development of the theory from the rejection of humanism through the Renaissance to the Enlightenment describes a tenacious positivist view that, in many ways, is still the institutional dominant perspective today. Multidisciplinary in nature, posthumanism can be considered a theory that disrupts the traditional boundaries between the human, the animal, and the technological (Bolter, 2016, p. 1). Breaking away from traditional assumptions of a superior Western culture, its

development into non-binary or Cartesian dual-natured scholarship has given rise to the scholarship that had its beginnings from such as “Darwinian biology, Marxist economists, and Freudian psychology” (Bolter, 2016, p. 1). Halfway through the 20<sup>th</sup> century, the disruption continued through the works of postmodernism and poststructuralism through language, literature, culture, history, philosophy and art, to name a few. The most influential of these were philosophers Derrida, Foucault, and Lyotard; whilst in different areas, their work was critical of humanism and aimed to decentre the Anthropos. In other words, they argued against the “elevation of man [sic] from and over the natural world”.

If man is not the centre of the world, Haraway’s (1991) cyborg as a posthuman subject expanded the theory to techno-science and biology. Not alone in these endeavours, her seminal work has provided much of the groundwork for feminist posthumanism by positing that the “tensions and possibilities of technological mediation” (Bolter, 2016, p. 3) can be productive and even political. Her cyborg is human, machine, and animal, wherein the metaphor exposes contemporary human beings as bodies “open to forms of technological modification and intervention” (Bolter, 2016, p. 3). Human bodies interact daily with various technologies, which “change, extend or enhance human’s physical capacities and capabilities” (Lupton, 2012, p. 232). For example, drugs, birth control, cosmetic surgeries, wearable digital technologies, pacemakers, hearing aids, and phones (among many others). These technologies, particularly smartphones, “tend to be carried on or very close to one’s person throughout the day, can monitor and measure their users’ behaviours, including their bodily movements” (Lupton, 2012, p. 234).

Posthuman feminism is concerned with de-centring the Anthropos, placing feminism as an integral part of posthumanism (that is, as the precursor). Braidotti (Braidotti, 2022) dynamically processes posthumanism alongside feminism without ignoring these important genealogies to disrupt the human-centred (or anthropocentric) interests [of scholarship in this case]. Concerning the body,

posthuman feminism recognises the contradictory nature and wide-ranging politics accommodated by the posthuman convergence (Braidotti, 2022, p. 175), which she defines as:

[A] *“historical condition of the Anthropocene – not a utopian future – that is marked by three momentous and interconnecting changes. First, at the social level we witness increasing structural injustices through the unequal distribution of wealth, prosperity and access to technology. Second, at the environmental level we are confronted with the devastation of species and a decaying planet, struck by climate crisis and new epidemics. And third, at the technological level, the status and condition of the human is being redefined by the life sciences and genomics, neural sciences and robotics, nanotechnologies, the new information technologies and the digital interconnections they afford us”* (Braidotti, 2022, pp. 3, 4).

Further, the intersection of “powerful structural socio-economic forces, led by technological development, in combination with equally powerful environmental challenges, centred on the climate crisis” needs to be analysed with a feminist lens. That is, with a liberationist spirit (much like the goal of cooperative inquiry methodology discussed below) that is both disruptive and empowering. In other words, in a more than human world, what and how can scholarship understand lived experiences and embodiment through the assemblage of technology, socio-cultural, political, and environmental influences through which we understand ourselves?

Using a feminist new materialist (FNM) approach, Braidotti and Regan ask *“...whether we can bring the new technological developments to bear on a vision of subject formation that respects and reflects complexity, diversity and multiple ways of belonging”* (Braidotti & Regan, 2017, p. 182).

This postfeminist and human understanding situates what Braidotti considers the ‘human convergence’ in a multidisciplinary, intersectional, collaborative, and positive space where it is possible to be simultaneously grounded by historically developed theory; and open to a dynamic process that will unfurl and bloom to be a snapshot of the lived experiences and understandings of a group of previously ‘othered’ individuals within a technological interconnection. In other words, it is, from a Posthuman feminism perspective, important to recognise that a humanist stance may have developed into a dominant discourse of the human that “is based on the assumption of superiority by a subject that is male, white, Eurocentric, practising compulsory heterosexuality and reproduction,

able-bodied, urbanised, speaking a standard language” (Braidotti, 2022, p. 10). However, to disrupt this perspective, it is crucial to consider the ontologies and epistemologies that do not take this view to practice knowledge creation and meaning that is inclusive of all things ‘other.’

Braidotti argues that feminists are not the same as ‘man’, but neither are ‘we’ a “homogenous, unitary notion among ourselves: we are otherwise others”. Moreover, the “power, entitlement and access” conditions that define our different positions may be materially embedded in separate locations. However, it is precisely those differences that need to be understood as a “shared intimacy with the world” in order to “nurture and implement the ongoing process of unfolding and transformative paths of becoming” (Braidotti, 2022, pp. 7–8). Central to posthuman feminism is new materialist feminism that stresses the “embodied, embedded and sexuate roots of all material entities, humans included” to defy binary oppositions (2022, p. 11). New materialism can think through embodiment, multiplicity and differences to better understand the related affiliation of “human and non-human others” (2022, p. 11). In particular, Posthuman feminism and FNM utilises the concepts of assemblages and entanglements in understanding the more-than-human world, mutually constituted by all aspects of that world, that is in a constant state of flux, ‘becoming’.

Davies (Davies, 2020) considers new materialist concepts and how being human and being more-than-human are opened up through thinking about assemblages and entanglements of the world that we are of, where that world includes “the emergent, permeable human and all of its animal and earth intra-active others” (2020, p. 1). More specifically, how matter comes to matter through understanding the non-binary affects through the intra-action of the entanglements within assemblages. For example, when discussing researchers, she disrupts the binary understanding of writing as inquiry whereby a researcher “comes to know the world through intra-actively engaging with it – that is, in each encounter, they affect the world and are affected by it” (Davies, 2020, p. 2). She also points out that ontology and epistemology are

inseparable; therefore, we can no longer observe a world where that observation is separate from oneself; in other words, researchers affect what they encounter and are also affected by it (2020, p. 3). Unlike inter-action, intra-action is the entanglement of all parts of the assemblage, the human and more-than-human, the organic and inorganic and the ontological and epistemological. The intra-action happens in conjunction with the entanglements. For example, as I am writing this, I am intra-acting with the laptop I am writing on, the seat I am sitting on, the lights in the room that are providing light for me to see, the notes I have beside me, the water bottle that I sip from regularly, the heat pump in the room that is keeping the room warm for me. These are all things that affect me and how I feel as I write; therefore, how I feel will affect my writing of this section.

Feminist new materialism (FNM) furthers these concepts with an emancipatory focus that considers not one immutable ‘object’ but a combination of things that, when assembled ‘intra-act’ to evolve in a dynamic way to create or become something that ‘matters’; data, lived experiences, the cultural and social aspects of our environment all intra-act to create a dynamic, in flux ‘becoming’ of an experience. Davies (2020) considers intra-action as follows:

*“relationships between multiple bodies (both human and non-human) that are understood not to have clear or distinct boundaries from one another: rather, they are always affecting or being affected by each other in an interdependent and mutual relationship”* (Davies, 2020, p. 16).

## Postfeminist healthism

**When you are trying to  
work from home, raise  
kids, not be broke, stay  
hydrated and remain sane.**



Figure 7: Doing femininity in a nutshell. <https://www.digitalmomblog.com/work-from-home-memes/>

Focused on the intersections of gender, health and contemporary forms of neoliberalism, postfeminist healthism looks at the varying ways in which women are commodified and pathologised with an unachievable promise of being a good citizen if only they can maintain a ‘normal’ healthy body, all the while attending to practices that are “self-transformative and consumerist” (Evans et al., 2020, p. 95).

Postfeminist healthism was developed from Gill’s (2007) postfeminist sensibility (as cited in Riley et al., 2017), in which a set of ideas about “female subjectivity, embodiment, and empowerment” is mediated through a range of “digital, social and traditional media” (Riley et al., 2017, p. 8). The sensibility calls for understanding how women’s sense of self is mediated through contradictory and inconsistent notions (Riley et al. (2019) as cited in Beijbom et al., 2023, p. 4). The discourse of choice and empowerment meant that feminist perspectives of sexist and objectifying practices were now touted as individual choice regardless of the underlying discourse of biological essentialism. For example, choosing traditional gendered domestic roles, wearing high heels, participating in marriage, pregnancy or any other choice driven by biological femininity were now seen as individual choices of transformation promoting empowerment and good citizenship, particularly when underpinned by neoliberal capitalism.

Produced through appearance work, femininity was constructed “as a bodily practice and the body as the locus of women’s success and identity” (Riley et al., 2018, p. 3). Mediated as choice, empowerment and autonomy, the postfeminist sensibility highlights the underlying marginalising ways these feminine ideals left out those who were not “white, slim, middle class, able-bodied and heterosexual” (2018, p. 4). Riley, Evans and Robson (2022) frame this as a ‘transformation imperative’ wherein undertaking work on the body is framed as empowering and a choice. Centred on the premise of being visible, attractive and valued, this entanglement of ageless ageing and the transformation imperative can have the affect of being tied into a narrative where women must continue to work on themselves and their bodies “in order to live an optimal life” (Riley et al., 2022, p. 50). Regarding women’s health, this can be seen entangled in the Postfeminist and Neoliberal healthism discourse that is entangled in the postfeminist sensibility that underpins these discourses.

Concerning women’s health, underpinned by a neoliberal capitalist discourse, the postfeminist sensibility has been extended to include Crawford’s (1980) concept of healthism, wherein the problem of health and disease is situated at the level of the individual in the form of medicalisation (Crawford, 1980, p. 365). That is, women’s bodies and reproductive health are considered medical issues.

Postfeminist healthism was developed to conceptualise how women understood themselves and their bodies. It describes a cultural imperative for women to work on their bodies to meet narrow cultural ideals of healthy embodied femininity and to understand this work as empowering and a measure of their morality and citizenship. In other words, women's empowerment and embodiment are underpinned by the neoliberal paradigm of women’s healthcare being framed positively yet with a consumerist notion of needing to ‘manage’ a healthy ‘ideal’. If healthism “reinforces the privatization of the struggle for generalized well-being” (Crawford, 1980), then postfeminist healthism identifies the commodification of women’s health and their bodies through the discourse of choice, empowerment and embodiment (Evans et al., 2020; Riley et al., 2017, 2018, 2022).

## Theoretical Framework

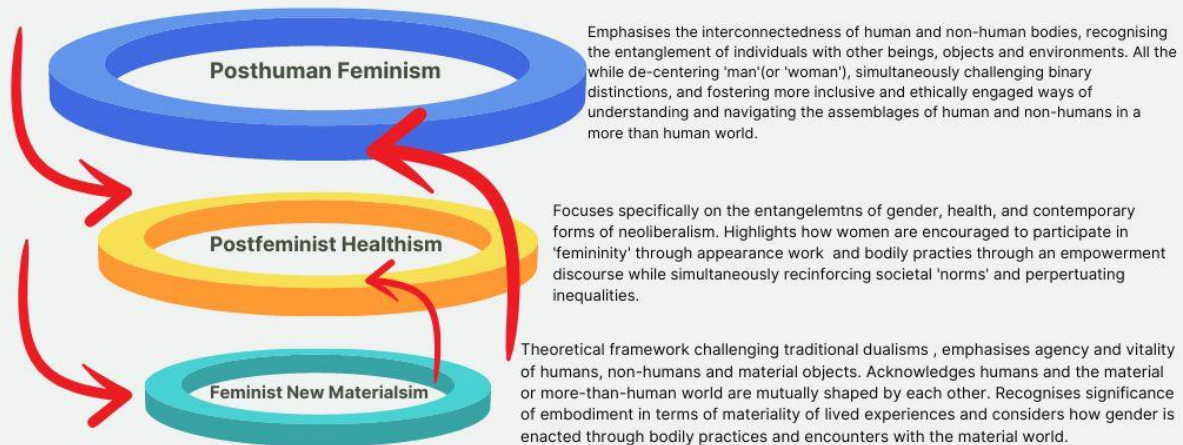


Figure 8: Theoretical Framework figure that I created in Canva to remind me of how my theories worked together. The text was put into Chat GPT to give me quick, easy-to-understand descriptions.

The theoretical frameworks of posthuman feminism and postfeminist healthism have similar foundational approaches that make this methodological theory suitable for this project. While coming from different perspectives, these theories intersect in exploring the body and its relationship to power structures. They enable a recognition of how gender, embodiment and health are entangled in complex and mutually constitutive ways, simultaneously paying attention to underlying power structures. From the broader perspective of highlighting the need to move away from a human-centred conceptualisation of identity, agency and subjectivity and adopting a more inclusive and expansive understanding of what it means to be human, posthuman feminism informs postfeminist healthism by positioning women's health and the study of the body, gender and technology as an assemblage that is entangled in a manner that is heterogeneous and co-constitutive. Alternatively, as Braidotti

says, “not only are we not the same as Man, but ‘we’ feminists have never been a homogenous, unitary notion among ourselves: we are otherwise others” (Braidotti, 2022, p. 7).

From a posthuman feminist standpoint, we aspire to “nurture and implement the ongoing process of unfolding alternative and transformative paths of becoming” (Braidotti, 2022, p. 8). This can begin to be unpacked through postfeminist healthism to locate the ‘we’ and all our complex ways of understanding our bodies through mediated discourses to challenge gendered expectations and how these are reinforced through social, cultural and technological processes. Feminist new materialism is a way to articulate the intersections of these two theories by its ability to defy binary oppositions “by thinking through embodiment, multiplicity and difference” (Braidotti, 2022, p. 11).

Therefore, these underpinnings lead to my understanding of my objective study wherein a posthuman feminist lens requires understanding perimenopausal women as most definitely not human, wherein the humanist ideal human is that of a white, wealthy European able-bodied male. It requires a lens wherein a perimenopausal woman is dynamic, ever-changing and evolving, agentic and not just perimenopausal but part of a discursive, material and embodied assemblage. This assemblage also includes wider discourses of gender, bodies, health, citizenship and the material elements of the world, such as the organisation of space, digital technologies, and the ability to access and buy products (e.g. menopausal supplements online). Nor is she necessarily white, wealthy, able-bodied or cis-gendered. Further, using a Postfeminist healthism lens to explore these experiences meant understanding how perimenopausal women understood themselves and their bodies. The embodied experiences can be seen through a biomedical body and associated with periM (i.e. reduced follicles in the ovaries, irregular periods, hot flushes etc.); it can also be understood from a Postfeminist healthism discourse of a white privileged woman who is also ‘constructed’ through a negative biomedical model with a medicalised ‘condition’, at the same time being tied into a postfeminist healthism in which she is also slim, healthy, fit and ‘living her best life’.

## Method (the practice).

*“Life is a process of becoming, a combination of states we have to go through. Where people fail [sic] is that they wish to elect a state and remain in it. This is a kind of death (Anäis Nin, as cited in Kraft, 2011).*

This section concerns the methodological direction taken in considering the research question.

In a fundamental explanation of the structure of this research, it was clear that given the complex nature of perimenopause and the use of digital health technologies, a multidisciplinary theoretical position would be required to highlight these complexities. Therefore, a qualitative research approach was used to capture the multidimensional nature of perimenopause and digital health technologies alongside the complex situated knowledge that can be described as postfeminist healthism (Riley et al., 2018). As such, the methodological approach of Co-operative Inquiry (CI) was used with an underpinning theoretical lens of Posthuman feminism as developed by Rosi Braidotti (Braidotti, 2022) in alignment with postfeminism and health developed by Riley, Evans and Robson (Riley et al., 2018). This theoretical framework opens up the dynamic process of ‘becoming’ that understands the fluid, dynamic and in flux nature of a more-than-human world alongside thinking with theory.

### Methodological Approach



Figure 9: The collaborative nature of PAR <https://enliveningedge.org/action-research/reinventing-your-organization/>

Participatory Action Research (PAR) concerns power and knowledge, mainly how knowledge is created and deemed powerful through established constructions of what and how knowledge is

created. The double objective of PAR is to produce knowledge and action directly valuable for a group of people and empower people at a deeper level by enabling the construction and use of their own knowledge. This double objective is directly attended to within the methodology of CI.

Qualitative research has numerous methods to collect non-numerical data; in this instance, a type of PAR known as cooperative inquiry (CI) was used. “Action research uses scientific knowledge to solve practical problems, in collaboration with those who are experiencing the problem situation, in order to generate new knowledge”(Rohleder, 2012, p. 176). PAR concerns power and knowledge, mainly how knowledge is created and deemed powerful through established constructions of what and how knowledge is created. Utilised as a qualitative research method that emerged in the US during the 1940s, PAR has since had a multi-disciplinary pathway to its use in health promotion and social and critical psychology (Rohleder, 2012, p. 176). PAR uses a process that includes collaboration with those that experience the problem and the researcher(s) to “bring about community-level changes to social and health problems”, specifically where the research enables emphasising participation and involvement of those who “may be otherwise marginalised or whose views are often not considered important” (p. 177). This is particularly emphasised within the disability movement studies wherein a key slogan is, “*Nothing about us without us*”, which epitomises the active research component of conducting research “with” not “on” people with disabilities (Rohleder, 2012, p. 177). In their chapter on Critical Health Psychology (CHP), Lyons and Chamberlain (2017) discuss PAR as a research method utilised within CHP as a means to “improve health and well-being outcomes” (Lyons & Chamberlain, 2017, p. 53).

