

**Empowering Women's Reproductive Rights: Enhancing  
the Impact of Fertility Awareness App on Women's  
Conception Experience and Gender Equality**

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**Empowering Women's Reproductive Rights: Enhancing the Impact of Fertility Awareness  
App on Women's Conception Experience and Gender Equality**

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## Notes

This thesis includes the written analysis, project, and documentation for the project. The project is presented as a digital product prototype in this document. To access the prototype, please use the following link:

<https://www.figma.com/file/8pPjYbtWT56vR249By7Su1/Fertility-%26-Family?type=design&node-id=0%3A1&mode=design&t=39hiMPvFOeV5YnLI-1>

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## List of Abbreviations

<b>Abbreviations</b>	<b>Definition</b>
LDR	Long-distance relationship
UX	User Experience
F&F	Fertility & Family
App	Application

## **Abstract**

This thesis examines the significant impact of fertility awareness apps in enhancing women's understanding of their fertility and promoting awareness of reproductive health. This analysis rigorously assesses the influence of fertility awareness apps on the physical, mental, and reproductive well-being of women, with a particular focus on the unequal distribution of fertility-related obligations between genders. The study reveals that existing fertility awareness apps lack functionalities that involve men, hence intensifying gender-based disparities in fertility and conception (Grenfell et al., 2020). The text explores and recommends strategies to make fertility awareness apps more inclusive and emotionally engaging. It suggests encouraging greater involvement of male users and leveraging digital technology to enhance lifestyles, thereby improving fertility and conception prospects. Additionally, it aims to promote awareness about conception and fertility, as well as facilitate collaborative planning and decision-making during the conception process. The thesis promotes novel strategies to improve fertility awareness applications, with the goal of offering women a more supportive and fair experience when trying to conceive.

## Introduction

The issues of reproductive health and conception have consistently been a focal point of public health interests, significantly impacting family formations and societal interactions. Consequently, women are frequently anticipated to assume the primary duty of conceiving and reproducing, although the associated social cost and psychological stress are frequently disregarded. With the advancement of civilization, there has been a notable increase in the number of women engaging in paid employment (Oláh et al.). Consequently, the swift progress in digital technology has led to the emergence of 'women's tech', which includes widely used fertility tracking applications (Grenfell et al., 2020). Presently, more than one-third of women in the UK utilize fertility apps to assist in the process of conception (Grenfell et al., 2020), positioning fertility awareness apps as pioneers in transforming women's reproductive health.

This thesis explores multiple case studies of these apps in improving women's experience of conceiving, examining their transformative power and existing barriers. In addition, this analysis delves into the impact of these apps on digital gender equality. Based on the current research and case studies, we decided to investigate the use of digital solutions to address the challenges encountered during female conception. This initiative aims to enhance the participation and collaborative support of male users, with the ultimate goal of reducing gender inequality in reproductive responsibilities. The study set out with the objective of analyzing whether the increased engagement and emotional support of male users of fertility awareness apps is effective in terms of women's reproductive and emotional health. To achieve this goal, the study provides a comprehensive understanding of the importance of men in enhancing women's success and experience of conceiving. As well as the role of the Fertility Awareness app in promoting fertility enhancement, raising awareness of conception, planning and decision-making, and fostering emotional support for couples during the conception process. The subsequent comparative analysis evaluates four digital products related to women's and men's fertility health. Based on the findings, a prototype digital product is proposed that focuses on empowering the female conception experience through male engagement and support, promoting gender equality in digital fertility awareness apps, which is a key aspect of this thesis.

This study not only contributes to the field of women's reproductive health, it also carries a stronger belief in women's reproductive empowerment and greater equality in the areas of reproductive health and conception.

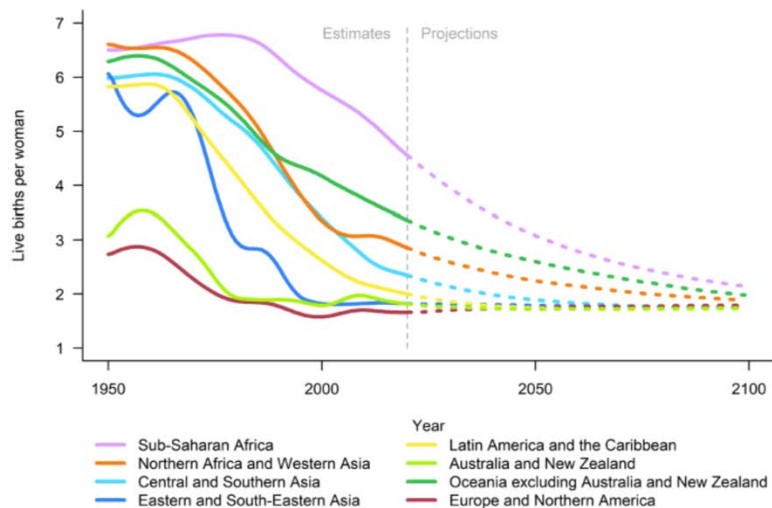
# Chapter 1

## The Significance of Empowering Women's Conception Experience

Over the past half-century, the world has experienced rapid progress, with many countries undergoing profound social transformations. There has been a noticeable shift in the roles of women and men within family structures. An increasing number of women are entering the workforce to engage in paid employment (Oláh et al., 2018). This shift in roles has intensified the physical and emotional challenges faced by women during the process of conception. This has also led to a general decline in fertility rates since 1950, a trend that may continue into the future (Fig. 1). Research indicates that the average number of live births per woman decreased from 3.2 in 1990 to 2.5 in 2019 (Author\_Id, 2020)."

**Figure 1**

*A Screenshot of total fertility by region, estimates and projections, 1950-2100*



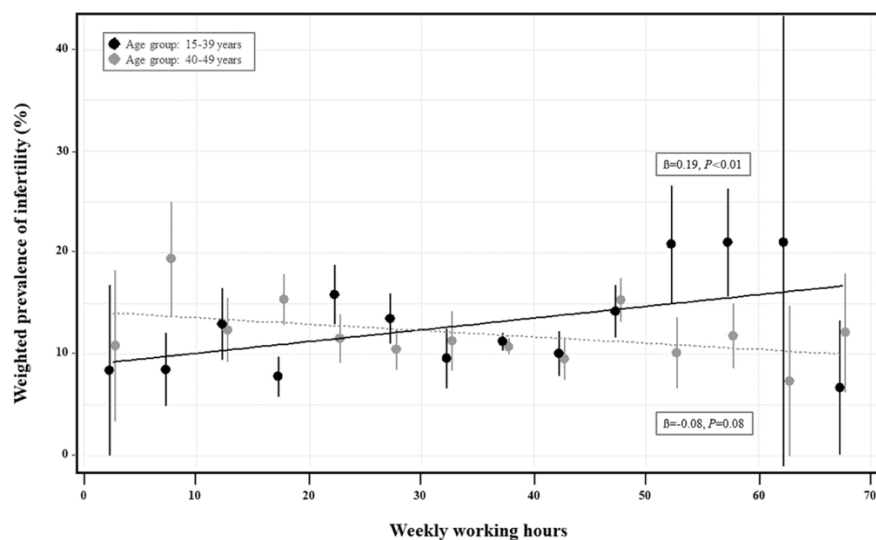
Note. From *Fertility rate: children per woman*. (n.d.). Our World in Data.

<https://ourworldindata.org/grapher/fertility-rate-with-projections>

In addition to the decline in fertility rates, two studies suggest that women who engage in paid employment face increased stress and poor quality of life issues. They are more prone to long-term negative emotions such as tension, anxiety, depression, and fear. Unhealthy lifestyles, such as smoking, drinking, obesity, poor diet, and lack of exercise, can also impact the decline in female fertility (Jumayev, 2012). Furthermore, there is a significant correlation between working hours and fertility (Gaskins et al., 2015; Tuntiseranee et al., 1998). In epidemiological studies, approximately 10-15% of couples experience difficulties in conceiving (Hull et al., 1985). Sleep disorders and psychological stress caused by long working hours can affect fertility (Kloss et al., 2015).

**Figure 2**

*A Screenshot of the weighted prevalence of infertility by weekly working hours.*



Note. From Ahn, J., Lee, S. H., Park, M. Y., Oh, S. H., & Lee, W. (2021). The association between long working hours and infertility. *Safety and Health at Work*, 12(4), 517–521. <https://doi.org/10.1016/j.shaw.2021.07.005>

At the social and familial levels, women are often expected by society to bear the primary responsibility for conception and pregnancy. This leads to unequal emotional and physical burdens, particularly for women who experience unsuccessful conception. Such women often face additional societal burdens, including violence, divorce, social stigma, and emotional stress (Infertility, 2023). Studies indicate that women with fertility

issues seem to bear greater psychological and social stress compared to men with similar issues (Lee & Sun, 2000). Moreover, in some cultures, fertility is crucial for maintaining a marriage (Chan et al., 2006). Therefore, these cultural norms and gender stereotypes aggravate gender inequality, often resulting in a lack of comprehensive support for women's reproductive health.