As in any methodology, some pitfalls and problematic issues arise in PAR. On a more practical level working with a group of people with diverse backgrounds and, therefore, diverse knowledge together with the demands of time on the group is not always going to be a simple and straightforward exercise (Murray, 2015, p. 228). Further, McIntyre (McIntyre, 2007) discusses the terminology in terms of definitions that are “always in flux and often contested” (McIntyre, 2007, p.

xii). This is to reject the ‘dualisms’ indicative of traditional social science research and “equalise” the relationships of all involved in the research project. With PAR being a multi-disciplinary method and the fluidity that makes it collaborative, there are some criticisms about its robust nature (particularly as it seems quite distinct from empirical methods) and how/if it has a valid theory to underpin it. McIntyre (2007) discusses how the distinction between academics and participants should not mean “theory reside[s] in one place” with the implementation being in another because PAR is specifically about the “development of theoretically informed practice for all parties involved” (McTaggart (2001) as cited in McIntyre, 2007, p. xii).

There are also ethical challenges that come with using PAR. Specifically, the difficulties the action researcher may encounter concerning power and authority. This is where reflexivity is critical to practice so that the recognition of the political and economic hierarchies is not repeated or maintained to further community interests (Murray, 2015. p. 229).

There are also criticisms concerning PAR’s methodology. There are certain issues with using varied and mixed methodologies. Stephens (Stephens, 2008, p. 113) points to Cook (2005) and the discussion of critical ethnography and how the methodological assumptions that underly ethnography do not align with PAR. In particular, how the “control over the research process” still lies with the researcher even though they share “the aims of changing existing social structures (Stephens, 2008, p. 114). Perhaps it is a matter of presentation. For example, McIntyre (2008) has a section titled “*You’re gonna be the teller, but it’s ours*” (p. 27) that sums up how PAR can negate that criticism by very clearly writing up the research as produced by all those involved and presented by the researcher. Persons also bring their capability to self-deceive, collude to the consensus, rationalise and ignore obviousness as characteristic of ‘human behaviour’. However, it is a continual effort (on behalf of the researcher) to reflect and remind all participants that it is a collaboration, and the researcher is a ‘middle’ person who translates how/what the community/group would like to say to

be heard. This is where the reflexivity aspect of the method is essential to maintain a collaborative piece of research.

With this in mind, it is also important to understand what the participants want to say and what they would like the research 'to do'. Further, it is also important to remember that the researcher is still obligated to provide a final report on the collaborative project. The benefits for the participants are related to the opportunity to inquire into a specific issue that should lead to more affirmative ways of being in the world. However, should the researchers' interpretations differ from the participants, that will become part of the findings and the participants lived experiences that will be discussed.

### **Theoretical Framework of CI**

The method chosen for this research of CI was in part because of its extended epistemology; that is, the theory of knowledge extends beyond just the primary "theoretical knowledge of academia" (Reason & Heron, 2022), but also because of its "participative world view" wherein both humans and communities and more-than-human worlds are co-created through the embodiment, experience and actions of those involved in the inquiry project (Riley & Reason, 2015, p. 170); and because of its "liberationist spirit" wherein an inquiry begins with concerns about power and powerlessness. This form of participation affirms people's rights and ability to have a say in creating knowledge about them (Riley & Reason, 2015, p. 171). Similarly, the liberationist spirit is also seen in Braidotti's feminist perspective of posthuman feminism that disrupts the humanist view of 'man' (or 'woman') at the centre.

This political aspect of CI entails the relationship between power and knowledge. It concerns the disruption of the 'monopoly' of knowledge in established and "power-holding" elements of societies worldwide (Riley & Reason, 2015, p. 171). The two-fold objectives of PAR; are the production of knowledge and action directly applicable and the empowerment of people who participate in knowledge production. In particular, the work of philosopher Habermas (1971)

furthered the view that knowledge, any knowledge, is not outside the “social, political, and economic contexts within which it was generated” (p. 219). This view is also reminiscent of Johan Galtung’s (1969) peace studies in which he describes structural violence, how the structures of society impede those in the society of their basic needs (Galtung, 1969, p. 171). The multi-disciplinary nature of PAR is evident in so many of its evolutions through different scholars and their specialities. It makes one wonder if this is perhaps what has been missing in an evolution of structured ‘privileged knowledge’ that has been the dominant paradigm so far; a way of working together collaboratively across disciplines. Should we be practising what we are preaching? The very structure and institutionalism of knowledge production seem to preclude this type of knowledge production with its competitive nature and economic and personal marginalisation.

In their chapter on Cooperative Inquiry, Riley and Reason (2015) describe a clear and succinct development of PAR through their descriptions of knowledge, participative inquiry and action research. Cooperative inquiry is a formulation of action research within which there is an emphasis on “understanding participants as co-researchers” with a view to ‘problem-solve’ and ‘enable social change’ (p. 169-172). Unlike some articles mentioned above, this one provides a specific epistemology section. They discuss an extended epistemology that basically ‘extends’ the knowledge of all participants in the collaborative project (p. 170). This extended epistemology enhances the knowledge production that includes all ways of knowing and, more particularly, those that are “experiential and practical” (p. 170).

From a historical and theoretical background, Riley and Reason (Riley & Reason, 2015) describe CI as being “a science of persons” wherein the understanding of ‘person’ entails engaging with a fully rounded notion of a person within a participative worldview, with an extended epistemology and a liberationist spirit and beginning with recognising all in the inquiry process as persons, including participants and researchers, wherein their intelligence, intentions, reflections and relationships to each other intersect. An extended epistemology links to practical knowing since

practical knowing should enhance people's ability to be in the world, so in that sense, it is liberationist. It is within the interactions of all these characteristics that a 'person' experiences their 'reality' – a “co-creation that involves the primal givenness of the cosmos and human feeling and construing” (Riley & Reason, 2015). In other words, a participative worldview is fundamental to PAR. This worldview adopts a 'postmodern' attitude to “move us toward” a positioning of both human and more than human understanding in a situated and reflexive manner to enable those involved in the inquiry to 'construct' practical 'knowing' based on experience and action. Further, the political dimension of CI lies in what Riley and Reason (Riley & Reason, 2015) describe as a “liberationist spirit” that is grounded in the works of such philosophers as Habermas and Foucault, among others (Riley & Reason, 2015, p. 171). The double objective of PAR (mentioned in the Methodological approach section) is directly attended to within the methodology of CI. Drawing on the theory of four ways of knowing, CI uses this extended epistemology to verify a person's understanding of a particular situation through their experiences, based on their participative worldview collaboratively and reflexively, with the aim of knowledge production that is practical and empowering.

## **Design**

Using a CI methodology, this research project was designed as a collaborative project that brought together two groups of perimenopausal women on the Zoom meeting platform. Following the CI method of cycles of action and reflection (see Figure 4), these two groups collaboratively considered the nature of embodied understandings of perimenopause using digital health apps wherein all group members were co-researchers and co-subjects. The methodological approach of CI is a dynamic process that develops through the collaborative cycles of action and reflection to create experiential knowledge considering the research question.

The dynamic process is also essential in this research project's methodological and theoretical framework. In this instance, it refers to both the process of CI as a fluid, participatory, flexible

process-oriented exercise to enable change and empowerment; the process of the development of the theoretical framework of posthuman feminism to postfeminist healthism.

This openness to a dynamic process ties in with the methodological approach of Co-operative Inquiry (CI), with its extended epistemologies that provides both a rigorous yet fluid and dynamic way. This collaborative theoretical framework fulfils Braidotti's goal of Posthuman feminism, which is a... " *determination to construct together social horizons with hopes to affirmative ethics... we can only do it together*" Braidotti, 2022 Book Launch (Polity Books, 2022).

It was apparent that a qualitative approach should be taken to answer the research question. That is, in order to better understand how perimenopausal women experienced themselves and their bodies using digital health apps, it seemed logical to ask perimenopausal women themselves what their experiences were rather than using statistics from data, mainly when much of the data has not been gathered with the express permission of the users, and understanding that the data collected will be used for research purposes. Qualitative research is beneficial in situations such as this because it is helpful in areas that require exploratory findings where what is being measured is unknown (e.g. lived experiences of people); and also for complex issues such as the entanglements of the assemblages in this project (women-periM-apps); and, also for understanding how people themselves make sense of their lived experiences.

In this project, the research question of understanding how perimenopausal women understand themselves and their bodies through the use of digital health apps entailed looking at the assemblages created through the group Zoom meetings, the otter.ai transcript software that ran in the background of the Zoom meetings, Facebook group postings, emails, Miro board postings together with the use of digital health apps and how those entanglements affected the experiences of the women in the meetings as well as myself. FNM in research means that it is important to recognise

that I was a part of the assemblage and that my own experiences, embodiment, and entanglements with the women at the meetings were a large part of the research process.

## **Ethics**

Throughout this research project, I adhered to the Code of Ethics for Psychologists in Aotearoa New Zealand and the Massey University Code of Ethical Conduct for Research, Teaching & Evaluations Involving Human Participants to ensure that the criteria of my Ethics Application were continually met.

The project began with an approved application to the Human Ethics Committee. My commitment to protecting the women working with me in this research project was a large part of the Ethics Application. To this end, I attended to informed consent, confidentiality, avoidance of harm, the safety of participants, the safety of the researcher, and social and cultural responsibility. Further, I underwent a formal cultural consultation with Associate Professor Natasha Tassell-Matamua at the Massey University School of Psychology, in which we discussed my research project in the context of the Te Ara Tika Guidelines for Māori Research Ethics. Because menstruation is tapu (sacred) and interpreted in complex ways due to Aotearoa New Zealand's history of colonisation, it will be based on relevant research that places tikanga (customary practices or behaviours) as ultimate and essential for Māori identities which can be achieved through Māori knowledge of the female body (August 2005, p. 122)<sup>5</sup>. Therefore Te Reo (Māori language) was used in the research poster by inviting wahine (woman) to participate in the research project. Unfortunately, no Māori wāhine or anyone of any other ethnicity participated in this project.

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<sup>5</sup> A wonderful and accessible "exploration of bodily rituals, practices and cultural spaces of the female Māori body" is Wikitoria August's Thesis **The Māori female - her body, spirituality, sacredness and mana : a space within spaces (2004)**.

A research poster (see Appendix 1) was created with a QR code that would lead to a small purpose-built website where it was possible to get more information about the project and ways to get in touch with me (<https://62cb6d79a0a27.site123.me/>). The research poster was then placed in both of my clinics, on the local library noticeboard, and a local Facebook community group page. Several different agencies that I thought may be helpful in recruitment very kindly put my research poster on their websites; The Hope Foundation for Research on Ageing, the Womens Health Action Group and Niki Bezzant (author of *This changes everything* (2022) (Bezzant, 2022)). Each participant received an Information Sheet (see Appendix 2), which set out the purpose and criteria for the research project; a Consent form (see Appendix 3) was provided to each participant after a certain amount of time so due consideration was given to continue or not participate. Further, each participant was informed of their right to withdraw at any time and were reimbursed in appreciation of their time and any in-app purchases that may have been required while using the apps during this project.

As recruitment began, the lack of response made it apparent that perhaps the COVID pandemic was deterring people from registering interest. At the time, Aotearoa New Zealand, was at the pandemic level of orange light, which provided relative freedoms and no limit on group gatherings. However, many people were being affected in terms of having time to attend face-to-face meetings; or possibly being cautious about face-to-face meetings as there were still isolation restrictions in place around household members of those contracting the COVID virus. Therefore, after meetings with my supervisor, Professor Sarah Riley, it was decided to apply to the Ethics Committee to amend my initial application to enable the project to be moved online to the Zoom meetings platform. Professor Sarah Riley (my supervisor) had some previous experience in CI projects in this format. An amendment was applied for, and the committee approved this amendment.

## Participants

This research project consisted of seven women in two different groups. Group 1 was with three women and me; Group 2 was with four women and myself. Of the seven women, five were from Aotearoa New Zealand, and two were from Canada. All of the women identified as being perimenopausal (i.e. had, had a period in the last twelve months) and ranged in age from 42 years to 54 years of age. All the women were white (I consider myself Pākehā<sup>6</sup>), heterosexual, cisgender, and middle class<sup>7</sup> and relatively well educated. These are the only demographic statistics that were discussed at the meetings. As mentioned previously, this project does not have a goal to make generalisations.

## Procedure

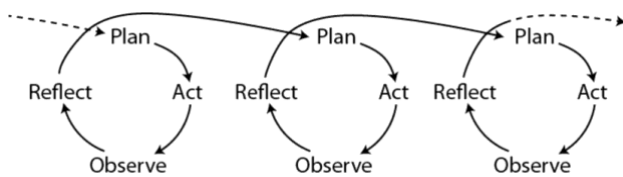


Figure 10: The reflect, act, observe cycles in CI.

<https://www.researchgate.net/profile/NinaJorring/publication/338937457/figure/fig1/AS:853366628433920@1580469867436/Illustration-of-the-Plan-Act-Observe-Reflect-Cycles-in-the-PAR-Process.png>

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<sup>6</sup> I consider myself Pākehā as it connects me to Aotearoa New Zealand more than the designation NZ European. I am a 5<sup>th</sup> generation Pākehā on my mother's side so I do not consider myself European. For more interesting reading on this see:

<https://www.theguardian.com/world/commentisfree/2022/jan/11/in-todays-new-zealand-its-not-about-being-just-maori-or-pakeha-everyone-must-belong>

<sup>7</sup> For the purposes of this project middle class is defined as: "individuals and households who typically fall between the working class and the upper class within a socio-economic hierarchy. In Western cultures, persons in the middle class tend to have a higher proportion of college degrees than those in the working class, have more income available for consumption, and may own property. Those in the middle class often are employed as professionals, managers, and civil servants".

<https://www.investopedia.com/terms/m/middle-class.asp>

The procedure used in this research project follows CI cycles of action and reflection as proposed by Riley and Reason (Riley & Reason, 2015): At the initial meeting for both groups, I introduced the concept of CI and how it would work for this project. This meeting established ground rules around confidentiality, empathy, compassion and sensitivity. To keep identifying information from the project, it was decided that I would anonymise the data in analysis by giving all the women (except myself) pseudonyms and not reporting on any discussions that could possibly identify any of the women. Discussions were had concerning the focus of the inquiry and the agreement to undertake specific actions and practices to contribute to the investigation of the objective decided upon (e.g. the use of periM specific apps). This essentially made up Phase One of the inquiry. During this phase, a discussion was had concerning periM and the women's experiences to this point. As a contributing member of the meetings, I will refer to the experiences as 'ours' and 'we'.

The second phase was begun at the second meeting for both groups. During this reflection of the first meeting, we discussed previous use of digital health technologies that we had used or found helpful in understanding the periM stage. A discussion was had about the apps that were appropriate/or not for perimenopause and whether there were apps that participants were already using. Suggestions from the participants were noted and added to the list to choose from<sup>8</sup>.

The third phase constituted reflecting on the use of the apps that we agreed to use at the second meeting. The action section of the third phase concerned either trying new or different apps that may be more suited to their specific requirements (based on the expectations of the app providing certain functions). Some of the women chose to use and reflect on continuing the use of their menstrual tracking apps alongside a periM specific app.

These reflective and action phases were continued throughout the meetings with both Groups. At all meetings, there were numerous discussions concerning the experiences of periM both in

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<sup>8</sup> Many thanks to Jessica Tappin who kindly provided me with the beginning list of periM and menopausal apps that she created from her research. As my research progressed this list was added to.

Aotearoa New Zealand and Canada, together with in-depth and often humorous discussions about how the experience of perIM was embodied within those contexts.

Due to time constraints and difficulties in setting meeting times that would work for everyone, there were only three meetings with Group 2 (one of them only consisted of myself and another woman). However, Group 1 met five times during this period (also one of those meetings consisted of myself and one other woman). Further, Group 1 and I had a Facebook research group that was set up by one of the participants; some of the women emailed me after sessions with their thoughts and reflections; Group 2 and I had a page on Miro Boards that we were able to post on with thoughts, reflections, and any other information we wanted to share.

Because of the many different ways the assemblage of our group meetings, emails, Facebook posts, and Miro Board posts were used to gather ‘data’, I have somewhat applied the Bricolage methodology to this project. Bricolage “denotes methodological practices explicitly based on notions of eclecticism, emergent design, flexibility and plurality” (Rogers, 2015, p. 1). Alongside Reflexive Thematic Analysis (RTA) as a means to gather and analyse ‘data’, bricolage is a way of piecing together lived experiences with “artifacts (e.g. texts, discourses, social practices) of their given cultural context” in a flexible, fluid and open manner (Rogers, 2015, p. 3). Harking back to my undergrad days while studying for my BA in Social Anthropology, I was re-introduced to Anthropologist Claude Levi-Strauss’s bricolage metaphor for ‘meaning-making’ as a precursor for the use of contemporary bricolage. Based on the structuralism of his time, Levi-Strauss challenged the dominant “bifurcated mythical and scientific rationality” in order to understand the “innate structure of the mind that drives humans to seek understanding” and how knowledge-production by using imagination, knowledge tools that are to hand “in their repertoire (e.g. ritual, observation, social practices) and with whatever artifacts are available to their given context (i.e. discourses, institutions, and dominant knowledges) to meet diverse knowledge-production tasks” (Rogers, 2015, p. 3).