Given the intricate challenges women face in terms of reproduction, it is crucial to recognize the significance of empowering women in regard to their reproductive health. Edmeades, Mejia, and Sebany (2018) established a theoretical framework to promote women's reproductive health empowerment. This framework emphasizes three crucial components: voice, choice, and power. Women's voices are key to realizing their reproductive goals, pursuits and aspirations and to playing an active role in reproductive decision-making. Choice implies that women have the ability to make influential contributions to reproductive decision-making. Power is reflected in their ability to exert power over others to influence the process of reproductive decision-making (Vizheh et al., 2021). The concept of power is multifaceted and encompasses relationships within couples, families, and society as a whole (Moreau et al., 2020).

Women's increasing awareness supports their transition from responding to reproductive health issues to taking proactive measures in making decisions about reproductive health. Nevertheless, the degree to which women possess authority and impact over their process of conception is shaped by several psychological, interpersonal, and ecological aspects (Diamond-Smith et al., 2017). Various factors, including the extent of a woman's control over her male partner, the availability and accessibility of healthcare in her region, and her societal status, might influence the level of empowerment she experiences in terms of reproductive health. In order to overcome the specific obstacles that women face when trying to conceive, it is crucial to offer them emotional and practical support through various means (Reblin & Uchino, 2008). This support should encompass the provision of information and educational resources, psychological aid, societal change, and the engagement of partners. Crucial for delivering comprehensive assistance and empowerment to individuals along their process of conception and reproductive health.



## Chapter 2

### The Significance of Partner Engagement and Support in Conception

Based on the conceptual framework of female reproductive empowerment mentioned in Chapter 1 (Moreau et al., 2018), this chapter will delve further into female power at the level of the partner. The emphasis in this concept is on women's capacity to exercise power over others in order to affect reproductive decisions. Additionally, this implies that women have the ability to engage their partners in the process of making decisions regarding fertility, utilizing their influence to collaboratively shape and reach decisions, so ensuring that the perspectives and requirements of both individuals are considered and honored. However, it should be noted that fertility is influenced by both males and females, and the male factor contributes to 50% of cases of infertility (Irvine, 1998). However, the majority of fertility research typically solely enroll female participants. One potential obstacle could be that men may perceive themselves as not being primarily accountable for fertility and consider childbearing to be exclusively within the purview of women (Grace et al., 2019). Furthermore, it is not uncommon for women to attribute their low fertility to their own fault (Nahar et al., 2000; Imeson & McMurray, 1996). Furthermore, women are more likely than men to attribute their low fertility to their own actions (Becker & Rd, 1994). As a result, women who experience limited fertility face greater challenges and pressures than men, including societal pressure, criticism, and prejudice regarding their fertility. Further studies have demonstrated a potential correlation between the degree of communication and support between partners and their perspectives on fertility issues, specifically infertility (Renzi et al., 2023). The attitude and participation of husbands are also significant factors. Positive effects can result from a man's decision to participate in the conception process or from a woman's invitation to do so (Harlow et al., 2020).

Therefore, empowering women during the conceiving process requires the collaboration of the entire couple, and the partner's role in the process is substantial and multifaceted. It is not only a woman's journey in conception; it is a shared path. The conceiving process is expected to be positively influenced by open communication, mutual engagement, and support (Cheng et al., 2016; Renzi et al., 2023). For instance, the shared burden of learning about fertility, attending medical consultations, and

modifying their lifestyles can substantially relieve tension and contribute to a more equitable experience. Research has demonstrated that couples are highly aligned on unhealthy behaviours. However, if one partner were to undertake constructive modifications, it might inspire the other half to do the same (Jackson et al., 2015). Therefore, effective partner support can serve as a gentle guiding force to inspire one another to make positive adjustments (Reblin & Uchino, 2008), enhancing intimacy and cohesion within the couple relationship (Repokari et al., 2007; Renzi et al., 2023; Peterson et al., 2003). An investigation conducted in the Boston area examined two groups with different economic and cultural backgrounds. The researchers discovered that pregnant women who received less support experienced higher levels of prenatal anxiety, depression, and smoking. Partner support has been recognized as a crucial and adjustable element in enhancing delivery outcomes (Cheng et al., 2016).

Partner support is multifaceted, particularly emotional support, and has significant and cascading impacts on women's mental well-being (McLeish & Redshaw, 2017). Emotional support encompasses the provision of caring, understanding, and attentive listening (Lincoln, 2000). It is often defined as "providing comfort and security during times of stress so that a person feels cared for by others" (Cutrona & Russell, 1990). Emotional support can be conveyed in different ways, including direct communication and non-verbal actions. Conveying encouragement, appreciation, reassurance, respect and trust in the other person (Holmstrom et al., 2013). Alternatively, offering information and advice to help resolve troubling issues (Dunkel-Schetter & Skokan, 1990).

Nevertheless, it is crucial to acknowledge that partners may encounter challenges in expressing their feelings, which might be alexithymia (Franz et al., 2007; Yelsma & Marrow, 2003). Alexithymia is characterized by difficulties in experiencing, identifying, and expressing feelings. (Taylor & Bagby, 2013). The presence of alexithymia can have a detrimental effect on marital well-being when one partner's level of emotional expression is lower than the other's (Yelsma & Marrow, 2003). Nowadays, numerous couples find themselves in long-distance relationships (LDR) due to various factors such as professional prospects, familial responsibilities, or societal barriers. These circumstances often result in difficulties in communication, feelings of isolation, and a sense of uneasiness for the couples involved (Borelli et al., 2014). A study discovered that individuals who live together as a couple experience much lower levels of alexithymia compared to those who live alone (Franz et al., 2007).

The preceding discourse thus emphasizes the significance of partner engagement and assistance in a woman's quest for conception. Men's heightened cognizance of their own and their partner's reproductive well-being can significantly contribute to the facilitation of conception success (Harlow et al., 2020). Firstly, when men possess a more comprehensive comprehension of a woman's fertility cycle and health, they may more effectively assist and actively engage in the process of conception. This support encompasses both the physiological aspect, involving the modification of lifestyle behaviors to enhance the likelihood of pregnancy, as well as the psychological aspect, entailing the provision of emotional support and empathy. Furthermore, when both spouses possess the essential knowledge, they can strategically plan their pregnancy and minimize unnecessary worry and anxiety. Moreover, engaging in conversations about fertility between women and men contributes to the normalization of social discussions surrounding male fertility and male participation in childbearing. This additionally enhances the process of achieving equality in terms of conception and reproductive health.

## Chapter 3

### The possibilities and challenges of enhancing conception experience through improved fertility awareness apps

The mobile application market is experiencing tremendous growth due to the widespread use of smartphones. Within this industry, fertility apps that fall under the category of 'female technology' are particularly popular as health tracking tools. More than one-third of women in the UK utilize fertility apps to assist in the process of conception (Grenfell et al., 2020). These apps serve as a novel tool that offers practical assistance in empowering women to manage their fertility and optimize their reproductive health (Lupton, 2014). Women can monitor their menstrual cycles to guide them to their optimal 'fertile window'. Enhancing fertility by logging mood, symptoms, and sexual activity.

It is worth noting that the majority of fertility and pregnancy tracker apps are designed for women, with little consideration for sexual and gender diversity (Lupton, 2014). A study conducted in 2017 revealed notable discrepancies in the usability of apps. The study found that there were 1,141 apps linked to pregnancy available on the Apple App Store, but only 13 of them were specifically tailored for men (Thomas et al., 2017). As a result of this significant inequality, women bear the burden and obligation of monitoring fertility health. They are required to assume responsibility for logging the fertility window, scheduling sexual activity, and investigating and addressing methods to improve fertility (Baldwin, 2019). While some males may engage in this process because of their curiosity about fertility app technology and concerns about justice, their level of involvement is significantly lower compared to women. This leads to challenges about marginalized identities (Ives, 2014; Deave & Johnson, 2008). Men are commonly perceived as being 'present, but not actively participating' in the female conception and pregnancy process (Ives, 2014). Fertility apps alter how couples, particularly women, track their fertility and menstrual cycles (Pittman, 2016). However, these apps frequently lack functionalities that address the entirety of the conception experiences. Several apps prioritize solely the biology component, disregarding the emotional and psychological aspects of conception. The limited participation of men in these apps aggravates the sexual and gender-related

inequalities in the fertility and conception journey (Grenfell et al., 2020).

Hence, this chapter presents a novel methodology for creating the fertility awareness app, with a focus on promoting inclusiveness and providing support. The possibility of male partners being involved in conception is discussed. One study also explored the perspectives of female users of the fertility tracker app Natural Cycles and their spouses who used it together (Grenfell et al., 2020). A section of women said they appreciated that their partners shared the responsibility of entering their menstrual dates and the opportunity for their partners to be able to learn about the woman's fertility health. A few women wanted the app to be more widely recommended to their partners, as their partners were apathetic about the app. However, not all women wanted their partners to be involved, as they felt that sharing app data would involve their privacy and that their partners would have more access to their information.