The open, fluid and flexible methodologies of both bricolage and RTA were a way to get into the data gathered to understand the meaning-making of how women understood themselves and their bodies through the use of digital health apps through the assemblage of women-digital technologies-periM experiences. This meaning-making became apparent through the intra-actions of the assemblages and subsequent entanglements of those assemblages.

## **Reflexivity**

So many times I reflected on why I was trying to do this research project on perimenopause while I was perimenopausal myself. There were days when I had no energy nor inclination to write, or if I did, I could not articulate what I wanted to say, or what I wanted to say did not even make an appearance. This is, of course, typical of perimenopausal symptomology. I know that now because I have become well-versed in the patterns of symptomology in perimenopause, and as I reflect on these times (I wish I had known this when I started), I now understand that I lacked knowledge about these symptoms.

Something that I did not consider was that I would be someone without that knowledge. Because of my training as a Homeopath, I have the equivalent of a nurse's training in anatomy and physiology, so I knew what to look for in terms of physical symptomology. Or so I thought. Now after reading so many different books and being a part of this project, I recognise how severely women are under-educated concerning the 'whole' picture of our 'hormonal adventures'. That the cyclical nature has an unpredictable cacophony of physical, mental and emotional symptoms that can appear and disappear at any time; this lack of knowledge of this stage in the reproductive life span is so deeply embedded in the patriarchal Western medical system where women's health is medicalised, and women are woefully inadequately attended to that "sisters are [having] to do it for themselves". This highlighted for me the postfeminist healthism narrative.

My use of a menstrual tracking app proved problematic once I moved into the transitional stage of perimenopause. Basic data collection worked fine with the app when I was regularly menstruating every 28 days or so. However, the app did not know what to do with my information and stopped ‘charting’ once I started going 40-50 days or more without a period. Did this make me uncivilised? In some respects, I certainly felt on the ‘outer’ margins of a ‘normal’ woman. Reflecting on my own use, it became apparent to me that what is considered ‘normal’ for menstruation is being reproductive and with regular cycles and ties in with the concepts of youth and beauty and fertility being something to manage and control to be a healthy and ‘civilised body’. But where did that leave me? Where does that leave anyone who does not follow those ‘normal’ menstruation discourses?

Something interesting happened on my way to finding a theoretical framework for this research project. I had read through a lot of material. I had a seed of resonance with the likes of Foucault, Derrida, some Haraway, lots of Lupton concerning digital technology and lots of Bobel (and others) concerning menstruation, perimenopause, etc. I felt as though I had lots of threads but nothing to tie them to exactly. At least not that worked for me. As I was reading Riley et al.’s (Riley et al., 2018) work on postfeminism and health, I was reminded of one of my postmodern course readings from Rosi Braidotti (2006), *Posthuman, all too human*. So I got online and looked in the library, and there was her brand new work *Posthuman Feminism* (Braidotti, 2022). It was an epiphany read, and here was the theoretical vehicle to which I could pin my threads. Posthuman feminism brings a convergence of posthumanism and feminism (as well as other positions) by creating “alternative visions of ‘the human’” (Braidotti, 2022, p. 3) by people who have historically been left out of the category of ‘human’. In other words, those that are ‘othered’ that feminism aims to disrupt; in this case, women, not only women, but any person becoming perimenopausal; people who are hidden, forgotten because we are not in the prime of reproduction; old, doddering, without anything to say or add to the world; becoming burdens, to the public health system, to our children, to our workplace. Of course, I am being sarcastic.

That was my reflection on this project. Using a CI methodology involved more reflection; reflexivity from not just myself but the people involved in the project and through the analysis of the collected transcripts. A continual cycle of reflexivity is one way experiential knowledge is understood and created based on the PAR theoretical lens. The methodology of CI places reflexivity as a core component of the research process alongside cycles of action. The repetition of these phases enables the creation of experiential knowledge through thought from reflection that is rich and deep and reflects multiple ways of knowing that reflect the life experiences and practices of the participants together with the unique shared experiences as a collaborative group—further, the multiple ways of knowing (Riley & Reason, 2015).

## **Quality Criteria**

Much criticism of qualitative research has been around the quality criteria of the research. The nature of qualitative research is such that it is non-numerical, not necessarily empirical, and often small in sample size. PAR takes the view that “experiences are not from a sphere of subjective reality separate from an external objective world. Rather they enable humans to engage with their world and unite subject and object” (Baum et al., 2006, p. 856). Therefore using a feminist theoretical approach that underpins lived experiences that create “women’s ways of knowing or women’s experiences”. Following the central tenets of action through a reflective cycle where those involved in the research process collect and analyse data to determine what action to take with attention paid to the cultural and power structures of both the research process and the lived experiences of those involved in the research to make social change (Baum et al., 2006, pp. 854–855). CI as a methodology shares these central tenets and provides the action-reflective cycles that create a dynamic process of collaborative data creation through the lived experiences of those involved in the project. These experiences are embedded in inherited traditions and prevailing cultures, and critical theorists take action for change by “calling into question” these traditions and cultures (Baum et al., 2006, p. 856).

This research project is thoroughly grounded in a theoretical framework developed through various historical incarnations to evolve into a collaborative and all-encompassing framework that ties in with CI's practical and experiential knowledge and empowerment tenets. The theoretical framework of posthuman feminism provides a historical and dynamic process that has developed through time. It highlights the convergence at the core of CI in making sense through the inquiry process, cycles of action and reflection, and dialogue throughout the meetings. The dynamic process of CI enables a "critical subjectivity" wherein the cycles of action and reflection produce, develop and build upon each participant's knowledge and lived experiences (Riley & Reason, 2015, p. Box 8.2). This is achieved through several skill and validity procedures: being present and open; bracketing and reframing; radical practice and congruence; non-attachment and meta-intentionality; and emotional competence.

## **Chapter 4 Analysis**

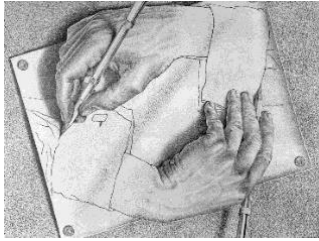


Figure 11: My visual cue for Intra-action - one hand constitutes the other. Drawing Hands. MC Escher (1948)  
[https://www.mygenerationweb.it/images/stories/Articoli/Mani\\_che\\_disegnano.jpg](https://www.mygenerationweb.it/images/stories/Articoli/Mani_che_disegnano.jpg)

As the literature showed, not many apps are specifically developed/designed for users in the perimenopause stage of the lifespan. However, there are some, and in order to answer my research question, it was essential to become immersed or ‘in’ the data and to appreciate both “their fine-grained properties and their larger whole, creatively combining codes, abstracting from the data, dialoguing with existing theory” (Pratt et al., 2022, p. 214) by “cobbl[ing] together” (Pratt et al., 2022, p. 218) a coherent understanding of the lived experiences of periM through the use of digital health apps.

The approach for analysing the data in this project was to think with theory and Reflexive Thematic Analysis (RTA), as set out by Braun and Clarke (Braun & Clarke, 2021), was the primary tool I used which enabled me to identify patterns in the women's talk/experiences. Further, I used methodological bricolage (as mentioned in the Methodological Theory chapter) to bring together an eclectic group of ‘tools’ in order to immerse myself ‘in’ the gathered data. Then I reviewed these recurring patterns using posthumanist analytical tools, which helped me to develop a conceptual analysis. The analytical tools were:

I used Braidotti's Posthuman feminism because it aims to avoid 'forgone conclusions' about 'man' [or 'woman'], disrupt the humanist view and open up the idea that humans are 'becoming' more than human. To this end, I also required an equally flexible way to analyse the data to understand how perimenopausal women experienced themselves and their bodies through digital health apps.

To enable the dynamic process of the data to appear or 'become' it was important to keep in mind what Braidotti (Angažovana misao / Engaged Thought, 2022) refers to as the philosophy that underlies the critiquing of both humanism and the Anthropocene; that is the feminist new materialism approach in which to produce new knowledge and ethical accountability while simultaneously “keeping in mind always, the environmental, digital, technological and ecological” (Angažovana misao / Engaged Thought, 2022), to analyse and conceptualise "human subjectivity and embodiment, agency and power relations, and the entanglements of humans and non-humans in more-than-human worlds" (Lupton, 2019b).

As a means to understand the complexity and dynamic processes of women's experiences of periM, a feminist new materialism (FNM) approach is an effort to “call into question fixed notions of selfhood and the human” (Lupton, 2019b, p. 14). This approach examines not just what humans are but how “humanness is performed and practised in entanglements with nonhumans” (2019b, p. 14). An FNM approach seeks to understand what the research assemblage 'untangles' and tells us about the intra-actions of these entanglements while thinking with theory.

While being careful not to 'fit' the data into the theory or find themes that reiterated the theoretical underpinnings of the research, I wanted to set aside (momentarily) the theories in order for the themes to be data-driven. However, as Braun and Clarke mention, "there is no such thing as atheoretical thematic analysis" (Braun & Clarke, 2021, p. 157), so it was somewhat of a 'balancing' act of being able to situate myself 'in' the data while simultaneously understanding what the data 'told' me about the women's experiences in a manner that was also interpretative and reflexive concerning my understandings of the theory underpinning the research. In other words being 'out' of the data and looking at the bigger picture, the theory that drives the 'becoming' through the entanglements of the assemblages.

Using Posthuman feminism as my 'big theory' position, I needed a way to look at the women's experiences in this project that links the big theory to how their language and understanding of their perimenopausal experiences were understood (by themselves and myself). Postfeminist healthism enables a perspective of understanding that develops from 'decentering man and the anthropos' with a feminist perspective. This lens enables Postfeminist healthism identification of how women's health through a biomedical body and a consumer driving Neoliberal feminism has become a different way of 'othering' by placing at the centre white, European, wealthy, and privileged cis-gender heterosexual women. This was what I could 'see' when I was 'out' of the data; the methodology of CI enabled me to see how periM was experienced by the women in this project through using digital health apps.

CI shaped this analysis by allowing me to explore the pre-technology assemblage for the women in the project before using periM or menopause-specific apps and how the assemblages changed after introducing these apps. Through the stages of action and reflection that were enacted using cooperative inquiry, two superordinate themes were identified and are presented below. Firstly, entanglements of the periM experience describe a woman-periM-society assemblage, followed by my analysis of how that assemblage shifts with the introduction of the periM/menopause-specific apps. Then secondly, the entanglements of technology and periM experiences produce a newly emerging or 'becoming' woman-menopause-society-digital assemblage.

The themes and their subthemes were:

- 1) Woman-periM-society entanglement
  - 1.1) Lack of knowledge,
  - 1.2) Free but floundering;
  - 1.3) Desire for control.
- 2) Woman-periM-society-digital entanglement

2.1 The use of Digital health apps,

2.2) App takeover.

2.3) The app as a failure

Much like a perimenopausal woman and in line with Davies's (2021) ideas of assemblages and becoming; in constant flux, these themes are a snapshot of the thoughts, feelings and experiences of the women and myself discussed at each meeting and can often be contradictory. As a means to analyse data that is dynamic and evolves as it progresses, it was important to use a tool that was equally dynamic, open, reflexive and at the same time honoured the differences of experience. Using a feminist new materialist approach alongside cooperative inquiry was helpful because it enabled me to see these dynamic entanglements move and change over time. These themes and subthemes are listed separately above, but in actuality, they are not distinct in and of themselves but overlap and interact in a fluid and dynamic process. In this project, there were two separate groups; these are their stories.

## **1. Woman-periM-society entanglement**

The biomedical model places the perimenopausal transition starting at any time from 40 years of age and defined with a myriad of physical and mental symptoms, including period irregularities, hot flashes and night sweats, trouble sleeping, low moods, anxiety and mood swings, low sex drive, vaginal dryness, to name a few. However, there also seems to be some confusion around these stages and symptoms with women themselves, and most women in this project have sought help from their GP or an expert healthcare provider (e.g., hormone nurse, endocrinologist). These signs and symptoms do not have to be present. Dillaway (2015) (Dillaway, 2015) argues that clinical definitions do not capture the variability of how women experience these symptoms or define the stages for themselves.

Entanglements of perimenopause experiences take the form of personal experiences and understandings of perimenopause, as discussed by the women in the meetings.

The first finding was that there was a woman-biological-periM-body-society assemblage within which the intra-actions and entanglements produced their experiences. PeriM is predominantly mediated as 'dysfunctional' conceptualised by the biomedical body (Shildrick, 1997). Through a biomedical model, the body is considered somewhat 'machine-like' without connection to the mind and comprises multiple 'parts'. In this definition of the body, if there are any 'faulty' parts, they need to be fixed. Therefore any deviation from 'normal' is considered to be a dysfunction. Feminist critiques of this model, such as Shildrick (Shildrick, 1997), have argued that this definition has important consequences for our self-perception (1997, pp. 13–14), particularly for women becoming perimenopausal when this process is considered a 'disease'. The biomedical body is the dominant discourse based on Western humanist thought that renders women, in general, and older women, quite specifically, invisible. To assess the entanglements and affects from the assemblage of woman-biological-periM-body-society and the use of digital health apps using apps, it was necessary to determine the women's understanding of periM first.

Three subthemes appeared through these entanglements. Firstly, a lack of knowledge wherein menopause was expected at some stage, but periM was not. Further, the lack of knowledge was not just their own; many women experienced a lack of knowledge of periM from the health providers they consulted. Secondly, a theme of free but floundering wherein there was an expectation that by a certain age, they would be free from certain societal expectations and this freedom was anticipated positively. However, they instead found themselves floundering because their lack of knowledge and expert support meant they did not understand what was happening to them. Also, there was a 365 countdown until they became menopausal that left them floundering if they experienced a period on or after the 365 days since their last period. Thirdly, a desire for control wherein the lack of knowledge

and feeling of floundering led to a desire for control over their bodies and perimenopausal experiences. These subthemes are discussed in detail below.

### **1.1 Lack of knowledge – "I didn't know there was such a thing as Perimenopause."**

The meetings began with talk about perimenopausal experiences. Each woman very openly and kindly talked about their specific experience of periM. Central to their woman-periM-society assemblage is a lack of knowledge that is expressed in multiple ways:

- Not knowing about periM specifically;
- Not recognising that other symptoms were part of the periM stage;
- Ignorance of the process of periM
- Being taken by surprise.

Some women did not know that periM was a transitional stage before menopause; Sally notes:

*"One thing about perimenopause was that I didn't realise it was called perimenopause until, you know I started because we just know it as menopause."*

This lack of knowledge profoundly affected their periM experiences because without knowing about the periM transition into menopause, they were not expecting to experience any changes until menopause. Therefore they were taken by surprise and did not understand what was happening to them.

Most women began by discussing their periM experiences with biological language, the dominant discourse of women's health that the biomedical model underpins. However, their lack of knowledge often meant that although they had many different embodied experiences, they did not know what was happening to them. For some women, menstrual irregularity was not always the first or most disturbing issue experienced. A distinct lack of knowledge of much of the physical

symptomology was discussed in the meetings. For example, many of the women did not know that there were other 'conditions' associated with perimenopause, like allergies. Amy commented:

*“So I thought of one thing that the the the only time menopause or it was pre menopause came up with my doctor with my GP because I went in because I was itchy everywhere..... And so she's so I've been on antihistamines, pills and sprays for probably ten years and so that she said that that was probably one of the first signs of pre perimenopause, that the histamines were going nuts. I've never heard that before”.*

Jody also had issues with allergy responses that she had put down to seasonal changes in the environment:

*“I didn't I didn't even think there was a correlation I just thought it was a couple of really bad seasons. So its been two years now since ive been taking three [antihistamines] a day yeah and prescribed too this isn't just me self-medicating”.*

Further, Amy's experiences of allergy symptoms she put down to both seasonal changes and the change in environment since moving to Aotearoa New Zealand:

*“And so I didn't have hay fever regularly, honestly, until probably I moved to New Zealand 2005ish, something like that and so something new here triggered me...”*

PeriM is experienced differently by different women, and even similar symptom pictures can be discussed or understood in differing ways, as is seen by Sally, Jody and Amy's descriptions of their allergy experiences. Emily talked about how she has had other issues for years that she never realised had to do with hormones:

*“And even in terms of the periodic insomnia that I've gotten over my lifetime, that probably is related to hormones, and I never even realised it”.*

Other women had rage issues where they found themselves feeling angry where they would not usually have felt so angry. For example, Jody noted that was one of the first things that changed for her:

*“I was starting to get angry and I’m not an angry person and I started to get really angry ...I’ve got patience is what I have and so I’d be driving home thinking when I get home I’ve got to do this I’m gonna have to do that and I’m really pissed off with everybody at home because I have to do everything”.*

Amy also had ‘rage issues’ and found that her anger was out of place and unusual for her and commented:

*“But for me the thing I’ve seen change, and I’m so sorry for my partner, he has the patience of a saint, I have rage issues but full on right. that’s the only word for it. Nothing’s been physical but man alive ..I don’t recognise it and I don’t know what to do and it scares me a little bit sometimes”.*

Some of the women knew about menopause as a stage they would go through but did not consider being in this stage because they did not know about periM. Lily works for a charity organisation centred on women's health and has lots of knowledge through her work about menopause. She still had regular periods, so she attributed other parts of her life to some of her symptomology:

*“I thought that perhaps I’ve been suffering from a lot of burnout. I’ve got three youngish children... and I have also had COVID....and I and I, you know, and I’ve been, I’ve been really struggling with my, my memory and how to articulate words and all these things”.*

Being taken by surprise was common to the women in this research project. Many of them talked about how they did not know there was a periM. For example, more than one woman said, *"I didn't know perimenopause was a thing,"* or that even if they thought they had enough knowledge to be prepared, they were still surprised to find themselves in this stage of life. They found it quite scary and confusing. Sally talked about the first thing that she found disturbing (retrospectively as she did not realise this was part of periM) was losing mental flexibility:

*"Okay, so, um, the first, the first and most disturbing part of it, for me, was the brain thing. Like two big things happening with the brain, one of them was forgetting words. And the other one was, my brain stop... has stopped being so flexible."*

Lily was also taken by surprise:

*"And we've been doing a lot of research into articles around societal attitudes around menopause and all these things [at work]. But for all of that knowledge, it completely took me by like, I thought, gosh, I've only just recently stopped breastfeeding. What's going on here?"*

Seeking medical help for symptomology that may or may not have been experienced as periM did not prove helpful to them when the women found their general practitioners (GPs) had little or no knowledge of periM. Not having personal knowledge of the perimenopausal process was experienced as confusing and scary by some women; however, upon realising their GPs had no knowledge and therefore either dismissed their complaints or misdiagnosed their symptomology was expressed as feelings of being unsupported, horror, shock and disbelief. Some women's experiences can be dramatic, intense, debilitating and very scary to go through if you have no idea what is going on; Emily talks about a friend's experience:

*"my my friend in New Zealand, I may have mentioned this earlier, but she she went through something very, very similar for a couple of years to the point where she thought she was*

*literally going crazy. And, and, and it took, I think her approaching many different medical professionals to find the right one who said, actually, you're okay, this is a result of this stage that you're going through, and they put her on hormone therapy, all went away, you know, and she, if she hadn't reached the right person, lord knows what path they would have taken”.*

If the GP lacks knowledge of periM, this stage (and all its concomitant 'symptoms') may be missed entirely. Further, a lack of understanding of the process of periM can be seen in the discourse of 'being too young' to go through this transitional stage. For example, many GPs lack knowledge, meaning that women must figure it out themselves. Not only have most of the women been surprised by not having the knowledge or information, but they have also been shocked and horrified to realise that those people did not have that information when they looked for help, support, and medical knowledge. Many of the women in this research project felt this shock and horror, too; For example, Cherie noticed the messaging on a Facebook group:

*“...I see on another Canadian menopause Facebook group is shocking – women seeing their GP's and being told 'you're too young' – I see that comment all the time”.*

Further, the women remarked that if they were taken seriously enough to get some tests, the lack of knowledge about periM means they only get one test done, providing a 'snapshot' of what is happening. Jules was surprised when she (finally) found out she was perimenopausal because she did not expect to be in that stage at just 42 years old. However, life had changed quite dramatically for her and alongside changes in her moods (feelings of rage), she had noticed a dramatic decrease in energy.

*“I used to train really hard. And I just can't do what I did. Even a year ago, I've really noticed a change in my energy levels And so I went to the doctor and he took my levels and he said, No, no, you're not perimenopause, you're ovulating. And I was like, Well, you've only just taken a snapshot of one day, of course, I'm bloody ovulating. You still haven't... so I went to*

*the endocrinologist fertility associates, associates. And she looked at my bloods for the last year and saw oestrogen up and down, up and down”.*

For some women, there was a definitive point in time where once they understood what was possibly going on, they realised that perhaps this phase had been happening for quite some time, as Emily describes her perimenopausal journey:

*“I I probably have been in perimenopause for quite a long time, but I've always been a bit sort of ignorant as to that partly because of the lack of information”.*

The women in both groups also mentioned that there was a general lack of knowledge passed along through family members like mothers, aunts, sisters or cousins. However, Jody did say that her family talk, so she knew what menopause 'looked' like and what it may entail:

*“I come from a family that talk and my mum's always talked quite openly so I knew about menopause and what it was might look and might might happen”.*

However, some of the other women commented about why they did not know about perimenopause and how the information was not readily available. Two of the women in the groups were from Canada, and both commented on the lack of information offered. However, it is unclear if this is country-specific, as the women in New Zealand also commented on the lack of information. Cherie noted:

*“My doctor didn't give me a lot of information or support – I am in the middle of Canada”;*

and Emily commented:

*“In Canada. Well, maybe I shouldn't generalise but certainly in British Columbia where I am, you know, I wasn't given any information about menopause. No one talked to me about it. My mother didn't. My doctor didn't. And you know, everything that I've learned in the last few*

*years has been just because of Facebook or the internet or friends who are starting to get more information about it”.*

From a cultural perspective, how our knowledge is mediated (from a Western perspective) is mainly through the biomedical model. Without the extended family structure that many other cultures have, the power and influence of the biomedical body and healthism continue to be perpetuated, at least in part. In other words, periM is considered a medical issue; however, when women go to their GPs, they either do not find support or understanding and may even be misdiagnosed as their GPs may not have the knowledge or understanding to engage in discussions with them. Jules had a complicated journey with perimenopause from her GP to her being prescribed HRT by an endocrinologist.

*“I had a woman doctor who actually told me at 42 that I was feeling tired because I was 40. She said that what happens when you get to 40? And it was actually my male doctor who sent me to the endo [endocrinologist]. Because I'm not going to see her anymore. She obviously doesn't know what she's talking about I just remember sitting there in disbelief saying 'is this it? You're just telling me I'm going to be tired for the rest of my life?' Great, that's funny. Okay”.*

The women expressed these stories alongside feeling unsupported, horror, shock and disbelief. Particularly around the experience of having their lives change dramatically for some and not understanding what was happening to them because of a lack of knowledge of periM, particularly after seeing their GP and having their complaints dismissed or misdiagnosed. Women GPs also experience this lack of support, and Jody explains how her GP had her own experience with periM:

*“so she [GP] goes to a doctor to help her with her perimenopause and he can't help her and so she that's why she's like 'it's a death sentence'. Its just like nobody knows what to do with this thing”.*

Here is an excellent example of the biomedical body discourse wherein the machine is broken yet cannot be fixed by the 'experts'. The women's experiences have pointed to feeling lost and out of control and that of a pathologised 'dysfunctional' biomedical body.

Overall, the experiences were talked about in terms of feeling unsupported due to a lack of information; it was not taught in school, and their mothers did not talk about it (although a couple of the women had mothers that did prepare them for menopause). Their GPs seemed to have less knowledge or considered periM a 'death sentence'.

The connections with friends for Sally were particularly empowering for her. She did not know that weight gain was another part of the periM experience and commented:

*"...its so good talking to each other, because one thing I didn't realise was the umm that weight gain that you can get like that 'Hello, a kilo a week?' for... and I'm not even eating McFlurries every day"*.

Talking about their experiences was discussed in a manner that promoted feelings of "*being normal*", "*I'm not going crazy*", "*I'm not alone*", or, as Jody says:

*"its quite normal to have memory lapses and to you know to have hormones that make you feel a little bit out of control and stuff yeah and to feel a little bit lost"*.

Again, this is perhaps a condition of the post-colonisation of nuclear family units that are not extended, which promotes reaching out to others in friendship groups and other communities, including online forums, Facebook groups.... etc. The shared meanings and experiences the women in the meetings gained through talking to their friends, work colleagues etc., were important to feel heard and understood. Sally has a large family and social group that includes other families, and she

has found that talking to her friends alongside her husband and children is valuable to her experiences. She talks about knowledge and how for her, it is empowering:

*“being able to share that with my friends and them sharing it with me leading to something tangible yeah, yeah its really good, really helpful”.*

Jody described how on a mental/emotional level, talking about it helped her feel less alone and normal:

*“probably it helps to help see on the one the mental you know that I'm not alone and other people are going through it and this is normal and all that kind of stuff as it helps you and I'm not going crazy, you know, actually its quite normal and common.”*

Moreover, the women also discussed how they now talk to other women, young women, children and men because they feel it is important to ‘normalise’ periM through talking. Amy particularly noted that she would tell anybody about periM and her experiences:

*“So now now I know, well, I know. And I'm I am. I am militant. So I I help run a sports club and I tell all the girls, all the girls, every chance I get I don't even care what age they are. “You're 19? Let me tell you something, sister,” and some of the older girls that are closer to my age say...[to the girls in the sports club], “you have no idea what you're in for. And I want you to know”.*

This concept of 'normalising' the periM experience differs from the 'normalising' of periM as a dysfunction; at least sharing knowledge empowers them, rather than only sharing the 'dysfunctional' biomedical body. Entangled in trying to understand what is happening to them, the women talked about their experiences regarding a 'dysfunctional' process that must be managed. The dominant discourse of a woman's value in youthfulness and fertility situates periM as problematic and a 'dysfunction' that maintains periM as hidden or unknowable. To an extent, it also keeps this hidden

from even ourselves, further perpetuating the 'dysfunction' discourse. Emily talks about how she looks after her body through the discourse of being a certain age and taking part in screening processes:

*“and I, you know, I go for regular pap tests every two years, I guess, with my doctor and she said there's no irregularities or anything like that. So just to watch the things like bone density iron. So I often eat a bit more red meat. I don't eat a lot of red meat, but I eat more red meat right after having a period just to prevent that iron loss. I don't know if that's the best, but it makes me feel better. So yeah”*

The entanglements of lack of knowledge, the periM experience and the ‘biomedical body’ points to a pattern of disconnection from their physical bodies. However, it could be argued that if they did not know of periM, how could they recognise that the physical symptomology they were experiencing be understood as part of the perimenopause process? Two of the women in this project were on hormone (HRT) to manage their physical symptoms, and while they felt a certain sense of having been able to find a 'solution', they do not necessarily know that it has helped, as Jody says:

*“I, I ...I don't know exactly where I am at I am on hormone replacement and my doctor was quite sort of good about mood, terrible mood stuff happening...[glitch in zoom connection]. I am still menstruating, but just probably six months I've stopped most yeah so I don't know what ...or where I'm at”*

and Jules notes:

*“I've got my an appointment with my endo[endocrinologist] in a couple of weeks to go over my blood test results on since I've started HRT so it'd be interesting to see. Yeah, it's hard to know whether you feel better or whether it's a placebo effect. I just I want I want to know the data from her about what's actually going on.”*

In particular, feeling the pressure to 'figure it out' for themselves meant that they used various resources other than talking to friends and families. As noted above, periM is experienced in a complex manner in different ways by different women. The vast array of physical symptoms can easily be mistaken as other conditions in a singular way rather than the overall process of a stage of life, e.g., hayfever and allergies as perimenopausal symptoms. The perimenopausal and menopausal experiences underpinned by a biomedical model of 'dysfunction' frame periM as a medical condition that needs treatment or management. However, there is a dichotomy that leaves perimenopausal women in a liminal space wherein they are both 'undiagnosed' because the GPs lack the knowledge and also unsupported and cannot get the 'solution' [in this data that is HRT], and yet the [Extract about not being able to access services, e.g. HRT]

Underpinning these entanglements is a discourse of postfeminist healthism wherein how women's ideas of healthy bodies are produced based on complex entanglements of empowerment and feminism, which continue to hold women in a position of needing to 'work on the body' to "meet cultural ideals of femininity" (Riley & Paskova, 2022, p. 3). These entanglements produce women in specific ways that have maintained a biomedical 'understanding' of women's bodies. This project was interested in seeing how, through the use of digital health apps specifically for periM/menopause, women in perimenopause would (be)come understanding or knowledgeable of their bodies and their experiences of periM.

The entanglements of menstruation experiences and culture have been given vast attention in research in the last few decades. Moreover, the women discussed how the 'management' of menstruation for them in Aotearoa New Zealand, is tied to the stigma and shame that is part of the menstruation discourse. For example, the discourse of 'managing' and hiding that you are menstruating. Jody comments:

*"I think its interesting also that we've moved we've become so 'civilised' that we don't talk about these things anymore you know? Like, I had a partner from Kenya and absolutely totally*

*normal he had no issue with it at all never grossed him out didn't bother him at all. Whereas you get men from New Zealand and they're like "mehhhh," you know?"*

Two things from this extract are interesting for the contradictory experiences visible from the intra-active entanglements of the women in the meetings. Firstly, Jody mentions that we do not talk about 'it' anymore, and as that was her experience (her mother prepared her for menopause), it makes sense, but other women had different experiences; For example, Amy talks about how she watched her mother go through a difficult and traumatic process that was not recognised as periM/menopause:

*"...umm I saw my mother suffer her whole life with ahh fibroids and crazy periods and struggling with the US health system and getting relief and getting someone to take her seriously and understand that six months worth of bleeding is probably not good for a woman who's five foot nothing ...and just insane. So finally, she got a hysterectomy probably in when she was between 45 and 50 finally and umm .. so seeing that and then ahhh ...but still that's not quite the same.. didn't even consider her her stage of menopause when she had that or had any discussions around it."*

And secondly, what discourse is there around men's expectations and understandings around periM and menopause (another topic for research that will not be looked at here)

It is not just the talking about these experiences that appears hidden. These examples clearly show how a mother's experiences and how she approaches and/or prepares a daughter will invariably shape how the daughter approaches her own experiences. The deeply entrenched biomedical body, while the supposedly only 'solution' is still creating a contradictory and perpetuating periM experience that keeps women undiagnosed, misdiagnosed, unsupported and at the same time responsible for finding out for themselves ways and means to navigate these contradictory experiences.

Amy's experiences are also evidence of the biomedical model falling short concerning knowledge:

*"...when I was growing up my parents were both in the medical field so we always had the books around that I could kind of flip through and would find my nosed in and be a bit curious about. So when I went to school, ultimately, I went for a degree in biology and umm got my ahhh PhD in biology with a neuroendocrine focus so I felt like I was a scientist, I had a good grasp."*

The above extract exemplifies the gap indicative of the binary understanding of the body as a machine that cannot have an embodied experience. Amy thought she was armed with enough knowledge through watching her mother's experiences and the education she had to be aware of this process, and yet she was still taken by surprise and unaware of the periM transition process and has been left to figure it out for herself.

The underpinning postfeminist healthism that travels alongside the Western biomedical paradigm holds individuals responsible for their health. Nevertheless, that same biomedical model does not understand or account for individuals' experiences that do not 'fit' the biomedical model of perimenopause. Of course, this is almost an impossible task because there is no definitive periM experience as most of the received knowledge about periM is understood as only a biological process, which causes anxiety for most women when they do not know what is happening, and also when their GP's have little to no experience of it themselves.

This further intensified when recognising that the goalposts have once again shifted and the postfeminist healthism discourse is still entrenched in this stage of life. In other words, it is scary to get to this stage, not knowing what is going on when you are feeling tired, grumpy, angry, achey, your period is all over the place, you are forgetting things and struggling to articulate yourself, and you have put on weight, and your clothes do not fit. Your doctor tells you either 'you're just tired' or 'its all in your head' and the magazines, podcasts, books, google, Facebook, Instagram and television and

movies say get out and exercise, eat better, wear sexier clothes, look after (read as 'maintain') yourself and be the 'best you that you can be'. The assemblage of woman-menopause-society that shapes women's experiences of periM, as discussed by the women in this project, does not work for them in terms of providing a 'capacity for action', meaning how they gain a sense of well-being or health; it merely situates them in a liminal space where they are neither amid a 'natural' progression nor are they entirely placed in the category of having a medically treatable condition. The intersecting family assemblage does not work for them either, as the underpinning neoliberal/post-colonisation has situated them inside nuclear families/units that are isolated and the historical 'knowledge' is not passed on. Therefore there is a sense of isolation and a need to gather knowledge for themselves.

The women in this project felt that the way forward or out of this liminal space was to talk about it or 'normalise' the periM experiences through discussion. For example, Sally and Jody commented:

*".....so I had women who talked to me so I make sure I talk to younger women" [Jody]*

*"...that's a really good point 'Jody' to ..i think we all should do that just talk about it to each other and then our girls hear it and they'll ask and our boys need to hear it to" [Sally] "yep, and normalise the whole thing aye?" [Jody].*

However, this only works with privilege. In this assemblage, privilege means access to knowledge. The biomedical model that was the overarching discourse in the data also highlights the privilege discourse underpinning the biomedical model. In terms of women's health, it appears that while feminist perspectives have been effective in dislodging, somewhat, the patriarchal male essential model, the lack of research with women has opened the door to an equally subversive dominating humanist perspective that is now expressed through a discourse of the white, wealthy, European, cisgender woman as the periM woman that needs to be heard.

Further, this lack of knowledge of periM can be contextualised within the context of privilege wherein that privilege enables women to access resources both to gain further knowledge and/or access to those resources that are part of the healthism discourse; as Jules noted:

*“I talked to my friends in the UK who have gone through similar symptoms and then battling to get HRT or any help, like, its just an absolute battle for them. Where soon as I realised, when my doctor sent me to the endo, she prescribed the HRT, it was very quick, I had to pay for it, but its very different in wherever you live, and culturally as well, what’s available to you”.*

So, on the one hand, Jules did not fit into the biomedical model because she was supposedly too young to be perimenopausal and could not access the services she required (testing of hormonal levels and HRT). On the other hand, she was responsible for finding the services she needed without the knowledge (or diagnosis?) required to do so. She also showed how experiences of periM are entangled in our sociocultural positions when discussing how she was fortunate to have access to HRT. Being privileged does not necessarily mean being blind to the privileges, as Jules's extract shows.