Nevertheless, the scope of this study is restricted to the monitoring of women's fertility cycles by males. Insufficient investigation and planning have been devoted to the integration of educational resources concerning conception and fertility and joint decision-making. Additionally, it is critical to prioritize the emotive dimensions of the user experience when developing fertility awareness applications, which should offer guidance and support in addition to data monitoring. How to Empower Partners to Participate in Conception Together through Emotional Support. in addition to contemplating potential fertility-threatening factors in partner relationships, such as LDR and Alexithymia. Based on a 2014 survey by the PEW RESEARCH CENTER, 74% of adult internet users acknowledge that the internet has had a positive influence on their marriage or partnership. Furthermore, the research also shows that 21% of mobile phone owners or Internet users in committed relationships feel closer to their spouse or partner as a result of communication online or via text messaging (Couples, the Internet, and Social Media | Pew Research Center, 2020). Mobile applications provide a distinct communication environment and interaction style (Scott et al., 2022) and usability (Nesi et al., 2018) due to the internet's unique nature. This includes features like liking, comments, rapid contact, and sharing content. Novel ways of interacting provide variety and increased quantity of expression of emotions between partners, and these increases may be associated with allowing them to achieve higher levels of well-being (Sun & Vuillier, 2018). So attention and research on how to enhance the affective experience of fertility awareness apps is also essential, promoting the potential of digital technology for a more inclusive, comprehensive and

supportive fertility tracking experience.

Nevertheless, it is crucial to acknowledge that these digital technologies can also introduce strain and vulnerability into marital relationships (Muusses et al., 2014). Smartphones greatly distract them, leading to a reduction in face-to-face communication and a decrease in relationship satisfaction. Whilst it has been shown that positive self-disclosure is positively associated with communication quality and intimacy (Boyle & O'Sullivan, 2016). However, face-to-face communication has been found to promote stronger emotional connections (Sherman et al., 2013). The utilization of digital platforms to convey emotions or access fertility apps exemplifies the potential and obstacles that these technologies pose for couples seeking emotional support during the process of conception. Instead of concerns regarding time and distance, partners can instantaneously communicate to share a conception plan, express emotions, or access educational resources about conception and fertility. However, it is imperative to acknowledge that digital technology can also be utilized as a way of escapism, which may cause partners to become less involved in ongoing interactions. The obstacles presented by technology in the context of a couple's relationship are not contingent upon gender, but rather on its utilization. For instance, engaging in constructive communication and sharing through applications may foster a feeling of overall wellness and generally contribute to a more positive experience (Sun & Vuillier, 2018).

The primary focus of most fertility awareness apps and related research has been on the accuracy and usability of the technology (Ali et al. 2021; Bull et al. 2019; Li et al. 2020). Additionally, an increasing amount of research has begun to point out that fertility awareness apps aggravate sexual and gender inequalities (Grenfell et al. 2020; Ives 2014; Deave & Johnson 2008). Nevertheless, as previously mentioned, research indicates that fertility awareness apps may assist in enhancing women's knowledge regarding their reproductive well-being and the ways engage to monitor their menstrual cycles (Symul et al., 2019). In contrast, exploring features that promote male user engagement and enhance the inclusive and emotional experience of fertility awareness apps may be a valuable solution to better empower couples throughout their journey to conceive.

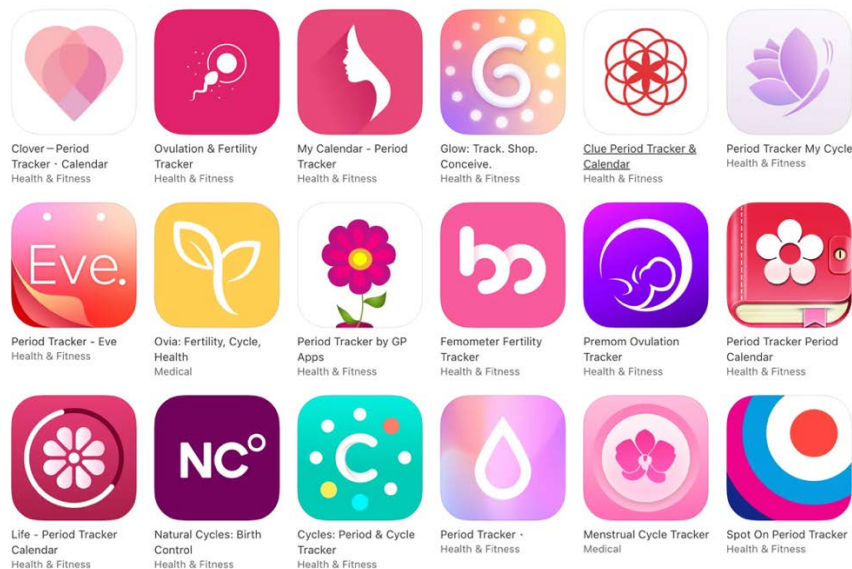
## Chapter 4

### Comparative Analysis

When searching for "conception apps" in Google, most of the results are not apps for the specific stage of conception but are categorized under apps for fertility tracking, period tracking and ovulation tracking. Despite the absence of user group specifications, the design of the applications exhibited a feminine aesthetic (Fig. 3). In addition, the keyword "male" did not appear in the product description. I then searched for "male preparation" and categorized it as a sperm and fertility app. The results showed three apps on Google Play and four on the App Store. Regarding downloads, in contrast to the 133,000 installs of the "Female Fertility Tracker" app, only 10 users have attempted to install "Male Fertility Tracker".

**Figure 3**

*A screenshot of search results for Conception app in the App Store*

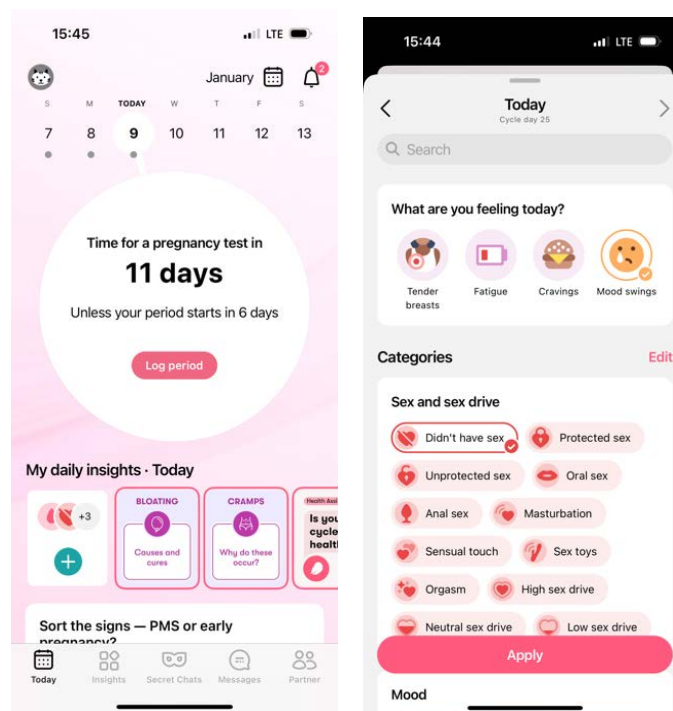


Flo is the most downloaded fertility tracking app. In addition to serving as a fertility

calendar, Flo is utilized by over 300 million individuals globally to monitor their periods, ovulation, and pregnancy (Tecton, 2023). It assists users in gaining a deeper comprehension of the body and how cycles influence mood levels and temperament. Furthermore, through the monitoring of menstrual cycles and bodily signals, Flo can ascertain the potential date of pregnancy. In addition, more than seventy symptoms including libido and sex life, mood, vaginal discharge, physical activity and more allow users to monitor information (Fig. 4).

**Figure 4**

*Screenshots of the Flo app. On the left, the app displays what day is user on in their cycle. On the right, user can choose symptoms in ‘Sex and Sex Drive’, ‘Mood’, ‘Symptoms’, and ‘Vaginal Discharge’ categories*



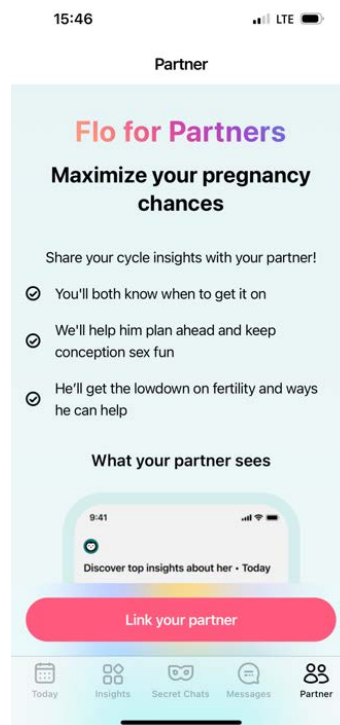


Flo launched the Partner feature of significance in October 2023 (Fig. 5). A view-only version of a user's cycle calendar can be shared with a companion. Personalized daily updates and alerts will be provided to partners during critical phases of your cycle. Female users may at any time discontinue the sharing of data with their partners about data protection. Additionally, Flo can only monitor a single menstrual cycle at a time and only assists male-female couples.

The addition of a partner feature as the number one downloaded app shows the demand in the digital market, but it still focuses primarily on sharing fertility tracking and lack an emotionally engaging user experience.

## Figure 5

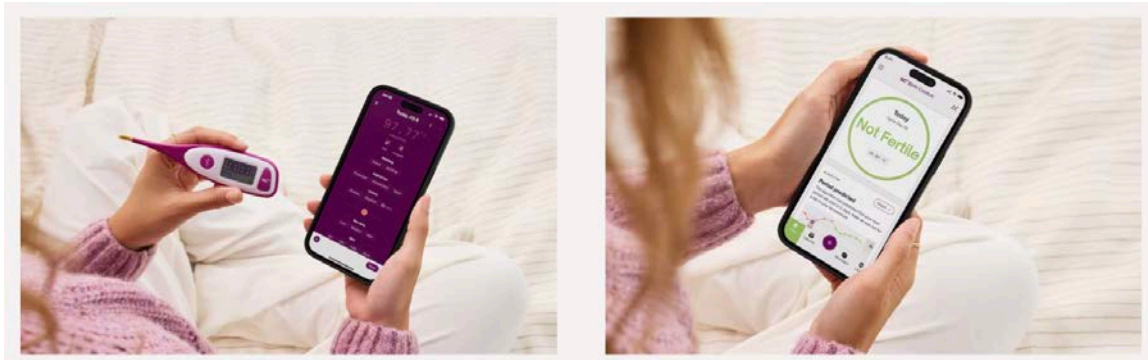
*Screenshots of the Flo app. The app displays Flo users can share their experience to their partners*



The second preferred app is Natural Cycles. To date, only this device application has received FDA approval (Grenfell et al., 2020). The fertility monitoring application known as Natural Cycles computes the conceived period by establishing a connection with a device that gathers temperature data (Fig. 6). The device compatibility of the Natural Cycles app is determined by the user's lifestyle and wearing behaviors (Fig. 7). The collected data from these devices—the NC° Thermometer, the Oura Ring, and the Apple Watch—is synchronized with the mobile device to provide the most recent fertility status.

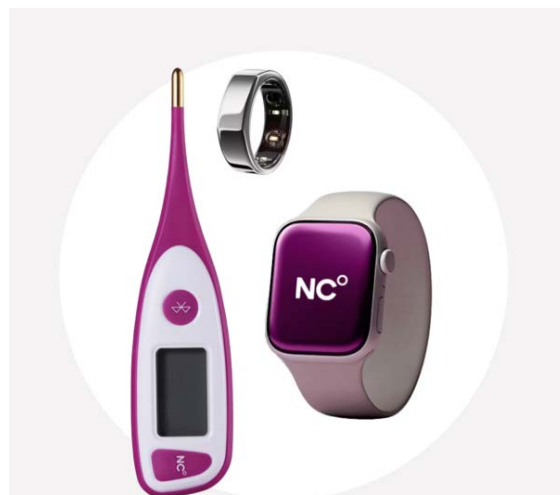
### Figure 6

*Screenshots of the Natural Cycles app and measure devices NC° Thermometer. On the left, the picture displays sync of data from the tested temperature to the phone. On the right, user confirms daily fertility status on App*



### Figure 7

*Screenshots of the Natural Cycles app supported three types of measuring devices.*



Exceed is the third app of preference. (Fig. 8) ExSeed is a specialized app that enables males to assess their fertility at home to increase their likelihood of reproducing. The results of the test are synchronized to the user's smartphone within fifteen minutes. The Exceed application customizes recommendations for enhancing sperm quality according to the test results or guidance provided by an in-house expert.

More than the diversity of fertility tracking apps for women in the digital marketplace, male fertility tracking apps need tools to test and improve fertility, and there is a possible gap for male apps that utilize lifestyle changes to enhance fertility.

**Figure 8**

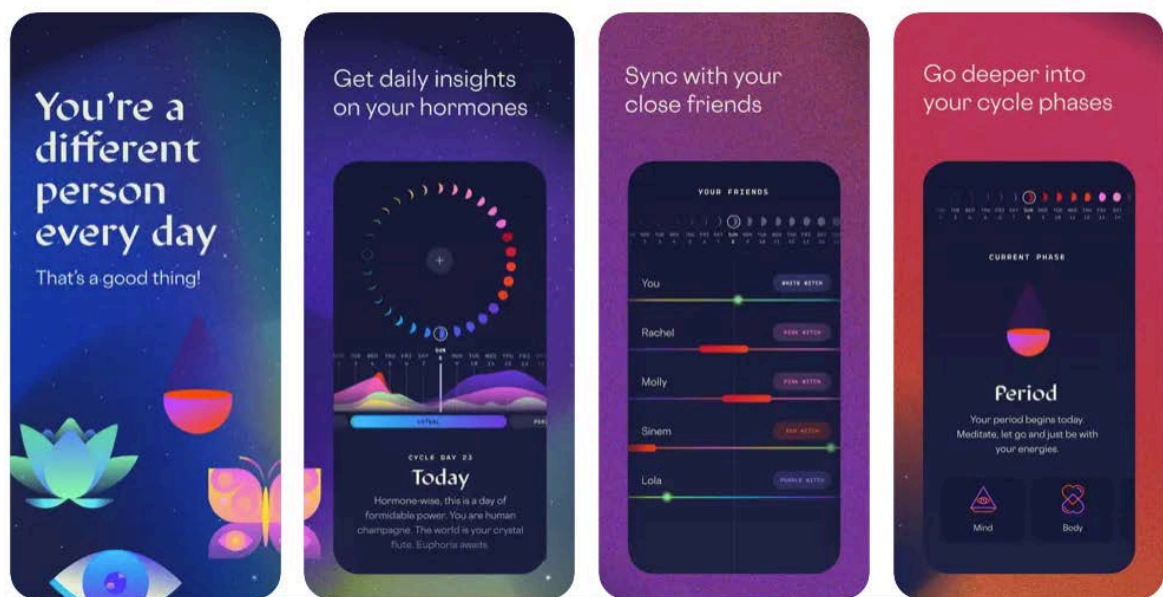
*Screenshots of the Exceed app and materials for test*



The fourth recommended app is Stardust Period Tracker. An application for cycle monitoring that integrates astronomical symbols, ancient folklore charts, and physiological cycles. It supports sharing and synchronizing physiological cycles with friends. The visual design of the Stardust app is its most appealing aspect, contrasting with the extremely feminine aesthetics of other fertility tracking apps. It has a more neutral and novel design in terms of visual experience(Fig. 9).

**Figure 9**

*Screenshots of the interfaces of Stardust Period Tracker*



## Primary Research

Five stakeholders including three couples and two women, were interviewed to better understand the needs, challenges, and behaviors of users during conception. The interviews were complemented by an online survey. The purpose of this study was to investigate the requirements and difficulties that couples have when trying to conceive, with a particular emphasis on the need for partner support. We also evaluated the use of Fertility Tracker apps, painpots, and satisfaction with conceiving needs being met. According to the poll results, all female users use Fertility Tracking apps while they are trying to conceive, and one male user used the apps before marriage to learn about his partner's fertility cycle as a way to provide care.

When it comes to the challenges in getting pregnant, both men and women typically say that in order to enhance fertility, they need to modify certain aspects of their lifestyle, including smoking, staying up late, being obese, and changing their diet. When it comes to making changes to their lifestyle, Women were more committed than men when it came to making lifestyle changes. Significantly, women with a second pregnancy usually have a lower quality of life compared to their first pregnancy, which may be due to their lesser focus on making healthy lifestyle adjustments. For women, they also experience the stress associated with miscarriages and prolonged periods of unsuccessful pregnancies.

With regard to the demand for information in reference to conception, women's demand is significantly greater than men's. Female users search for diet, nutrition and supplements to improve fertility, pregnancy test options and testing, treatments and hospitals regarding difficulties in conception, and preparation for a successful pregnancy. Male users want clear information on how to help their partnersh.

About partner's help during pregnancy Women want more from their partners. Women need more than just emotional support when faced with their partner's poor lifestyle, they also need to see their partner make changes. Women need extra support to cope with stress, worry, and loneliness because of their mood swings, especially if they are preparing for a long-term pregnancy, a miscarriage, or if their partner needs to business trip frequently. Man also needs active help from their wife when they encounter obstacles that require a change in lifestyle. However, it is important to

remember that when one partner in a couple is not behaving as they should, the other half is likely to feel angry and frustrated. Maintaining intimacy during pregnancy is equally important, and to do so, both partners must communicate positively in order to feel happy and close.

It will be discovered that female users of fertility tracking apps are more likely to be unsatisfied if they have been planning for pregnancy and failure for a long time. Furthermore, users may experience anxiety and possibly have their sexual behavior and sentiments affected by the app's ovulation prediction feature. For female users who have had a miscarriage, the app can only restart and delete the pregnancy record. For them, this was a double blow and an extremely traumatic event.

Based on the experience of using existing apps, users want to be able to provide personalized advice based on their health issues, weight, lifestyle etc. and hope that the app offers reliable and meaningful community content.