However, the reality was different because firstly, they did not quite expect the changes to happen so early (they did not know about perimenopause, so they only expected menopause later); secondly, they did not realise that once here, there were a new set of rules about ageing. This is at the heart of women's experiences of periM; the contradictory entanglement of lack of knowledge and personal responsibility to maintain' and regulate the perimenopausal body leaves them confused, vulnerable, angry, shocked and horrified.

## **1.2 Free but floundering – "we're menopausal not dead."**

Also discussed was a sense of freedom from conforming to femininity experienced throughout their adult lives. Most of the women in this project expressed a sense of freedom from societal

pressures around fertility and that apart from the physical symptoms they had been experiencing being confusing and difficult to navigate, this stage of life was not met with a sense of loss. The entanglements of becoming a perimenopausal woman are different for all women (or at least the outcome is). However, the intra-action of the biological changes in a woman's body, together with their understanding of their 'age', alongside the sociocultural understanding of their 'stage' that is shared with their friends, families, colleagues and community, is underpinned by a deeply entrenched postfeminist healthism perspective. For example, Jody noted

*“So I literally have just turned fifty in the last couple of weeks, ...finally maybe I’ll have some wisdom. ...I don’t have a problem with ageing at all but it was like ‘oh what is 50 supposed to feel like?’ cause this isn’t it...this isn’t 50, whats 50 you know?”*

The confusion about what this stage of life is supposed to be like stems from the entanglements of a lack of knowledge of the perimenopause stage and a sociocultural perception of ageing that needs to be fully understood. While the discourse is of an end or a 'dysfunction', the lived experiences do not always follow this negative stage in life. Sally felt excited about getting to this stage because she and her husband were in a good space and enjoying lessening responsibilities from parenthood.

*“...our youngest is fifteen and she loves to be left alone at home and that’s awesome because we lunch all the time and just my husband....he’s able to step back a little bit and so you know we are really enjoying this.”*

However, the unpredictability of periM experiences can also mean some anxiety around fertility. Historically literature has shown that anxiety around fertility has often been about the 'loss' of fertility, but that may not necessarily be how all women feel. For example, Sally further mentioned:

*“...I took a pregnancy test just, you know secretly and quietly and I’m like ‘please, please, please, I’m too old’”.*

At this age, there is a sense of freedom from everyday responsibilities and looking forward to a position where women can "value themselves as individuals, and to look to their own needs, rather than always attending to those of others" (Ussher, 2006, p. 144). The women also discussed how the process of becoming perimenopausal should not mean that they are any less feminine, as Jody comments:

*"We're menopausal not dead."*

There is also a societal push for ‘ageless ageing’ in which the transformation imperative (discussed in the methodological theory chapter) is seen to pressure women. In contrast, there is a body-positive discourse wherein women are encouraged to positively accept their age and bodies. These discourses can again be confusing and scary, as Emily notes:

*“Yeah, that's whole societal pressure, which which couples with the financial pressure pressure has really bugs me at times, like I think about for example, my my hair, you know, I've I've never dyed my hair, it started to go grey ..I thought I'm just gonna let it go grey I'm not going to dye it and yet I get annoyed because there's so much pressure on women to dye their hair and not the same pressure on men. Just this one example it really bugs me but the other thing that bugs me is the fact that I it's almost like I need to justify why I'm not dying my hair. That's it is time [internet glitch] when I don't dye my hair because that's how old I really am.”*

The discourse of choice is part of the transformation imperative regarding the older woman. Seen as being empowering because we ‘choose’ to partake in particular behaviours does not always

equate to empowerment; the following extract is a conversation about how we feel bound by society's 'normalisation' of appearance concerns:

*[Lily] “... its also okay if you want to if you want to be a person who gets a Brazilian wax every six weeks and and and you dress as as you know...in the way that makes you feel good about yourself but its like you cant win I don't think in some aspects of it because your too old to dress like that or your too young to dress like that or you're letting yourself go ....”*

*[Jules] “why do I feel better when I get my eyebrows threaded? My husband lets his eyebrows do what the fuck they want [Emily “exactly”] and I'm like why do I? I mean I do feel better cause I like them shaped and it makes my face look better, I think, but is that because society has told me that or do I really think that?” [lots of laughter and agreement from everyone]*

*[Lily] “... it's the same with shaving my legs I'm not sure I always like I feel better about them but yeah is that cause I really feel better or is it because society says that's whats acceptable....but it can be extremely triggering if you are not in a...[internet glitch] supportive community or you are trying to find a support for this already feeling bad about yourself probably because that's why you've gone to this then you get sort of confronted with the feelings that you're not conforming to whatever like the 'graceful ageing' I don't know”*

*[Emily, Jules and Diane all commenting at the same time about how 'confusing' and 'complex' it is].*

This extract exemplifies the intra-action that often happened with the women in the meeting as they unpack this entanglement of the transformation imperative. It shows how the affects of the entanglements of women and society and a postfeminist sensibility underpin the contradictory ways we enact femininity. At the same time, recognise the underlying power structures (consumerism, conforming to an ideal of feminine behaviours based on a neoliberal normalisation of being feminine) that drive those enactments.

The women in this project articulated that the transformation imperative does not end once you get to 'a certain age' but becomes entangled with an 'ageless ageing' or 'ageing gracefully' discourse. As seen in the extract above, this leads to feelings of floundering and confusion. The complexity of these entanglements is also highlighted in the 'double standard' where men do not need to take part in this imperative, as noted by Jules in her comment about her husband's eyebrows. She further talks about the high cost of such 'maintenance'. For example, Jules talks about what she does to 'maintain or make herself feel better', even though she knows it is a socially constructed feminine performance:

*"It's horrible. Like my, my husband jokes with me because we're like, you know, he spent \$40 on a haircut, shaves his head. That's it. I've got haircuts and eyebrows and waxing and nails and you know, this family just for basics really took to make myself feel... I'm not excessive with my stuff, just my nails done and I'd get my eyebrows threaded, and that's basically about it but having to do all that upkeep, hair dyeing and all that stuff. I feel bad because I'm spending so much money but it's but I feel like I have to, like society says I have to, if I if I suddenly stopped shaving my armpits and not wearing makeup and letting my hair go frizzy, you know somebody, somebody will soon comment about it. So it's a really, as a woman, it's so hard. And I, only women understand that. It's the whole beauty industry. Yeah, it's just so ingrained and so fucked up. It just infuriates me. They're so ingrained into us about what we have to do and what we have to look like".*

The privilege that this kind of 'body work' entails is quite costly and highlights the inequity processes underpinning the transformation imperative as 'normal' because of the assumption that the body is changeable and, therefore, transformable. The transformation or changes can be made to a body through the entanglements that make up the transformation imperative; that is, with effort (choice), skill (consulting experts), money (privilege), and a hopeful belief that aligns with the

discourse that women's happiness is associated with her appearance, beauty, youthfulness, and fertility. The entanglements of this imperative can also be seen in the assemblages of the beauty industry and the 'wellness' industries, two distinct but connected industries that are booming economies. These two industries and two other industries further assemble to perpetuate the transformation imperative, namely the medical and Femtech industries. The medical industry, particularly where periM and menopause are concerned, has shifted to a more menopause-positive perspective to deliver more specific and expert advice online or in the form of books, apps, podcasts etc. However, this assemblage may be problematic if it perpetuates the transformation imperative and privilege discourse that marginalises those who cannot access those services.

This privilege space is also seen concerning the ability to access specific medical 'treatments' like HRT, as Jules noted when she said she was lucky to go privately to an endocrinologist and pay for HRT. Again, the women in the project were self-aware of the larger discourse that affected their feelings about themselves and their bodies. However, while recognising that their thinking like this reinforced this entanglement, they were more accepting of it because of their self-awareness. Also, this self-awareness can be seen as disrupting these stereotypical normative discourses, as Emily has done by choosing not to dye her hair (even though she still feels the pressure), or as Sally says:

*"Hey, you just with maturity you develop perspective, if you if you let yourself"*.

Alternatively, is this a more subtle and unwitting effect of the transformation imperative and its underlying 'choice' discourse; that is the choice to take HRT, the choice to work on your body to 'maintain' it, the choice to dye your hair or not to dye your hair, the choice to 'hide' your periM or menopausal experiences or not. Does the transformation imperative for older women still reinforce value in youth, beauty, and fertility?

Mainly discussed were being 'feminine' or 'taking care' of oneself by grooming; for example, getting nails done, dying their hair, waxing their genitals, and shaving their legs and armpits.

However, once this stage in life was reached, the long-awaited 'freedom' was not here. There is as much pressure on being feminine in this stage of life as previously. It is almost worse because there is so little information/research/knowledge on perimenopause that it becomes easy to be tied into either or both the biomedical model of 'dysfunction' or the ageless ageing healthism that leaves women confused and floundering.

There is also a sense of freedom concerning the anxieties of youth and a promise of being 'wise and in control'. This term was used quite a bit during the meetings where the expectation was that once at this stage of life, everything would fall into place, and life would be lived on their terms. The unexpectedness or surprise of some of the mental symptoms that accompany perimenopause meant that often, to begin with, some of the women "thought I was going crazy". However, there was also an expression of positiveness here where Jody mentioned how she would happily swap the mental health she had now when I asked what the positives were that they had experienced with getting older:

*"...mental health, I would I forego my 20 year old body for better mental health 100% you go to get up out of my seat set and hold but my head oh my gosh. Yep. 100% I don't have to self-medicate anymore. Much cheaper"*.

There is also much effort that continues to be an expectation in 'ageing gracefully' that the women in this project were unaware they would have to continue to partake in. Clearly, not having knowledge about periM and only expecting to become menopausal later, and also realising that the dominant discourse is that a woman's value is tied to fertility/femininity, which is now 'lost' or that surprisingly, they are not free from it, placed the woman in this project in a liminal space that left them floundering and feeling lost, confused and out of control.

### **1.3 Desire for control – "nobody knows what to do with us."**

While becoming a periM woman, the entanglements discussed regarding being taken by surprise that this stage of life had arrived because of the lack of knowledge of periM meant that the women felt that their lives had changed, and they did not know why. Articulating these experiences, the women most often described that being surprised left them 'feeling out of control' with a sense of 'floundering' because their lives had changed, and they did not necessarily know why. Therefore, a desire for control came from these entanglements. In particular, the feelings of 'brain fog' and 'rage' that came upon them without knowing that this was a part of the periM experience was highlighted through the entanglements of being taken by surprise and without knowledge of what may happen at perimenopause some of the mental and emotional symptomologies meant they felt out of control. For example, for Sally, the first thing she noticed was a change in how her brain was working (or not);

*"the first and most disturbing part of it, for me, was the brain thing like two big things happening with the brain, one of them was forgetting words, and the other one was umm, my brain stopped ...my brain stopped being so flexible".*

This was confusing and scary for Sally as she is part of a large family and socially active community. She is integral to the organisation and smooth running of many social events. When these things began happening to Sally, she began to feel like she was not coping.

Rage was also a feeling discussed in the meetings. Interestingly, Sally talked about how she used to feel rage before getting her period, and this has lessened for her during periM, which points to the varying ways in which different women experience periM:

*"it's funny you mentioned about raging just because I am becoming the opposite I've always struggled with that hormonal rage thing";*

Whereas Jody talked about experiencing rage since entering into the periM stage. Jody says:

*“I had the rage issue too in fact that was my first sign that I was, I knew that something wasn’t right, that maybe I was heading heading that way because I I’m not an angry person and I’m in I’m in education I have patience is what I have”.*

One of the expectations about entering into the periM stage that was talked about during the meetings was the expectation of becoming ‘wise and in control’. It is interesting to hear that many women felt like this, and I wondered where it originated. Mainly as it was something that I very strongly felt myself. This expectation was not met. The lack of knowledge, being taken by surprise, and the different physical, mental, and emotional symptoms experienced left most of the women feeling like they were ‘floundering’ and feeling out of control. To take back that control, the women were hopeful that the digital health apps would help provide knowledge about the periM experience and perpetuate a feeling of empowerment.

The mediated knowledge of the biomedical body that situates an older woman as ‘dysfunctional’ or suffering a medical condition produces these feelings where *“nobody knows what to do with us”*, and the entanglements of these understandings of the periM woman create an ‘invisible’ body that has no value and is instead considered as a ‘leaky’ and monstrous body that is ‘dysfunctional’. Underpinned by expectations of empowerment with a postfeminist healthism perspective and the quantified self, understanding self through numbers meant that perhaps using apps would provide some sense of control, providing that wisdom and control that was expected once perimenopausal become a certain age.

At the end of the second meetings, different apps were decided on for everyone to download and use before the next meetings. The sense of hope of ‘being wise and in control’ through the apps was apparent. The expectations were that the apps would become the happiness object, a problem solver, or even a solution to some of the issues around symptom ‘management’ the women were experiencing. For example, Amy emailed through her expectations around the app MySystas that she was going to begin using:

*“So after reading the blurb on the App Store, I thought:*

- *It claims to have social functions, I hope that's positive and see if it looks more like Fb or more like DuoLingo.*
- *Tracking 'symptoms' has a severity function - that appeals to me for some reason, I like being able to assign a degree of intensity which for Cycles I can only do for menstrual flow*
- *ID patterns & trends - YES, great, now I can't wait to see how it sort of interprets them and presents them to me*
- *Create a chart for Doctor -- YES that's exactly what I'd like -- something that is useful and sensible to my doctor, tells them if things are going as they should be or not, helps us make a plan for my future, and they don't just poo-poo and think "oh boy another WebMD researcher"*
- *I still haven't used the app yet but am looking forward to it and am totally getting my hopes up!”*

## **2. Woman-periM-society-digital entanglement**

Through an assemblage of Zoom meetings with two groups of women (myself included in both groups), the use of periM-specific apps, and the dynamic processes of the meetings themselves, entanglements of a lack of knowledge, and new knowledge were produced regarding: Women's bodies; PeriM; experiences of PeriM; apps specifically for PeriM, including the way apps handled our personal data and the entanglements we had with technology and how this new knowledge, used in ways that incorporate sharing with others (friend, families and partners) produced perimenopausal women that become knowledgeable and empowered with new knowledge. This empowerment can be seen as confidence in that new knowledge which could be understood as the opposite of 'floundering' (discussed in another section) and, more specifically, free.

While this project is specifically concerned with the entanglements of technology (in this case, periM/menopause-specific apps), the women in both research groups and myself, I want also to point out that how I approached all the elements of the research project (from recruitment to the zoom meetings) include entanglement of technology. In other words, the meetings were held on the Zoom platform, so an entanglement happened from the first moment the project began. However, I am more specifically interested in how the entanglements of those elements intra-acted to produce understandings achieved through the CI approach.

The cycles of action and reflection within a CI methodology mean that the entanglements of the assemblages can be seen in the intra-actions of the women and the use of digital health apps. The process of beginning with a lack of knowledge and the resulting new knowledge and awareness can be seen in this entanglement. As we progressed and discussed digital health apps, there was an excitement and 'sense of hope' that these apps and technologies may provide new knowledge and understanding of themselves, their bodies and their perimenopausal experiences. The Quantified self-movement uses the term 'self-knowledge through numbers' to understand what the body is going through when collecting data through tracking apps that monitor the body. Ubiquitous in their use, women's health has made the most of this new 'Femtech' technology. With the promise of empowerment, freedom and knowledge, these apps can be seen to embed users in the postfeminist healthism discourse that, rather than freeing women from 'working' on their bodies, holds them in the space of having to provide more and more data to be successful in their use of the apps.

The entanglements with their bodies, periM experiences and apps produced complex and often contradictory elements of becoming perimenopausal women that can be seen in the subthemes of the use of digital health apps that highlights how the apps produce new knowledge that promotes feelings of awareness and empowerment app takeover wherein the use of the apps can contribute to increased use to feel empowered but simultaneously tie us into periM becoming an identity; and, apps as failures that investigates the negative feelings produced through the use of apps. In the following sections, I

develop the themes outlined above and show how they become entangled with the technology (in the woman-menopause-society-digital assemblage) because of the affective processes that using digital health apps have on the entanglements of periM and the women's understanding of themselves and their bodies through these entanglements.

As we cycled and reflected through the meetings, the women discussed the use of digital health apps specific for perimenopause/menopause; and their previous use of digital health technologies, including Google searches, Facebook groups, Instagram, Reddit forums, TikTok, podcasts and various other online support groups to gain more knowledge. This discussion provided a sense of hope that using the apps would provide more information and knowledge about their perimenopausal experiences. Based on their specific periM experiences, some women expressed interest in certain types of apps that might be useful for their particular requirements. For example, Jody would prefer an app that may help remind her to take her HRT meds; Cherie expressed a desire for an app that may help measure her hormone levels; and Sally wanted to be able to use her data herself (to take to her doctor) and to evaluate patterns to make her life better or easier.

## **2.1 The use of Digital health apps – “we weren't made with it.”**

While there was a feeling of excitement and hope about using the periM/menopause-specific apps, the women essentially felt positive and excited about their app use. However, as time went on, some disappointment and disillusionment presented more constant and in-depth use of the apps.