Preliminary research has collected and collated partners' needs and challenges with regard to conception and fertility tracking apps and can demonstrate the positive effects and implications of promoting mutual support and awareness of fertility among partners. However, attention needs to be paid to the app's thinking about emotional data visualization and user experience.

## User scenario

Following the primary research phase, I identified stakeholder needs, behaviors and challenges through user interviews and surveys. At this phase, user scenarios as a methodology for user experience design helped me to better envision scenarios and experience how users would actually interact with the product in real-life situations to solve their challenges or goals.

The following are the proposed assumptions for these user scenarios.

Penny, a 27-year-old flight attendant, and her husband, Kevin, a 28-year-old senior manager in international trade, are planning to conceive their first child. Due to Penny's irregular lifestyle and diet from her job, she has some health issues and is advised to take medication regularly, pay attention to nutrition, and get enough sleep. Kevin, often away on business trips, feels guilty for not being able to support Penny physically and emotionally during this crucial time.

They turn to find a digital tool like app, seeking a more diverse and immediate way to express emotions and stay informed about each other's health, mood, and optimal conception times. The app allows Kevin to stay connected with Penny's health status, even from afar, and plan for conception together.

Both Penny and Kevin are long-term smokers, and for the health of their future child, they decide to quit smoking. They find it is hard to change this ingrained habit and seek a tool that helps in lifestyle adjustment. The app's feature, which visualizes behavior change and gives a sense of achievement, motivates them to persist. It also fosters mutual support, strengthening their relationship and emotional bond as they work towards their goal.

As first-time parents-to-be, they value the app's convenience in providing quick access to fertility health-related information, like diet, nutrition, emotional regulation, and pre-pregnancy checkups, enhancing their fertility and maximizing their chances of conception. The shared journey of quitting smoking, aided by the app, not only helps them understand their behavior changes but also brings them closer, offering emotional support as they strive for a healthy pregnancy.

## Chapter 5

### Product Overview

Due to the shifting responsibilities that women play in society and the home, women are under increased pressure to perform well both physically and psychologically because of the rapid growth of modern civilization. The question of empowering women to become pregnant has gained importance. The product 'Fertility and Family' is a fertility awareness app with the core beliefs of encouraging partners to support each other in focusing on each other's needs during the conception process, to encourage partners to participate in the process of getting ready for pregnancy, and to facilitate the improvement of both partners' fertility and conceiving experience to address these issues.

Through comparative analyses and preliminary research, I identified the significance of partner involvement and support in empowering women's conception experience and the importance of raising awareness of fertility health. And gained insight into market trends for various fertility tracking apps. During the digital product design phase, I presented the need to increase male user engagement using digital app technology to enable women to collectively plan for conception, visualize lifestyle changes, sync their fertility cycles with partners, and increase their knowledge of conception and fertility, thereby empowering their conception experience.



## Product Concept

'Fertility and Family' is referred to as F&F. Couples should assist one another through the challenges of infertility, as fertility is one of the variables that impacts the well-being of families. From this idea, F&F offers resources and instruments to support partners in improving their fertility and raising awareness to facilitate a healthy pregnancy and ensure that they have a fair and enjoyable experience throughout the process.

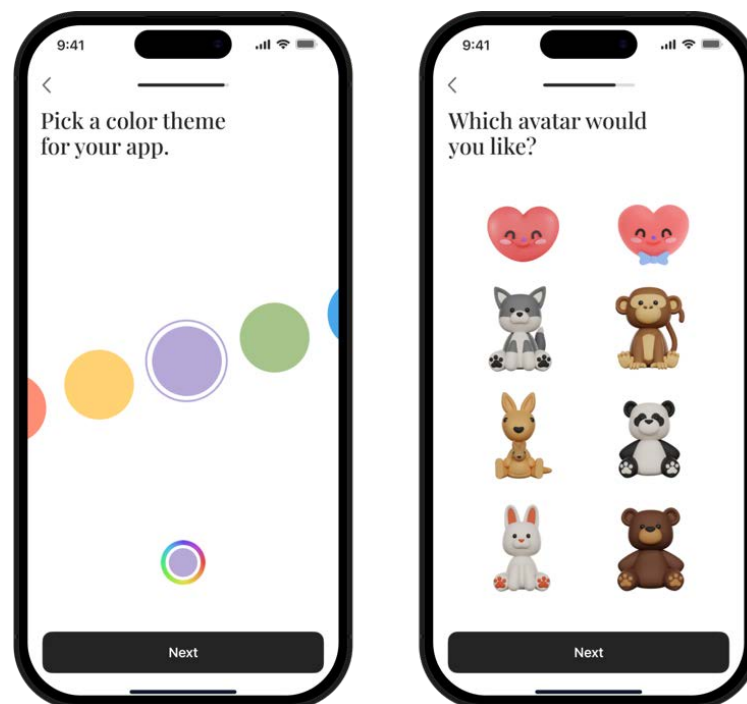
The digital service asks partners to collaborate to empower the conceiving experience and successful pregnancy through self-tracking and managing fertility, visualizing lifestyle adjustments, and providing expert information on fertility enhancement. It is targeted at partners who need to make lifestyle adjustments, have been trying to conceive for a long time, and are unable to be with them because of work.

## Visual Concept

According to a visual analysis of fertility monitoring apps, male users feel excluded by these apps because of their very feminine aesthetic, which is understandable given that female users make up the majority of the user base. F&F must therefore take into account how to design for each gender. Avoid perpetuating gender stereotypes using color schemes, panel designs, and other visual elements. Users should not be given avatars that reinforce stereotypes of men or women. F&F is dedicated to offering gender-inclusive design as a result. allow users to choose the theme color and avatar of the app during the onboarding stage (Fig. 20).

### Figure 10

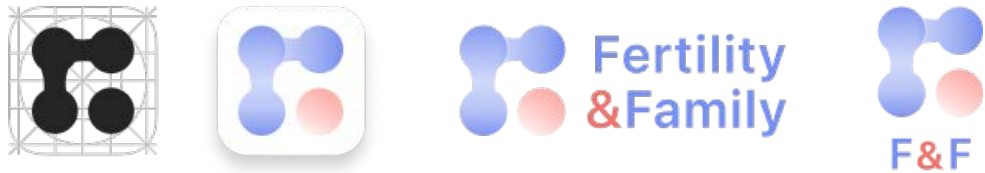
*Screenshots of interfaces of picking color and choosing an avatar on F&F App*



The general shape of the F&F logo emerged from the letter 'F' and the shape of a circle that represents a woman's body as she bears her baby (Fig. 21). Together, these two symbols complete the "Fertility & Family" logo.

**Figure 11**

*A Screenshot showing the identity of F&F app's logo*

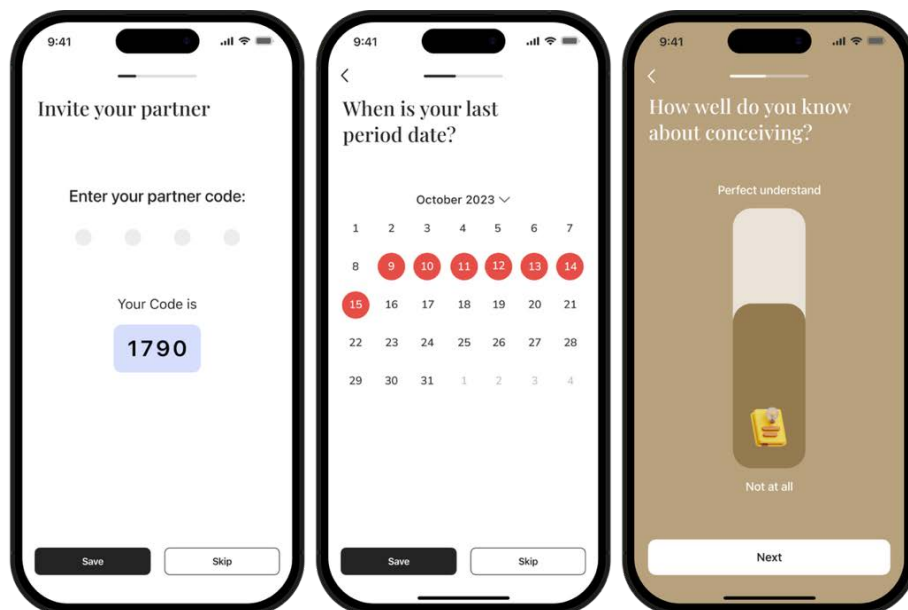


## Onboarding

During the sign-up process, user can invite their partner to join by sending the invitation codes during the sign-up process. After that, users choose a theme colour and avatar, as well as provide information such as their current mood, the date of their last menstrual cycle, and questions about their conceiving needs. This process helps F&F to better provide personalized information when users start using it as well as predict the ovulation window for the best chance of conceiving (Fig. 22).

**Figure 12**

*Key screens of app information, inviting partners and filling in information related to conception during onboarding*



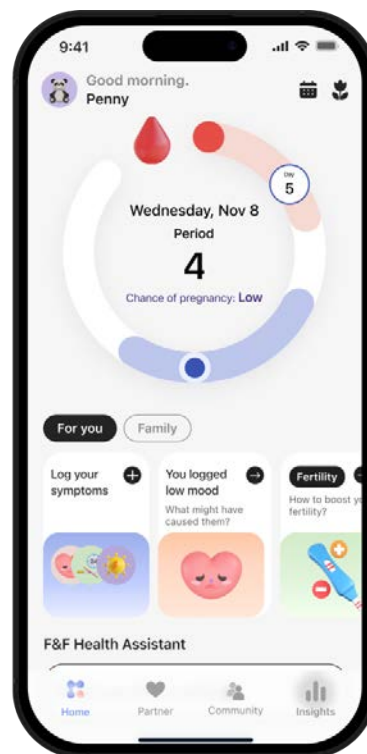
## Features Set and use Functionality

### Fertility Tracker feature

Male and female users are presented with the F&F home screen after completing the registration step (Fig. 23). The fertility cycle, the most important fertility data in conception, is displayed intuitively. Through drag buttons, users can get information about the menstrual cycle, ovulation, and the ideal time to conceive. Below the fertility cycle are personalized and expert articles, videos and courses about individuals and families based on the data and symptoms recorded by the user. The F&F AI assistant is the final feature. With it, users can plan their pregnancy based on the baby's zodiac sign and receive other helpful advice to empower their conception journey.

**Figure 13**

*A Screenshot showing the home screen of F&F App*



## Lifestyle Streak Day feature

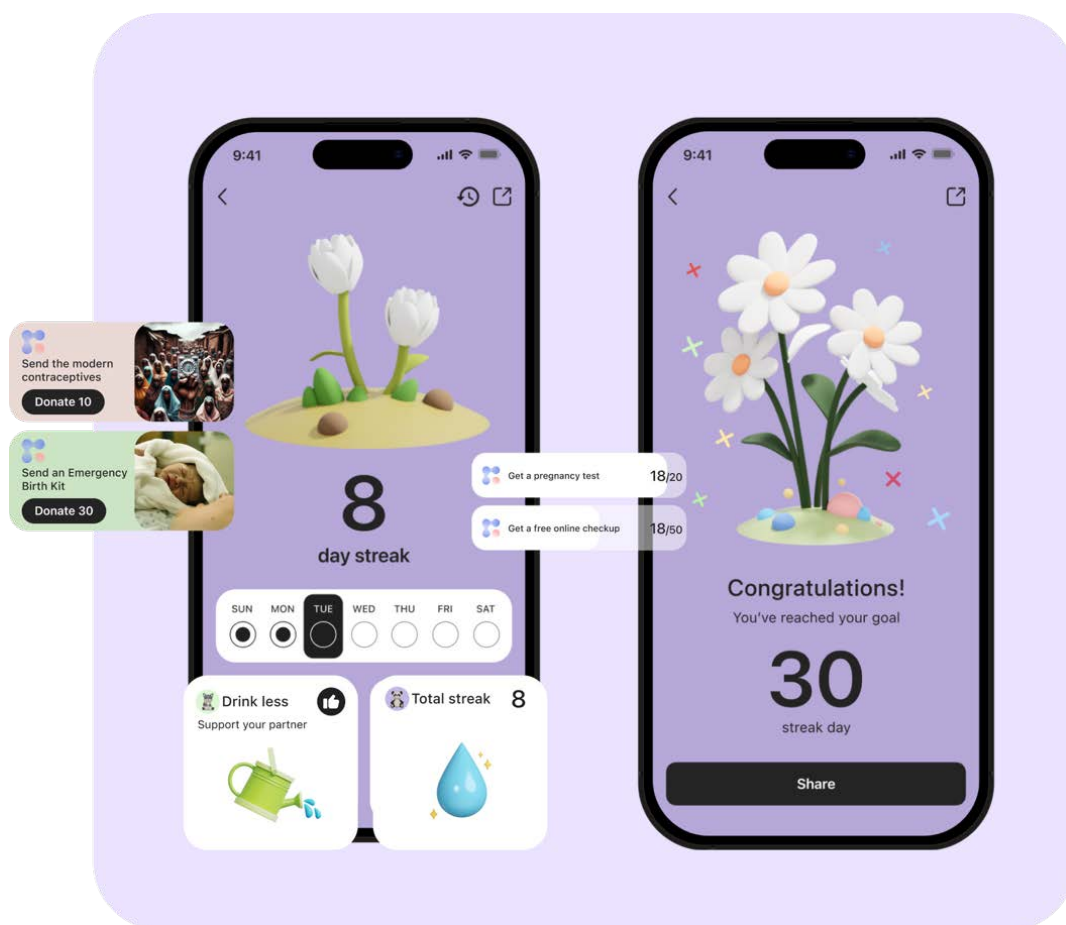
In the top right corner of the homepage, there are two additional features, one of which is the Lifestyle Streak Day feature (Fig. 24). F&F is committed to not only helping users improve their fertility and maximize their chances of conceiving through a healthy lifestyle. F&F is committed to not only helping users improve their fertility and maximize their chances of conceiving through a healthy lifestyle but also to producing long-term results. In the Lifestyle Streak Day feature, the focus was on how to better visualize lifestyle adherence and adjustments to motivate users to develop long-term habits. However, there is a need to consider the negative impact of data-induced user stress (Lourdais et al., 2020). Therefore, attention needs to be paid to the content, design and accessibility of the display in the conceptualization of the interface (Lourdais et al., 2020).

The main content displayed in this feature is to visualize the behavioral changes of the user. Many partners come to adjust their lifestyles and develop positive habits because of the opportunity to conceive, but changing their old lifestyles can be very challenging. Relying solely on app reminders to help users remember tasks does not create habits. However, apps can support behavior change through self-monitoring and tracking (Stawarz et al., 2015). So in this feature, the growth changes of the virtual plant are visualized to correspond and track the behavioral changes. The longer the number of days the user persists, the better the plant grows, which leads to a sense of satisfaction, and increased satisfaction helps to reinforce the habit (Lally & Gardner, 2013, Aarts et al., 1997). The growth of virtual plants can also be supported by watering from a partner, allowing each other to feel the positive feelings of caring and supporting each other.

Additionally, the F&F App hopes to promote global equality in women's reproductive health by allowing users to donate accumulated points (i.e., the number of days a partner has adhered to together) to support women around the world in accessing more and more equal reproductive health services. This may also provide users with another motivation and meaning for adherence.

**Figure 14**

*Key screens of the Lifestyle streak day feature of F&F App*

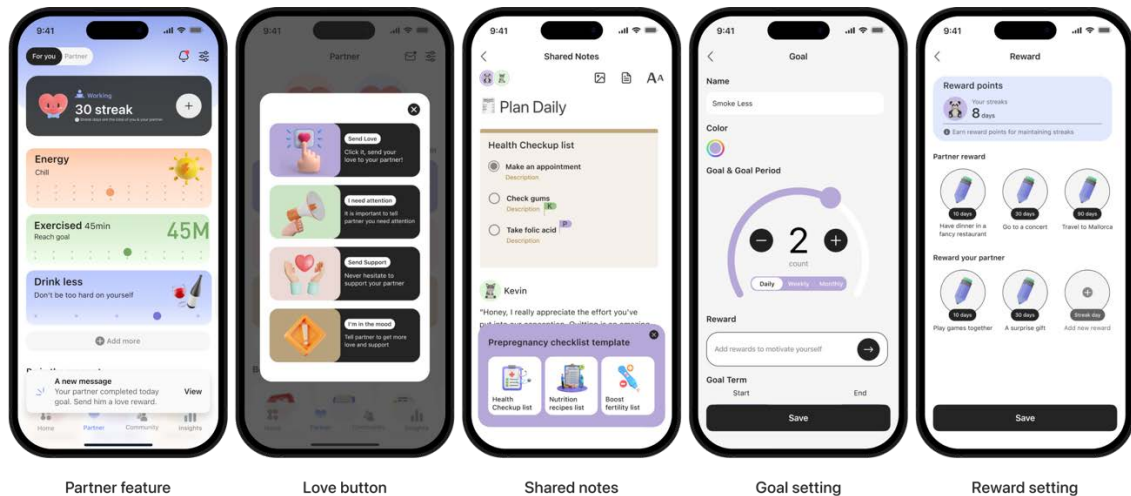


## Partner feature

The second key feature of the F&F App is the partner feature (Fig. 25). Features include logging symptoms and emotions, and allowing users to send signals that they need care and attention by clicking on "Love buttons". In addition, the Shared Notes feature provides checklist templates for conceiving and reproductive health. This allows partners to plan and make decisions together quickly and clearly. In the Partner feature, F&F encourages users to set goals aimed at improving fertility. Users can view rewards set by their partner and add rewards to their partner's goals. F&F app has designed this feature to promote engagement and support between users and their partners, providing instant fulfilment and thus increasing engagement and motivation.

**Figure 15**

Key screens of the user interacting with the partner during the Partner feature.