To begin with, the women used the apps and described a definite feeling of awareness. For example, Jody said:

*“I was having real issues and still am, but now I know my body is going through a process where it's now up to me to choose what avenues to take”.*

It was also expressed as a way of seeing what patterns were happening with their physical symptoms and determining if/when they needed further help or treatment. Much previously unknown

physical experiences (see 1.1 lack of knowledge) and a vast range meant that now having an awareness of these physical symptoms has enabled the women to get a more specific and personalised understanding of what their individual perimenopausal experience is for them. For example, Amy talks about how the app she used had a huge list of physical symptom listed:

*“Yeah, well, now this one, this MySystems one has, has so many symptoms and it has a really nice detailed description of what each symptom is ... I hadn't even known that was a symptom before I opened this app, I had that I didn't realise that .. they talk about pins and needles in in fingers and toes well I don't know that, far out..... huge, huge list of of symptoms”.*

The new knowledge that the apps provided generally took the form of both physical and, to an extent, mental/emotional symptomology, but most helpful to the women were ones they had experienced but did not know related to their periM experiences. For example, Jody said:

*“and I just cause it's so simple and and it just makes me think about the day cause I'm not great at reflection like that, and so it was did I did I have brain fog? and you know what I've realised through doing it, which I didn't think I'd learn anything very much, but I have discovered that I get very tender breasts and I didn't realise how much that was and how often that was and not just during my my cycle I'm actually having tender breasts quite a lot. So that's that was an interesting thing that I wouldn't have known if I hadn't used it. What I do with that information, who knows, but it's information I have about my body that I didn't”.*

Most of the women thought apps were only ‘trackers’ for fertility, which can be demoralising for this age bracket. For example, Jules had been using the Flo app for years, but since entering PeriM, she was only logging her info because she had for so long it was firstly a habit, and secondly, to know how many days since her last period. Jules posted on the group Miro board:

*“I've been using Flo for ages now and for the first time ever it has recognised my irregular cycles and the fact i should look at Peri Menopause - welcome to the party Flo! LOL”*

Further, an interesting subtheme came from this entanglement of technology and the biomedical body discourse: the 365 countdown. The biomedical conceptualisation of periM is that you become menopausal 365 days after your last period. For those using tracking apps, this became a countdown that could leave them floundering when a period arrives out of nowhere just before or after that countdown. Emily describes her feeling of floundering wherein this happened to her, and she then had to start the countdown again:

*“That was the last hurrah. So no joke. I go a whole year, about 13 months. I am in Europe on day one of a sailing trip in Greece, and guess who visits me? Go a whole year, I get my stupid period again. So you know, it's just been ridiculous”.*

There was also a significant sense of feeling ‘normal’ when it was realised that many of the other ‘users’ were having the same or similar experiences. Also, a feeling of not being alone was discussed as a number of the apps had a community component where you could chat online with other users, post messages, and read articles. A few of the women also discussed their other ‘online’ use of digital health technologies. For example, there are several different menopause podcasts, blogs, Facebook groups, Reddit, and Instagram accounts that were followed by some of the women previous to being part of this research program and had provided some information and support/reassurance.

The apps (not all) are mostly still designed as ‘trackers’, and for Amy, who freely admits she does not have any forgiveness for herself, these apps can be problematic; she says:

*“the, whatever comes with the iPhone, the health from cycles. And it's, I thought I switched it to prompt me every night around the same time that I already have the phone telling me oh, boy, go to bed. It's, it's supposed to be prompting me also to fill this in, how did you feel today, and I just, I have no idea where those notifications have gone. ...That doesn't mean I miss my entry, it's just that I've missed my reminder so that I'm just I'm a little, it makes me feel annoyed*

*that I thought I got it. And um, but that's also, technology being against me, like I think I set it to actually stop giving me notifications at 10 o'clock, because I'm supposed to be in bed. But I also set the notification to come at 10 o'clock ...and cuz I forget things because I feel like I'm forgetting everything. That goes back to the commentary on the previous event like I I've never had any forgiveness for myself. And this app does nothing for that. And in any case, it's making me a little bit worse about myself because.....It's just frustrating, frustrating in that respect. But I started recording one more function, one more characteristic. And it's interesting because I would love to record allergy stuff, but it doesn't have that at all because it's so specific for periods and fertility this app. It cares not at all about older women. So that's awesome” [sarcastically said with a thumb down gesture].*

Amy's extract above ties Amy into the good citizenship discourse, and this can also be seen when Sally talks about how she uses the technology to feel like she has a 'clean conscience':

*“...when I feel empowered in relation to this whole perimenopausal, like part of my life, is when umm, like my favourite sort of online resource is healthy food guide. When I go there and I remind myself I have to remind myself though because I just go off and slip into my little lazy bum routine and you know but when I remind myself how to look after myself right now with nourishment as well that also feeds into that feeling of empowerment...and so I feel like if I am ahh taking in the knowledge and then acting on that on how to look after me ...that makes me feel good. Feel good to know that and then feel good when I do it. Because I can feel confident that that's something that's helping me and its yeah and so I feel like ummm I have a clean conscience that I'm doing what I can. Yeah yeah and so yeah so I feel like it benefits my family and my friends because I know having that feeling makes me a more settled, happier person a more content person so its got to have a spin off effect”.*

The good citizenship discourse is underpinned by a postfeminist healthism perspective that, in these examples, ties women into behaving in certain ways to 'feel good' about themselves by participating in certain health practices.

Becoming a knowledgeable perimenopausal woman is not just about the women themselves but is entangled with their relationships with their families, partners, friends, and digital health technologies. Sally's extract above also highlights how the entanglement can further include family and friends in a manner entrenched in the healthism discourse but experienced as 'empowerment' and 'choice'. Sally expressed how she feels empowered by choosing to participate and yet feels like a 'lazy bum' if she does not, and her understanding that she is a better family member and friend, a person to be around while she maintains this participation.

Even though we joked about it, there was a relationship between our technology and our understanding of periM. Much talk was about interacting with our technology, notably Siri and Alexa. For example, when prompted to introduce her app as a friend she brought along to a party, Sally introduced her 'friend' as:

*“Oh, goodness. What would I say about her? Okay, obviously. My friend’s from overseas they belong to Europe, so we never mind that. Um, yeah. I would, probably in human terms, she’s reasonably limited in her social skills, and you’ll find she might be a bit repetitive and the questions that she asks you she has a lovely little smiley face and can be very encouraging if you’re giving a positive answer. And she can be very reassuring and is happy to talk to your GP for you”.*

The following extract is quite large, but it is a specific example of the intra-actions between us during a meeting. In this meeting, we discussed the physical symptomology listed in an app Amy used and how they related to us personally. However, a simultaneous intra-action with the otter.ai programme happened as it was transcribing the meeting.

*“Diane: so did you, do you guys think that you've found out more about either yourselves, your body's perimenopause, the app's? through doing this? Jody: Yep. Sally: Definitely. Amy: All of the above. Yeah. Diane: All of the above? That's brilliant. Sally: Yeah. Yeah, because you find out things like the pins and needles. And hayfever. Jody: Yeah the allergies Yeah, that one was was big for me. Yeah. Amy: Shall I just bring up the list for you because it's huge. Couldn't [overlapping talk – hard to make out – all agreeing to hearing the list] Sally: Okay [clapping hands] lets learn more. Diane: I am actually really interested in that. Jody: Just talk, just talk really clearly Amy because the otter can understand you [enunciating each word sarcastically]. Amy: Ahh the otter. I won't read the the underlying or the descriptions unless it's unclear. Allergies, anxiety slash panic attack, back pain, bladder pain. Bloating, body odor. bone density loss, brain fog, breast tenderness, brittle nails, burning vagina, clumsiness, cold flash slash flush, depression, dry eyes. fecal incontinence, but not bladder incontinence for some reason [Sally Oh no, please no [hands over mouth in horror]]. So that's great [sarcasm]. Now. Jody: Doesn't mean you're gonna get them Sally, it just means that you could. Sally: My brain could make it happen now that its heard it, okay?. Amy: we're only on F - food cravings, hair loss, heart palpitations, hormonal acne, hot flashes and flushes, infertility, insomnia, intestinal issues. So that's separate from fecal incontinence [Jody: is fecal incontinence diarrhea?] irritability, diarrhea, Amy: fecal incontinence, it says track inability to control bowel movements. Jody: Okay, so an inability rather than just loose. Amy: just a GI issue. Diane: Timing, you know, a “shart”. Amy: yeah don't trust don't just never trust the fart. Sally: laying a brown egg or something? [all laughing out loud]. Jody: Oh look I work with older people, it's all too real. Amy: irritability, itchy skin, joint pain, menstrual blood clots, menstrual cramps, metallic taste, migraine slash headache, mood swings, muscle cramps, nausea, night sweats somehow that's different from hot flashes, other, ovulation cramps, in addition to menstrual cramps, painful intercourse periods, period*

*changes premenstrual pre menstrual cramps, restless legs ...***Jody:** *I get that... it doesn't mean.*  
**Diane:** *One you didn't know?* **Jody:** *I've had it all my life though.* **Amy:** *Ummm sinusitis, sleep disruption, spotting sudden fatigue .... the description for that is unrelenting exhaustion.*  
**[Sally:** *I like that definition]* *tingling in ...***Jody:** *I've just been referred to a general medical team for that.* **Amy:** *tingling in extremities, tinnitus, tinnitus, urinary incontinence, vaginal dryness or atrophy vertigo and vomiting.* **Jody:** *vaginal atrophy sounds terrible.* **[Diane Yeah, it does doesn't it?]** *like it just stops working?* **Diane:** *Well it atrophies, it actually shrivels.*  
**Jody:** *Ah, it shrivels, I think mines like that anyway.* **Amy:** *separate to the burning vagina symptoms. The ahh...***Jody:** *to me that just sounds like a list of a woman's life.* **Amy:** *Yeah I know right? from puberty on...***Jody:** *yea since I was 13 Isn't that just life?* **Diane:** *Yeah, I think you're right but I think it seems like all these ..new symptoms because they've never ... no one's ever taken time to document this.* **Amy:** “yeah”. **Sally:** “yes”.

The above extract is interesting in several ways. Firstly the intra-action at the beginning was around being aware that while we were talking, the otter.ai programme was 'listening' to and transcribing our words, so Amy, in particular, had to adjust her talking so that it would understand; secondly, the process of understanding that developed as Amy read out the extensive list of physical symptomology that, to begin with, began as an understanding based on the biomedical body and yet by the end of the list was understood as 'just life from puberty onwards'.

Something to note is the entanglement with the technology and the women in the almost forgotten meetings, which are the Zoom meetings themselves. This platform provided us with the ability to meet in the first place. It was not until writing this analysis that I realised how important it was as an integral part of the intra-actions. Of course, there is the obvious where we could meet in the first place; but the less than obvious was how it had become the 'normal' way to meet with people over the last three years since the covid pandemic began. This extract is an example of how to 'normalise' something may make it invisible; or taken for granted. While analysing the data that

otter.ai transcribed from the Zoom meetings, I often returned to the video recording because the written transcript lacked the subtle differences in meanings gained through looking at and interpreting facial cues and gestures.

## **2.2 App take over – "We are not just perimenopausal."**

The women's use of digital health technologies, in general, was varied, and while not determined by sociocultural factors per se (i.e. economic positions), they were concerning their family situation. By this, I mean that some women were involved in a larger family or community group, those in quite a 'nuclear' family group or some involved in a profession that meant they had access to larger social involvements. How these entanglements affected their use of digital health technologies can be seen in varying ways. For instance, Sally is part of a large social family group that provides feelings of connection and 'sisterhood', and these entanglements provide her with a means of gaining and sharing knowledge and insights into her periM experience. Her use of technology is less regular and less in-depth than some of the other women in the project. For example, Amy uses several digital health apps and follows various people on digital platforms such as Instagram, Reddit and TikTok to find general information because:

*"I don't have anyone really in the same age bracket friend wise that that I communicate with umm too much too routinely, anymore".*

Lily described how she works in women's health, so she has often been involved in discussions, meetings, listening to podcasts and reading scholarly articles, but that the lines are blurring between what is for work and what is personally relevant, particularly regarding technologies specific for periM:

*"So I might be like 'oh this is for work' but actually it might be more relevant to me now than before".*

Further, the women in this project are in an age group that is not generally considered 'digital natives.'<sup>9</sup>, but some of the women use technology more often than others. Perhaps some mistrust, apprehension, or lack of digital literacy determines how involved in digital technologies people become. There is also some consideration here regarding the issue of privilege. By privilege here, I mean the Western tradition of a nuclear family without a worldview that in other cultures offers access to wider family/whanau/generational knowledge amongst women in families. Therefore there is a need to gather information elsewhere (i.e. online).

There was a theme of identity that came up through the cycles of action and reflection, where it was understood through mediated knowledge and the awareness produced by the apps that by talking to lots of people purposefully, there was a chance of feeling like and being seen as only perimenopausal. For instance, Sally comments that she does not want being a periM woman to take over:

*“Yeah, because you get.... saying, hey,.... like I don't want every, every single little thing I feel is due to being peri-menopausal, because I'm also a human and have life and circumstances and, like, I don't sort of, I still want to freely live my life. And have my mind relaxed and dealing with it at the same time. Yeah. Yeah, just take over my brain a little bit. Yeah. Yeah. And yeah, yeah. And then just become a bit dramatic. You know? Yeah. Was it cuz yeah, to me, this there is that balance of seeing the whatever's happening, feeling that whatever's happening, connecting it to being in peri menopausal thing, and then kind of just getting on with life? You know?”*

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<sup>9</sup> 'Digital natives' in a broad sense is the received knowledge that describes young people that have grown up with digital technology and is how I will use it here – however, there is a significant amount of debate around this term - see Brown et al., L. (2010), Debunking the 'digital native': beyond digital apartheid, towards digital democracy. Journal of Computer Assisted Learning, 26: 357-369. <https://doi-org.ezproxy.massey.ac.nz/10.1111/j.1365-2729.2010.00369.x>

Jody also discusses how she had a conversation with a young woman at work who had obviously ‘heard’ her previously:

*“Because I talk about menopause a lot because I think it's important. I worked with a whole lot of women and I think it's important that they understand menopause because as we know, it's not talked about, and I work with a young 20-something-year-old girl and I said I don't know what's wrong with me this morning I was crying at the stupid ad on TV. ...and I'm sitting there and I cry. I've seen it 100 times. I've cried this morning and she just looked at me and laughed and said "Jody menopause"”.*

### **2.3 The app as a failure**

Within the groups, there was a common assumption that most apps were only used for fertility and tracking menstrual symptoms. Most women did not know that there were perimenopause-specific apps that they could use, and this highlights more of the lack of knowledge theme as discourse, or perhaps it is part of the assumption that this age group is not a digital native. Previously, women used available tracking apps to monitor their menstruation cycles and get some predictability around those cycles. While they were regularly menstruating, these apps were quite helpful and met their expectations to a certain degree. However, these apps became problematic as the irregularity of their menstrual cycles began, and the unpredictability made it challenging to receive valuable or helpful information. For example, Jody talks about her previous use of a tracking app:

*“when your periods are coming and going they [apps] don't help and they also I think are set up more for people when they're like just starting their periods which is a little bit different”.*

Lily describes how her experiences of using the apps were not at all that helpful either:

*“and so I started thinking about trying to use an app, but none of them seemed to work very well for for for me at this point yeah and they did a a lot of predictive that that didn’t match up with my reality”.*

Also, with the apps being 'trackers' in nature, it produced feelings of ambivalence because they were not happy with the way they aimed at white, cisgender, European women who were fertile, which became frustrating alongside the inaccuracy, as Jules comments:

*“you can log your periods and its useless because it predicts stuff one month and then you didn’t have a period for three months and it predicts, tries to, it cant predict anything so for me its just I keep a log of data when my periods have been ....everytime I miss a period it says “you might be pregnant” and im not pregnant I still keep using it to track everything but every time it pops up with a notification im just like ‘piss off”*

A number of the women began using the periM/menopause-specific apps excitedly and with a positive outlook. However, as their usage progressed, it became clear that the apps could have been more helpful after a prolonged time. Several reasons for this were identified; the information became redundant – "didn't tell me anything new; it became just a 'tracker'. However, as a tracker, it became clear that the needed functions were unavailable. For example, Amy had certain expectations about an app that would work for her (extract from an email sent to me):

- *“prediction & extrapolation: USE what I'm giving you to make my life better or easier*
- *make it so at some point I only have to CORRECT your predictions, not keep feeding you new info*
- *gamify things a bit? The two apps that I have used for a good bit of a 'streak' are MyFitnessPal and DuoLingo*

Amy has previous experience with certain types of apps that she finds useful. It is also interesting how her language is as if she is emailing the app with a list of her requirements. However, that is because that is how she likes to interact with her technology and is quite digitally literate. Moreover, she is also aware of the balance between experiencing life and remarks on the difference of not wanting to be sucked into a digital space that separates her from her experiences:

*“I saw somebody talking about the difference between generations and how older people tend to say, “technology is not real life. Real life is real life.” And the younger kids say, “my phone is just as much real life, and things that happen on Instagram and Tiktok are just as much real life as your real life are”, which is just kind of like, to think like that is just.... its scary for me. and I’m sure a lot of older people think like the kids [laughing] “the kids”. The younger people seem to really think that think that differently. And so maybe that is that weird in-between stage where the people think they’re at an age where real life is real life whereas I would say “real life go touch grass,” but they’re introducing more and more technology, and it’s becoming realer and realer”.*

A further positive aspect of periM/menopause-specific apps for some of the women was getting a 'nudge' to remind them to input data. For many women, this stage of life comes with a certain forgetfulness or 'brain fog', so getting a reminder is helpful and being an app specifically for this age and stage is also important, as Jody says:

*“Umm what was the one I was using that was actually really helpful even though I didn't think it was helpful... and it asks me every day to just log in and it's really easy umm you can do as much or as little as you like there's symptoms, mood period, sleep activity, meditation, food and drink so you can do as many or as little of that as you like, if you're just doing symptoms, then you can change what symptoms you choose from but you log your .. umm and you just have checkboxes to ... ones that are relevant to me umm or not relevant to me and you can*

*say how often you want to be asked about it. You can create a document or a report based on it that you can download and take to your doctor and you can also do moods and it's as simple as a slider... There's a place for notes if you want it and periods but it doesn't where you know, most period trackers says "your period's due", it doesn't do that, it realises that you may or may not. So you can just put whether you've got it or not and how heavy it is. No. So it's really menopause friendly in that regard".*

Interestingly, as time passed, and it was some weeks before our last meetings, the womens' use of the apps petered out. This was for various reasons, but the most common was "life", wherein the other activities and responsibilities took priority over using the app. It may be that to get more data on something like periM that is so unpredictable it requires more time and effort to input data or, as Homewood (Homewood, 2019, p. 3) suggests, "the desire to reduce complex phenomena into problems to be solved by the addition of technologies" may just not work in favour of the end-user.