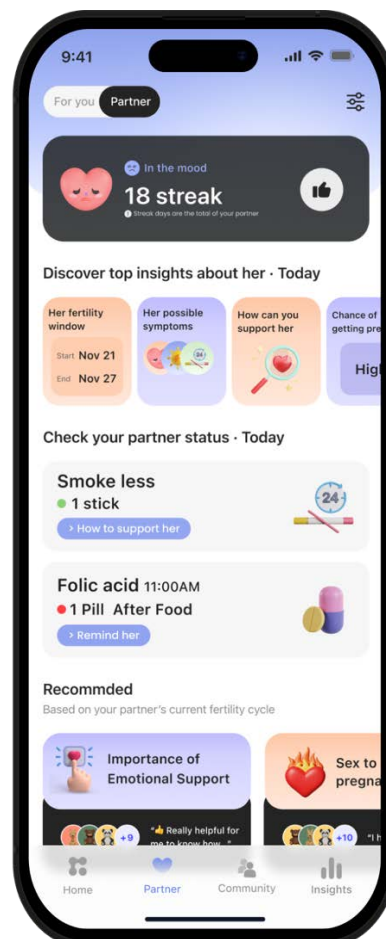




In addition, in the Partner Feature, users can view their partner's status and goals by clicking on their avatar (Fig. 26). The core concept of the F&F app is to create a gender-equitable environment for participation in the process of conceiving and reproductive health. Thus, with this feature, when a male user views his wife's status, he will be able to gain insight into her physical and psychological state. The app also aims to guide the male user by providing the necessary information and tools to help them be able to support and meet their partner's needs more effectively.

**Figure 16**

*A Screenshot showing a man's user view of his wife's status*

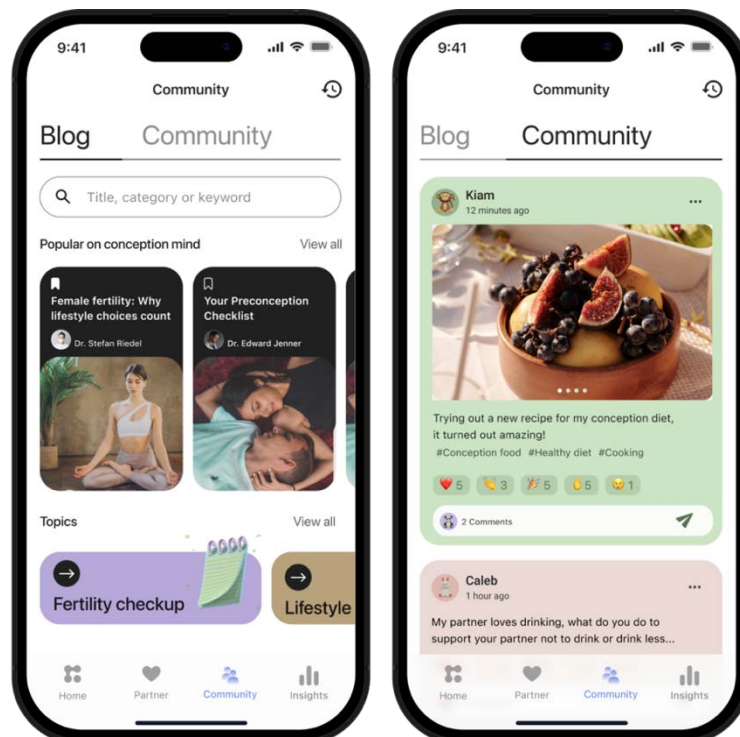


## Community feature

The F&F app aims to create an egalitarian, positive online reproductive health community (Fig. 27). The community offers two modes of interaction: the blog mode and the online community mode. The blog mode provides professional information and tools, such as infertility users can find professional medical articles and advice. The online community allows users to share and exchange information on fertility-related topics or experiences. In order to create a positive community atmosphere, F&F has introduced more positive reactions such as likes, support, well wishes and congratulations. Community content is also customized based on user's personal data and reactions to other posts to better meet their needs.

**Figure 17**

*Screenshots showing Blog mode and Community mode in the Community feature*

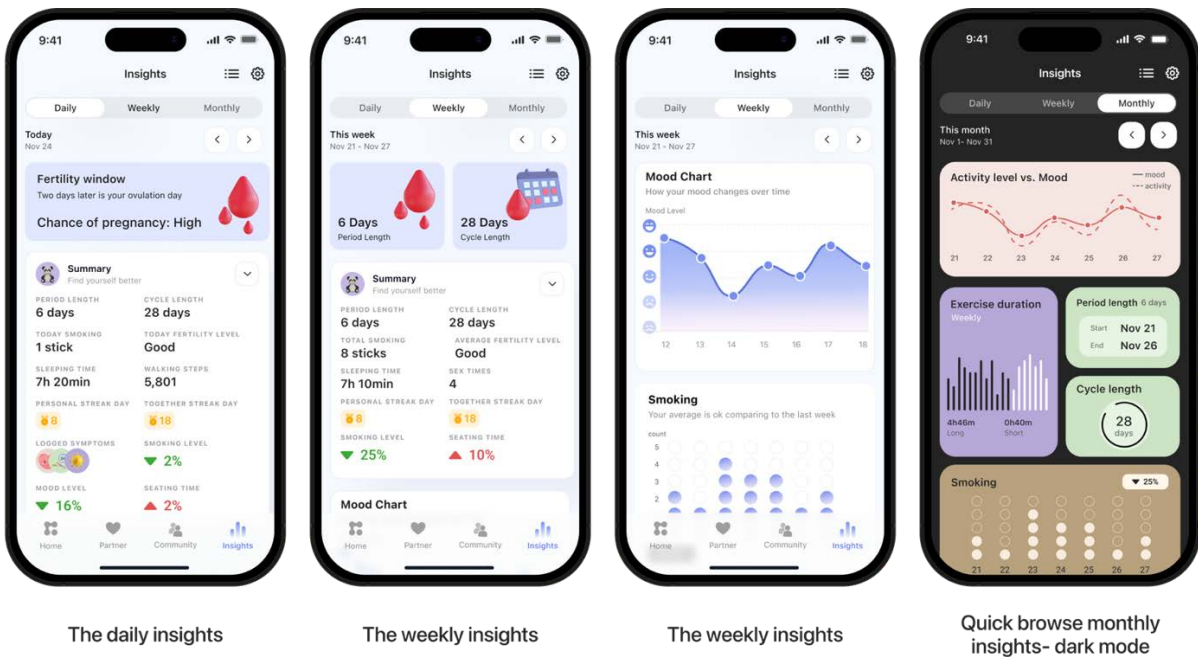


## Insights feature

The Insights feature visualizes daily, weekly, and monthly personal data to enable users to take better control of their bodies (Fig. 28). This feature is private and does not require sharing of data with partners. Besides the visualization of data trends, summary and comparative analyses are also added to motivate users to improve their behavior. The quick view mode allows easy access to key information and simplifies complex data for a stress-free experience, especially on smaller mobile screens. In addition, it allows users to customize the data they need for a better user experience, considering that data can cause psychological issues such as stress and frustration.

**Figure 18**

*Screenshots showing daily, weekly and monthly personal data visualisation and support the quick-browse dark mode in the insights feature*



## Conclusion

This thesis emphasizes the critical role of partner co-engagement and decision-making in enhancing women's conception experience. Empowering women to have a more equitable conceiving experience and enhanced fertility by integrating emotional support, personalized fertility health information, and emotional visualization design. This study identifies issues of gender inequality and poor user experience in existing fertility awareness apps, highlighting the need for improvement. The proposed solution involves a partner feature in the F&F app, offering tools that provide both emotional and fertility support.

Fertility tracker apps are one of the most popular areas of the digital health tracking industry. Due to sociocultural and norms leading to the fact that the main users of fertility apps in the digital marketplace are women, very few studies have been conducted to explore the impact of male factors on fertility outcomes. Some digital products have supported male users to view their fertility cycles through the app. Nonetheless, men are still marginalized with regard to fertility health. To address this situation, this thesis proposes to enhance the inclusivity and emotional experience of fertility awareness apps through the engagement of male users, which is key to this thesis. Based on this principle, the product supports users in tracking their fertility cycles to collaborate in planning for conceiving. It also works to improve fertility health through lifestyle modifications and personalized advice. In terms of improving the emotional experience, the importance of the relationship between emotion and design is emphasized to create a more engaging, supportive, and satisfying user experience by addressing the emotional aspects of user interaction. Allowing partners to enjoy the process of conceiving and strengthening emotional bonds.

This thesis contributes to a wider discussion on gender equality in fertility, advocating in favour of more equitable and emotional user experience in the field of digital fertility awareness app.