Use of the apps and discussions we had helped some become aware of the issues concerning apps around privacy/security, and one woman did not know that her data may be shared. Also, a negative aspect of using the apps was that some of the women noted that they previously did not know about an app's ability to collect data that may be used/sold for use by third parties; the privacy laws that were/were not upheld by the apps and the underlying 'agendas' that some of them may ascribe to (e.g. catholic/'anti-choice'). While finding this out during the process of our meetings was positive, Sally remarked:

*"Because I was a little bit naive I think beforehand about it. Because you know, that last one that I did start to try the fact that I couldn't, when I pressed their terms and conditions it came up with a blank page. And I'm like, "Okay, I'll try that again" and maybe tomorrow maybe something glitched there, kept happening, and that app it only let me choose one symptom. And I'm like, "what?", and it wasn't one a day even it was just one symptom. It was so I*

*appreciate the fore knowledge that I had, because I feel like I was a little bit smarter about what might have been going on with that one. And it helped me make the decision. Definitely not. I mean, it frustrated me anyway, so I wouldn't have continued.*

While the women in the groups enjoyed using the apps, and they provided them with much-needed knowledge (as discussed in the first theme). However, as time passed, the app either became annoying in its consistent requirement of data; or the information that was accessible became repetitive and did not change. However, the assemblage of our meetings (Zoom, otter.ai, each woman) entangled in a way that created an intra-action that proved more valuable. The information shared, talked about and looked into through the cycles of action and reflection produced more awareness of their experiences and understanding of their bodies. This, in turn, led to feelings of being less alone, less likely to need or want medical interventions as a ‘solution’ to periM as the knowledge they gained meant that they felt more confident in dealing with the biological symptomology of their perimenopausal bodies together with an empowerment and agential capacity to become a perimenopausal woman.

## Chapter 5 Discussion

*“[W]hat we call Man’s power over Nature turns out to be a power exercised by some men [sic] over other men [sic] with Nature as its instrument (Lewis, 1943/1978, p.35)”*<sup>10</sup> CS Lewis, as quoted by Jonas Hallström (Dakers et al., 2019, p. 1).

### Findings:

To answer my research question, firstly, I needed to know what we know about periM and how we know it. PeriM is a transitional lifespan stage that is complex and contradictory, much like the women who undergo it. Digital health apps are just as complex and contradictory in their design, appeal and promotion. Previous research based on lived experiences shows that women have little knowledge about periM as a transition period before menopause. Much of the knowledge is mediated through a biomedical discourse that situates periM as a dysfunction that must be managed. The literature also highlights how periM is complex, varied, and understood as an assemblage of the biological and sociocultural. Further, the term periM can be problematic as it is distinct to menopause being that it is the transitional phase leading to menopause. However, the two terms are often conflated and inter-changeable in both popular media and academia (McChlery, 2021, p. 12).

This was one of the first things that was discussed at the first meeting with Group 1 where Sally made the comment *“One thing about perimenopause was that I didn’t realise it was called perimenopause until I started because we just know it as menopause”*. The women in this research project were all disappointed, shocked, horrified at some stage of the periM journey because they had no knowledge of periM. There was some knowledge of menopause, but without any knowledge of

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<sup>10</sup> C.S. Lewis wrote on the philosophy of science, technology, biotechnology and bioethics, which can be seen in much of Braidotti’s work but without the feminist perspective. (Hallström, J. (2019). Clive Staples Lewis: Social, Environmental and Biomedical Implications of Technology, In John R. Dakers, Jonas Hallström & Marc J. de Vries (eds), *Reflections on Technology for Educational Practitioners: Philosophers of Technology Inspiring Technology Education*, Boston, MA: Brill Academic Publishers; 2019, pp. 1-14. ISBN: 9789004405516).

periM they were not expecting their lives and bodies to change when they did, they expected menopause later. Feelings of ‘being crazy’ or ‘alone’ were often described. These feelings were exacerbated for many of them when they sought medical help for the many and varied physical symptoms they were experiencing. One woman had a positive experience with her GP. One woman did not seek help as she was part of a large social network of family and friends who provided much needed information when she talked to her ‘girlfriends’. The rest of the women had negative experiences with their GPs where they were either dismissed as being ‘too young’, needing antihistamines for allergies, not recognising the hormonal tie in with her symptoms, or just told that how they felt was part of getting older. All of the women talked about GPs having no knowledge of periM themselves so were left feeling isolated and confused. 2 were able to get some understanding and went on to be placed on HRT. There was one woman whose GP was a woman and described periM as a ‘death sentence’ because her experience with her own GP was so negative. Cherie described her feelings of horror at the similar stories that she saw on Facebook.

These accounts are underpinned by a wider discourse of women’s bodies being hidden, unknown and a problem to be solved (Ussher, 2006). Moreover, this hiding of woman’s bodies is an historic stigma surrounding menstruation where we hide our menstruating bodies. There were discussions with the women about this stigmatisation of menstruation and hidden bodies. Jody discussed the cultural implications of this when she talked about being in a relationship with a man from Kenya whose attitude to a menstruating body was quite different to a “kiwi man” in her experience. While the biomedical body is the locus for these women’s understanding of what was happening, they were well aware of the mental and emotional changes that were happening simultaneously. So the biopsychosocial model of periM is inherent in women’s understandings even if they are not explicitly aware of it. We had many discussions about fatigue, forgetfulness, rage, unpredictable mood swings and tears.

Describing their experiences of getting to an age where they felt that it was a time when they were supposed to feel ‘wise and in control’ the women all described feeling mostly the opposite. They were floundering with feelings of isolation, shock, horror, anger, resentment and at the same time vulnerable and at the mercy of their ‘unruly’ bodies. Within this time we discussed the 365 countdown. This is predicated on the biological understanding of periM where when it has been 365 days (1 year) without a period is considered to be menopause. Two of the women and me had not had a period for some time and we discussed the anxiety that comes with this innocuous number that we felt we were at the mercy of. As Emily described in her extract, she had thought she had got to that stage and then got a period. This produced feelings of floundering and being out of control. Moreover, the women began discussions of feeling out of control concerning their ‘unruly’ bodies, unpredictability of when they were going to get their period; the changes in their bodies like weight gain. Sally also described how unfair it felt, *“its not like I’m eating McFlurries everyday”*. The feelings of being out of control were also found in discussions concerning the broader social situations. For example, in her extract Sally talked about feeling out of control when her brain stopped being so flexible and she couldn’t remember words. Also particularly bothersome to not just the women but the members of their families and social groups who were living with the effects of their ‘rage’; Amy made the comment that she felt sorry for her partner *“he has the patience of a saint I have rage issues”*. These examples are indicative of a wider discourse that ties women into behaving in a ‘ladylike’ manner and always maintaining control around other people. This is also seen in wider gender discourses around traditional roles and ‘being’ feminine.

It became apparent that Postfeminist healthism was shaping their experiences so together with Posthuman feminism as outlined above I brought in a Postfeminist healthism theoretical framework to my thinking with theory. That is, to enable me to understand how this discourse shaped the meaning-making of the women’s periM experiences.

The perimenopausal experiences of the women in this research project were complex and often contradictory. This is partly because the Postfeminist healthism discourse is so deeply embedded within our understanding of women's health that we do not even notice it being there. Inherently we try to express our experiences as they are actually experienced, yet our language or discourse in trying to express those experiences is expressed in a Postfeminist healthism discourse. This was seen particularly when we were discussing periM and what it is exactly or at least how it was experienced; all of the women discussed it in biomedical terms, at least at the beginning of our meetings.

PeriM was understood, to a certain extent, as a biomedical issue in need of 'management'. However, the women in the project somewhat distanced themselves from this discourse while simultaneously using it to describe their experiences. They recognised that while they wanted the knowledge to understand what was happening to them, they also used it to enable a certain distancing from periM as a dysfunction. For example, Jody commented that now she knew what it was, she could decide what or if she required further medical attention.

Further, the women in this project used this knowledge of what was happening to them to enable a distancing from the recognised postfeminist healthism 'transformation imperative'. For example, Lily knew that she 'felt better' by shaving her legs, but also recognised it was a social construct that was the driving discourse of this behaviour.

This project highlighted the predominant discourses surrounding the biomedical body and the postfeminist healthism 'transformation imperative'. Further, it can be seen in the way it drives the practices of 'maintenance' like shaving legs, waxing, dyeing hair etc. The complex and contradictory ways that this is understood can be seen in how Lily described shaving her legs; she simultaneously felt better for doing this and yet she knew she was complying with a societal pressure to conform to this transforming behaviour. Conversely, Emily discussed how she made a choice to not conform to

dyeing her hair and instead of feeling empowered by her 'choice' she still felt the pressure of 'not' conforming to a transformative practice.

The dynamic process of periM has been hidden, its knowledge kept from those going through it, and the experiences of those perimenopausal women ignored for long enough. The lack of knowledge around periM is part of a particularly long term and large assemblage that begins when the knowledge and 'business' of midwifery, healing and all things to do with women's health was taken by 'professional' men with the result that they "hoarded knowledge" of women's bodies and therefore their experiences of them (Clancy, 2023). Still, women do not have that knowledge of their own bodies.

In a similar vein, these complex and contradictory notions were seen with the use of digital health apps. Femtech promises empowerment and self-knowledge through numbers the women all began using the digital health apps that were periM or menopause specific with anticipation, expectation and excitement. Between meetings we were in touch via a specific and private Facebook group set up by Jody and through emails and a Miro Board. Amy emailed me with a wonderful description of what she expected the app to do for her. It was a great email that was set out like she was talking to the app. While the women began using the apps in a positive and exciting way this positivity did not last. Their experiences were contradictory. There was a certain amount of enjoyment in using them to begin with. By the time I had the last meetings with the women all but two had mostly stopped using them. The common reason not continuing was 'life'. For most of them they were too busy to give the apps the time required to spend on them. The general consensus was that they found out some great information and received knowledge but that for most of the apps this information was not changed often enough and got repetitive. Further, none of the apps they used actually had all of the functions that they thought would be useful to them when we talked about what they would like in an app. The wider discourses that can be seen here are that self-knowledge through numbers (quantified self) has the dichotomous affect of providing knowledge and information wherein the

women can learn to understand themselves differently. Yet it is also time consuming and demanding (regulating) and not all that helpful after a while; the apps did not meet their needs.

This assemblage and entanglement is also part of a social and political assemblage that entangles us in complex ways on the broader or bigger assemblage and entanglement mentioned above. The intersection of the broader assemblages and the social and political assemblages often drives our understanding of our bodies. For women in periM, this includes a healthist discourse and postfeminist sensibility that drives our need to attend to our mad, bad, and unruly bodies as if periM was a disease. It privileges white Western superiority as the knowledge delivered to us as empowerment through the regulatory practices of self-monitoring, adhering to feminine performances as transforming, powerful, and relevant (because older women are not?). It ignores any person that does not adhere to these practices or cannot access these privileged ways of being feminine. A knowledge gap (purposefully?) leaves us wanting/needing ‘expert’ direction on how to ‘fix’ our mad, bad unruly bodies. This knowledge gap keeps us tied to an androcentric understanding of our world without asking us, “How do you feel?”; without listening to us; without trusting that we are intelligent enough, savvy enough, or with an inherent understanding of the bodies we inhabit to know intrinsically what is happening and who we are. However, we hold out hope that an app can. This research found that women have expectations around periM-specific apps and the promise by Femtech of empowerment, self-knowledge and agency. More specifically, they have expectations that they will have functions that will work for them and provide them with what they need. However, the complexities of the women that use them mean that this may be an impossible task, much like the striving to be thin, young and fertile that the Postfeminist healthism discourse ties us into trying to achieve. Considering the Neoliberal healthism that underpins the Femtech industry with its promise of empowerment, self-knowledge and a way to a ‘better you’ - at a cost, and with the user doing all the work in creating data it is not surprising that they do not consider the variability and complexity of the women using the apps.

The women in both groups did not use the apps regularly or consistently in any manner that changed their understanding of themselves or their bodies. While the assemblages of woman-periM-app had the affect of situating themselves as more knowledgeable about periM and may have affected their understanding of their bodies through this new knowledge, it did not impinge on their feelings of identity. The assemblages affected their becoming perimenopausal women only as far as providing a small amount of understanding of their physical symptomology. The assemblage of the meetings were more affective in terms of their identities wherein they contested the limiting, gendered, narrow ideals of a periM woman and how that should be enacted.

A final finding that unfolded out of the data that I was not expecting was the way in which the women in the groups discretely pushed back on both the biomedical body discourse and the transformation imperative discourse. The biomedical body and the Postfeminist healthism discourse, as already mentioned, is deeply entrenched and at this stage there is no other language to use when discussing our periM experiences. However, there was an intrinsic or intuitive ‘knowing’ that all the women articulated underneath the language they were using. The lack of knowledge that is so prevalent in all the literature and found in this project does not mean that women do not ‘know’ their own bodies. The women in this project were highly resistant to being labelled in any manner. Jody said that she had avoided labels all her life and just because she was going through periM it was not going to define her. After all, “we are more than perimenopausal”.

### **How the findings have developed the literature:**

The findings of this research project were much in line with Lupton’s (2019) digital health project. Although her project was on women’s use of digital technologies to “find, share and generate health-related information” (Lupton, 2019a, p. 3) and not specific to menstruation or periM, there were similar results. For instance, a sense of empowerment was described concerning health

information that was accessible to them, whether online or through digital health apps and the feeling that once they had the knowledge they could then make choices about whether further action needed to be taken. Further, the findings suggest that in this project it was the assemblages of the women, the Zoom meeting platform, the otter.ai transcribing programme that provided them with the majority of the awareness that they gathered through the project. Lupton (2019a) also found that the apps did not align well with their bodily affordances and that while they highly valued knowledge they felt that they gathered knowledge that was better mediated from personal connections (Lupton, 2019a, p. 47)

The findings also supports previous research that disrupts the medicalising of women's bodies and keeps knowledge hidden from them. Moreover, it supports research that identifies periM as a biopsychosocial assemblage. Obviously it does not support any of the biomedical model literature that does not acknowledge a biopsychosocial perspective of periM or place knowledge production anywhere other than with the biomedical institution.

Ageing itself is a dynamic process that is more than just a biological process but also seen as a biopsychosocial progression through stages of 'becoming'. Each generation will be a part of the assemblages and entanglements of their particular times, technologies, and social and cultural environments. The meaning of 'ageing' will continue to be specific for that particular time (Muhlbauer & Chrisler, 2007, p. 103). This research project is with women who, in the process of 'becoming' perimenopausal women, are entangled with technology and situated in this time where they are technically proficient but maybe not entirely digital natives. The assemblages of the women and the technologies that were used entangled in ways that provided information and knowledge about the periM biological condition and some of the self-help/care promotions. These experiences of their entanglements with the assemblages was particular for right now. As soon as I turned off the Zoom meeting the assemblage changed. Once I started transcribing the meetings and went 'in' to the data, then back 'out' to look at the methodological theory, trace the entanglements before I went back 'in' to the data, the affects of our intra-actions within that assemblage had changed. This same project

would look very different today, in a year's time, but more specifically in ten years' time when the now 30 year old women are becoming perimenopausal. These women may understand themselves and bodies differently through the use of digital health apps – or chips, whatever the technology will look like then.

Femtech, as an industry, is not interested in the complexities of the periM experience or the women that experience it. Therefore the apps do not have the full functionality that the women in this project were hoping for. The discourse that drives the design and implementation of these apps is clearly tied into a Postfeminist healthism discourse where the end goal is management of a mad and bad body that requires 'treatment'. However while they do provide some positive functions that the women in this project enjoyed using it would be interesting to see how some of the Scandinavian designers mentioned in the literature review would design an app that took a more-than-human approach and worked with the people that would be using them. Maybe the drop off rate of use would be less if it was designed 'with' instead of 'for' women in the periM stage of their life span. It is easy to understand where Homewood was coming from now when she decided that the best design for a menopausal app was inaction – to not design one as it was not possible to do without reinforcing narrow and limited conceptualisations of menopausal women (Homewood, 2019). Moreover, I believe that by continually releasing apps that only work to a certain point before they begin commodifying women's bodies is a short term business model. By this I mean that while they continue to tie women into impossible goals, regulate their bodies through a biomedical discourse as well as the Postfeminist healthism discourse they are underestimating women and their ability to actually see through the 'menopause capitalism' and eventually begin to trust their intrinsic knowledge of their bodies and periM experiences. The women in this project may have been taken by surprise and been shocked and upset and angry because they did not have the knowledge that could help them understand what was going on. However, once they were equipped with the knowledge

and an awareness of what periM looked like they were absolutely fierce in their determination to not let either periM or using a digital app take them over.

### **Reflections on the overall project:**

The journey of this thesis was complicated, bumpy, challenging, exhausting and, at times, irrational in terms of it being both exciting and gruelling. There was a moment when I recognised what some of the women had been saying to me, maybe unwittingly or unconsciously, but just the same, they were telling me, “We are more than perimenopausal, and an app cannot tell me how I feel”. The complexities of all assemblages are such that they move ‘in’ and ‘out’ of our understandings of ourselves and our bodies (much like the song going through my head while I wrote the analysis section – *Squeezebox* by The Who). I will go ‘in’ to the assemblages of my world, the entanglements of those assemblages and how they affect my understanding of this research project from a posthuman feminism lens; then, I will go ‘out’ and look at the underpinning discourses and ‘framing’ of becoming a perimenopausal woman and how that is understood within a postfeminist healthism lens. The women in this project told me how they gained more awareness about being periM and about themselves and their bodies while doing this research with me. It was this assemblage that they got the most awareness out of. That connection of women and the shared understandings of a particular time in our lives. These things I realised while I was ‘in’ the data. As I came ‘out’ of the data to look up and into the big theory and how I understood that for my own experiences was when I recognised exactly what they were actually telling me. We may be tied into discourses that are narrowing, limited, marginalising and re-produce normative gendered stereotypes. We may even use the language of those discourses because we have no other language to describe our experiences in those words. The women’s discussions and experiences moved, changed and evolved over time which I was able to see with a FNM lens. I could also see as I went ‘in’ to the data (that was created through CI), then back ‘out’ to my big theory that the complexities of our experiences have more to do with the complexities of the assemblages and entanglements that are part of our world, that we are a part

of intra-act so that at any given moment we are becoming something else. Having the vehicle of Postfeminist healthism became my way of moving ‘in’ and ‘out’ of the data and the analytical tools RTA and a bricolage method enabled me to use these tools to understand these experiences. However, as much as being a Homeopath, a mother, a partner, a friend, a godmother and a pop culture and gaming fan these assemblages are part of what makes me me but they are not all. I am also an older woman, a perimenopausal woman who cannot have children anymore, who is a bit slower, definitely wider, a bit achey and sometimes moody. But again that is not all that I am. I like to think that Rosi Braidotti has the right idea when she says we need to look at the world in a way that recognises a more-than-human assemblage with an affirmative ethic that takes care of ourselves, our families and communities, our eco-systems and our planet. As she so eloquently says “we -who-are-not-one-and-the-same-but-are-in-*this*-together” (Braidotti, 2022).

This was the assemblage that helped me to see the data in a way the spoke to me. When I was facilitating the meetings part of my facilitation was to try and let the women tell their stories. Recognising I was a part of the research and that my being there was going to affect the intra-actions meant I need to be aware of my location in the assemblage.

### **Parameters and limitations of the project:**

We were a somewhat homogenous group in that we were all white, relatively well educated, of similar ages and in similar socioeconomic conditions. This could be considered a limitation of this project, however as I have not made any generalisations this is not particularly relevant. I would have loved to have welcomed women from other ethnicities, socioeconomic groups, but this did not happen. While we may not have been digital natives we were all reasonably tech savvy. However, even this was an issue at time as with using any technology. At one meeting I was having technical issues and otter.ai struggled to clearly transcribe some of the glitching that was happening while we were meeting.

As a homeopath I am very comfortable with getting people to talk to me and tell me their stories so I did not have a problem with facilitating the meetings. However my consultations are one on one and sometimes keeping the meetings on track was a bit difficult.

One of the things I acknowledge now could have been done better was to actually set all the meeting dates the first time we met. It was November when we had our first meeting and the last ones were in February as it took a lot of juggling to get everyone together again over our summer. I set each meeting date at the end of each meeting which meant we were trying to accommodate a lot of people and became a bit difficult.

### **Recommendations for future research:**

Research is needed to situate the lived experience of perimenopausal individuals within the adjacent research areas mentioned in the literature review. There is very little research concerning perimenopause in general, and indeed, none that is collaborative and reflexive within the space of digital technology. The literature calls for challenging the normative assumptions of femininity and expanding perimenopausal and menopausal women's value from only young and fertile bodies to all reproductive life stages. Further, attending to the embodied and lived experiences of menstruators need to be considered in an inclusive manner that considers the assemblages and entanglements of biopsychosocial understandings of a perimenopausal body to minimise hiding and shaming experiences that are anything other than normal, stable, regular controlled perimenopausal woman.

Further research that is done with a generation of women in periM that are digital natives may produce different findings. As mentioned earlier, the past is always becoming the present and those that are young now will be older later, living in a different world with different technologies and knowledge. Therefore they will have different experiences and understand themselves and their bodies differently, particularly in view of the upsurge of the 'menopausal turn'. This turn may prepare the next generation for periM in a way that this generation has not been.

## Final take-home statement:



Figure 12: These steampunk goggles helped me look at assemblages and entanglements in many different ways  
<https://www.steampunksetting.com/best-steampunk-goggles/>

During our lives, we are in a constant state of flux, of becoming, of who we are in the present, and it is a complex entanglement of the assemblages around us that helps us become who we will be tomorrow. From the posthuman feminist perspective, it is the world that we are located in (our universe, our galaxy, our planet, our country, our community, our family, our jobs, our understanding of ourselves within those assemblages, our bodies, the digital technologies that we use, the food we eat, the clothes we wear, the way we attend to our body's requirements etc.; these are the assemblages we are entangled in, and they and ourselves are always intra-acting to give us our sense of self, our meaning-making and situated knowledge that unfold into becoming. As I was deeply entrenched 'in' research I had a moment where I was 'out' of the research and was thinking about how women and their bodies have been 'medicalised' since the late eighteenth century when what was previously a woman's domain – knowledge about menstruation, pregnancy, childbirth, contraception and abortion – was taken away by 'professional' men that decided what was considered 'real' medical knowledge (Clancy, 2023, p. loc 197 Kindle ed.). Then I started to think about how that would have been the beginning of the male gaze upon a woman's body inscribing judgment on it based on a male body. This then led me to 'seeing' this pathway unfold through time and space to where women have no knowledge of a transitional stage leading to menopause, that is periM.

Further, each and every stage of a woman's reproductive life is in some way medicalised and historically prescribed meaning from members of society who do not even share the same biological bodies. This is where I was able to understand the complex assemblages that have been entangled in a knowledge and meaning-making construction of a "monstrous" body (Ussher, 2006) not even of our own making. These assemblages are continually being added to through technological advances and the ubiquitous use of digital health technologies.

My research shows that they actually do and they do not. Jody said it best when she said, "*An app cant tell me how I feel*". It may produce a small part of our experience as part of the assemblage, but it is only a part of what makes a periM woman understand herself and her body. The use of these apps may be part of an assemblage that can open up new avenues of knowledge production and maybe language that can move us out of describing our experiences of periM in strictly medical and biological terms; or terms of taking care of ourselves and our health to be the best that we can be. But that is not here yet. The apps, at best, keep a track of our cycles, some of our symptoms and provide a certain amount of information and knowledge about periM. However, when that knowledge is underpinned by a Postfeminist healthism discourse we do notice. We may use them and try and get them to do what we want, but that excitement, anticipation and expectation usually falls flat or ends up not being used that often. Our actual life and experiences of our bodies get in the way or take us into different spaces and locations.

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# Appendices

## Appendix 1



MASSEY UNIVERSITY  
COLLEGE OF HUMANITIES  
AND SOCIAL SCIENCES  
TE KURA PUKENGA TANGATA

### ARE YOU OR IS ANYONE YOU KNOW GOING THROUGH "THE CHANGE OF LIFE"? OR PERIMENOPAUSE?



WOULD YOU BE INTERESTED  
IN TAKING PART IN A GROUP  
RESEARCH PROJECT?



### DO YOU USE OR WOULD YOU BE INTERESTED IN USING MENSTRUATION TRACKING APPS?

#### What is the study?

The study aims to have a group of women beginning the change of life get together and create a research project about their own experiences of using menstrual tracking apps.

#### Who can take part?

- » Participants of all cultural and ethnic backgrounds are encouraged to take part.
- » Identify as being perimenopausal - have had a period in the last 12 months; or feel you suffer perimenopausal symptoms (e.g. hot flashes, weight gain, irregular bleeding, dry or less elastic skin, low moods/mood swings, low libido etc).
  - » Happy to attend online Zoom meetings; or
  - » Happy to travel to Pukekohe 4 times over 12 weeks.
- » Use or are interested in using a menstruation tracking app.



If you are interested to know more, scan the QR code or  
contact Diane for a project information sheet  
Email: [periodappresearch@gmail.com](mailto:periodappresearch@gmail.com) – or text: 0225985450



## INFORMATION SHEET

### Researcher Introduction

Kia Ora my name is Diane Warwood, and I am a postgraduate student who is completing a Master of Science (Health Psychology endorsement) degree at Massey University. A part of my postgraduate qualification includes a research project. I am supervised by Professor Sarah Riley who has a long-term interest in gender, body image, healthy lifestyle change, and digital technology; and who specializes in qualitative research involving lived experiences. I have worked with wahine/women of all ages for a long time, particularly in areas of health and menstruation. The more frequent use of digital health apps for tracking menstruation has become evident with the women I work with. I found this interesting so decided to learn more through a collaborative research project.

### Project Description and Invitation

The aim of this project is to develop a better understanding of how wahine/women use digital health apps in perimenopause; and how their use informs their lived experience of perimenopause.

It is intended that this research will contribute to a growing body of research concerning wahine/women's actual experiences with digital health apps and how they influence their understanding of themselves and their bodies. The research will be a collaborative project where you will be working with myself and other wahine/women to create this knowledge and have your experiences documented.

The project will consist of two groups of 3-6 wahine/women who will meet 4 times over 12 weeks either through online Zoom meetings; or, through face to face meetings at a private meeting room in Pukekohe for approximately one hour each time. You will be reimbursed for your time/travel and the use of a digital health app in the amount of \$20 each meeting.

### Participant Identification and Recruitment

You are invited to participate in this collaborative research project if you meet the following criteria:

- *You identify as perimenopausal – have had a period in the last 12 months; aged approximately 47-55 years of age and experience some or all the following symptoms: hot flashes, weight gain, irregular bleeding, dry or less elastic skin, low mood/mood swings, low libido etc.*
- *You are happy to attend either an online Zoom meeting; or happy to travel to Pukekohe once every 3 weeks, 4 times and meet for an hour.*
- *You are willing to use a digital health app regarding your menstrual cycle*
- *You are willing to discuss your perimenopause symptoms and experiences and digital health app use with myself and up to 6 other wahine/women*

## **Project Procedures**

If you meet the above criteria and would like to participate, we will meet at a time that is convenient and/or after work hours (e.g., 5pm or weekends) either online in a Zoom meeting, or, face to face in a private room at The Villa, 12 Wesley Street, Pukekohe. During the meetings I will facilitate discussions between participants with a view to a collaborative project concerning how the use of digital health apps influence our understanding of ourselves and our bodies during perimenopause – our own individual experiences. With your permission (see consent form) I will record the online Zoom meetings and the audio of the face to face meetings so I can transcribe them later. The nature of the collaborative project means that at each meeting we can discuss how our experiences may/may not have changed in the last three weeks using digital health apps and what that means to us collectively and separately and what emerging patterns are noticed. This is wholly new knowledge that will evolve alongside our experiences. At the end of the project, you will receive a copy of the project report and will be able to make any changes you feel are required.

While this project is about perimenopause in particular, menstruation in general can be a private matter and not easily discussed. Therefore, this project requires respect, sensitivity, and patience from all involved. I will be facilitating this project in a manner that is non-judgmental, safe, and respectful of all participants' views and experiences.

I will also contact you one week after the final meeting to check in that you are feeling ok about the project as it may feel as though you have had a very personal and revealing experience. Should you require more support I will be able to provide/refer you to the appropriate services.

## **Data Management**

The online Zoom meetings will be recorded and the face to face meetings will be audio recorded for transcribing later. At the initial meeting you will be given a pseudonym to keep you anonymous. As the recordings are transcribed, the pseudonyms will be used again to retain that anonymity. You will remain unidentifiable in the research, not even the supervisor will have identifiable information about you. Any audio data, consent forms and transcribed interviews will be stored on my Massey University OneDrive account, which is a secure server. The data will be stored with Professor Sarah Riley for a period of 5 years and archived in case of publication of this research project.

## **Participant's Rights**

*You are under no obligation to accept this invitation. If you decide to participate, you have the right to:*

- *decline to answer any particular question.*
- *withdraw from the study at any time.*
- *ask any questions about the study at any time during participation.*
- *provide information on the understanding that your name will not be used unless you give permission to the researcher.*
- *be given access to a summary of the project findings when it is concluded.*
- *ask for the recorder to be turned off at any time during the meetings.*

## **Project Contacts**

Diane Warwood, Researcher – [diane4remedies@gmail.com](mailto:diane4remedies@gmail.com)

Professor Sarah Riley, Supervisor

Professor in Critical Health Psychology & Senior Lecturer - [S.Riley@massey.ac.nz](mailto:S.Riley@massey.ac.nz)

Please feel free to contact the researcher and/or supervisor if you have any questions about the project.

## **MUHEC APPLICATIONS**

*This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern A, Application 22/09. If you have any concerns about the conduct of this research, please contact Dr Negar Partow, Chair, Massey University Human Ethics Committee: Southern A, telephone 04 801 5799 x 63363, email [humanethicsoutha@massey.ac.nz](mailto:humanethicsoutha@massey.ac.nz).*



## ***How do perimenopausal women understand themselves and their bodies using digital health apps?***

### **PARTICIPANT CONSENT FORM – INDIVIDUAL**

I have read and I understand the Information Sheet attached as Appendix 1. I have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time. I have been given sufficient time to consider whether to participate

in this study and I understand participation is voluntary and that I may withdraw from the study at any time.

Please circle **Yes** or **No** as applicable:

- I agree that I meet the inclusion criteria, as outlined in the Information Sheet in Appendix 1. **Yes/No**
- I agree to the meetings being sound recorded in the case of face to face meetings; or the online zoom meetings recorded. **Yes/No**
- I wish to have the transcripts of my recordings returned to me. **Yes/No**
- I agree to have my anonymized meeting data placed in an official archive so that it may be potentially published at a later date. I understand that I will be notified before this occurs. **Yes/No**
- I agree to participate in this study under the conditions set out in the Information Sheet. **Yes/No**
- I agree not to disclose anything discussed in the Focus Group. **Yes/No**

**Signature:** .....

**Date:** .....

**Full Name - printed** .....

**A few books on Perimenopause/Menopause published since 2019 (but wait there's more – but this is indicative of how big the conversation is)**

*Flash count diary: A new story about the menopause* (2019) Darcey Steinke

*Perimenopause: The savvy sister's guide to hormone harmony* (2019) Anna Garrett

*Menopocalypse: How I learned to thrive during menopause and how you can too* (2020) Amanda Thebe

*The new hot: Taking on the menopause with attitude and style* (2020) Meg Matthews

*Still Hot: 42 brilliantly hot menopause stories* (2020) Kaye Adams

*M-Boldened: Menopause conversations we all need to have* (2020) ed. Caroline Harris

*The M Word: Everything you need to know about the menopause* (2020) Philippa Kaye

*The M Word: How to ~~survive~~ thrive in menopause* (2020) Ginni Mansberg

*Menopause: All you need to know in one concise manual* (2020) Dr Louise Newson

*The happy menopause: smart nutrition to help you flourish* (2020) Jackie Lynch

*Perimenopower: The ultimate guide through the change* (2020) Katarina Wilk

*The Menopause Manifesto: own your health with facts and feminism* (2021) Jen Gunter

*Preparing for the Perimenopause and menopause* (2021) Dr Louise Newson

*Musings on Perimenopause: Identity, experience, transition* (2021) ed. Heather Dillaway and Laura Wershler

*What fresh hell is this? Perimenopause, menopause, other indignities, and you* (2021) Heather Corinna

*Cracking the Menopause while keeping yourself together* (2021) Mariella Frostrup and Alice Smellie

*Hormone Repair Manual: Every woman's guide to health hormones after 40* (2021) Lara Briden

*This changes everything* (2022) Niki Bezzant

*Menopausal: the positive roadmap to your second spring* (2022) Davina McCall

*The natural menopause: A nutritional guide through perimenopause* (2022) Karen Newby

*Everything you need to know about the menopause (but were too afraid to ask)* (2022) Kate Muir

*The Definitive Guide to to the perimenopause and menopause* (2023) Dr Louise Newson

*Hot and Bothered: what no one tells you about menopause* (2023) Jancee Dunn

*The menopause reset: Get rid of your symptoms and feel like your younger self again* (2023) Dr Mindy Pelz