## **Appendices**

## **Appendix: Primary Research User Interview**

1. How long have you been planning to get pregnant?
2. Have you ever used the fertility tracker app when conceiving, what's it called?
3. Are you satisfied with the current fertility app?
4. Have you had any challenges in conceiving?
5. Would you and your partner focus on enhancing fertility? What efforts are made?
6. Do you or your partner need to adjust the lifestyle?
7. How does it feel to adjust the lifestyle?
8. How much do you know about your and your partner's fertility health?
9. What information and help do you want during the conceiving?
10. What makes you feel stressed or uncomfortable during conception?
11. Are you satisfied with your partner's behavior when you conceive?
12. Do you think partner support is important?
13. How does your partner help you in general when you are stressed or in trouble?
14. Do you chat and share with your partner on the app?
15. Do you feel the interactions on the app are having a positive impact? Or prefer face-to-face?
16. Would you be willing to try the Fertility Awareness app if your partner would be involved with it?

## **Appendix: Primary Research User Survey**



The survey was completed anonymously by 8 individuals from a diverse range of age groups, backgrounds, and professions. The questions were as follows:

1. Please check your gender.

- Man
- Woman

2. How long have you been planning to get pregnant?

3. What fertility apps you have used during your conception journey?

4. What are the helpful features in fertility app?

- Check next month's conception time
- Log symptoms
- Knowledge of conception preparation
- Log lifestyle behaviors
- Explore other users' posts
- Other

4-1. In the above question, if you checked 'Other', what is it?

5. What information and help do you want during the conceiving?

- Nutrition and diet
- Medication and Supplement Choices
- Enhance fertility health
- Fertility Tests
- Selection of medical regions, institutions
- Infertility treatment

6. If you use the Fertility Awareness app and your partner uses it with you, does this help you conceive?

- I think it will help a lot
- I think it will be of some help
- I don't think it will help much

7. Has your partner supported and helped you in conceiving?

- Yes
- No

8. Do you think partner support is important?

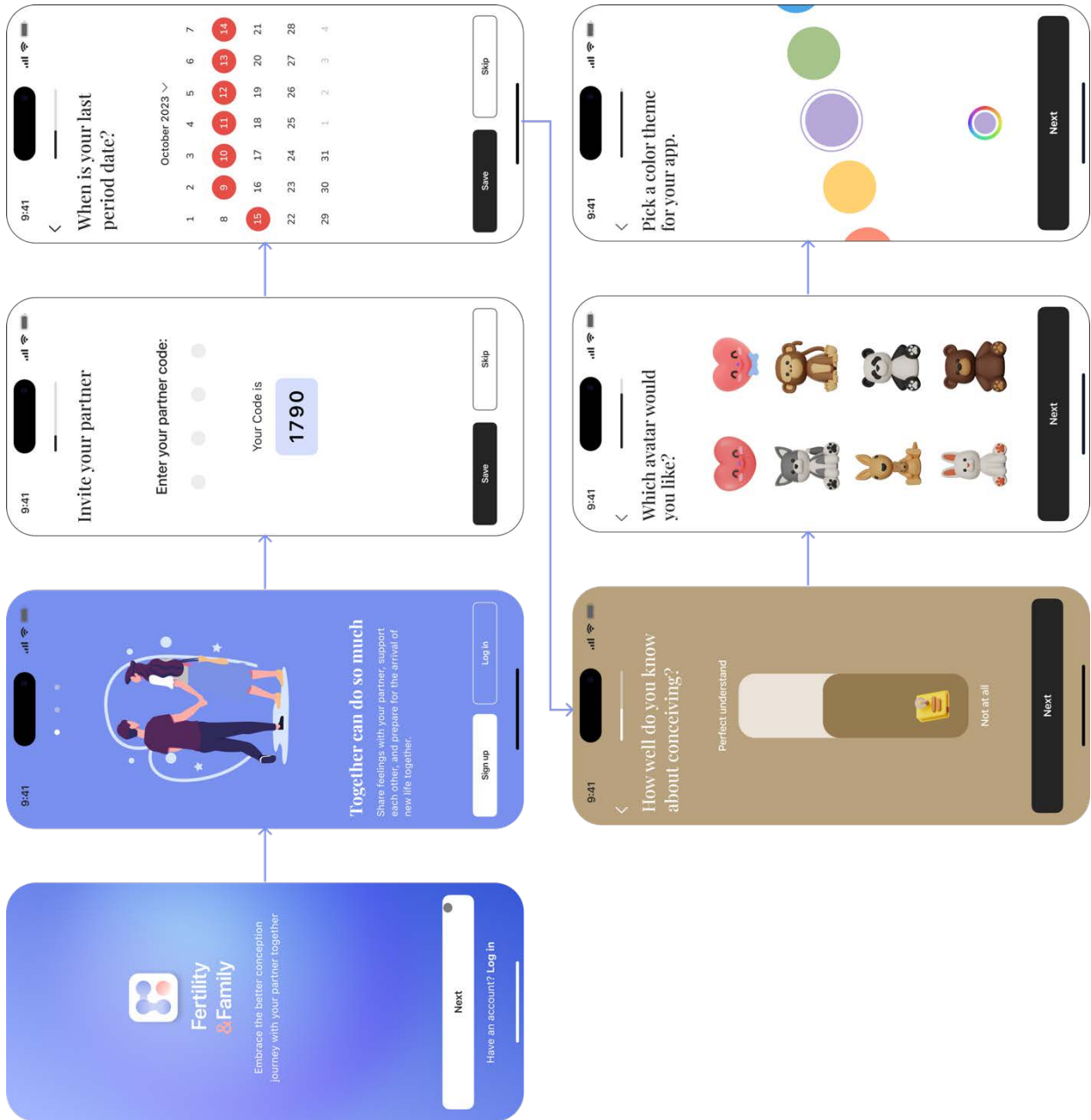
- Yes
- No

9. What support do you want from your partner?

## **Appendix: Fertility & Family app UX Flow: User Onboarding**

Figure 19

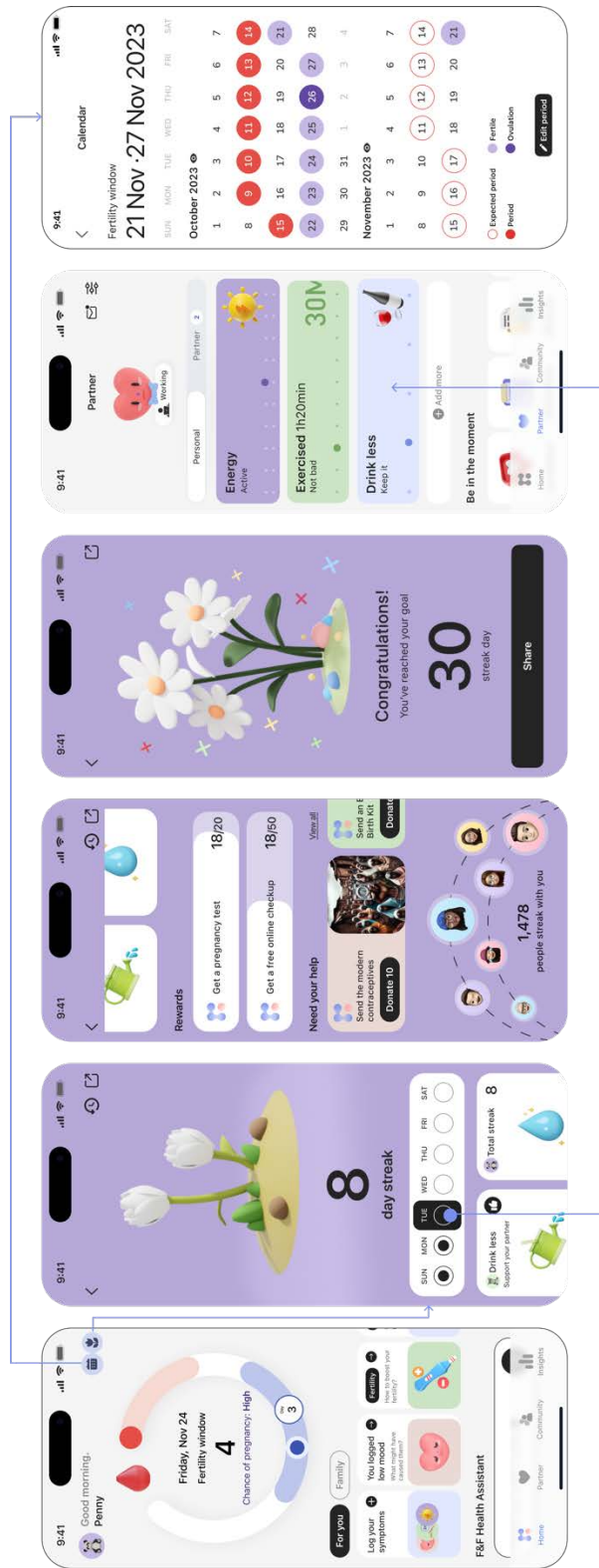
Fertility & Family app UX Flow: User Onboarding



**Appendix:** Fertility & Family app UX Flow: Fertility Tracker feature,  
Lifestyle Streak Day feature and calendar feature

Figure 20

Fertility & Family app UX Flow: Fertility Tracker feature, Lifestyle Streak Day feature and calendar feature



**Appendix: Fertility & Family app UX Flow: Partner feature**

Figure 21

Fertility & Family app UX Flow: Partner feature

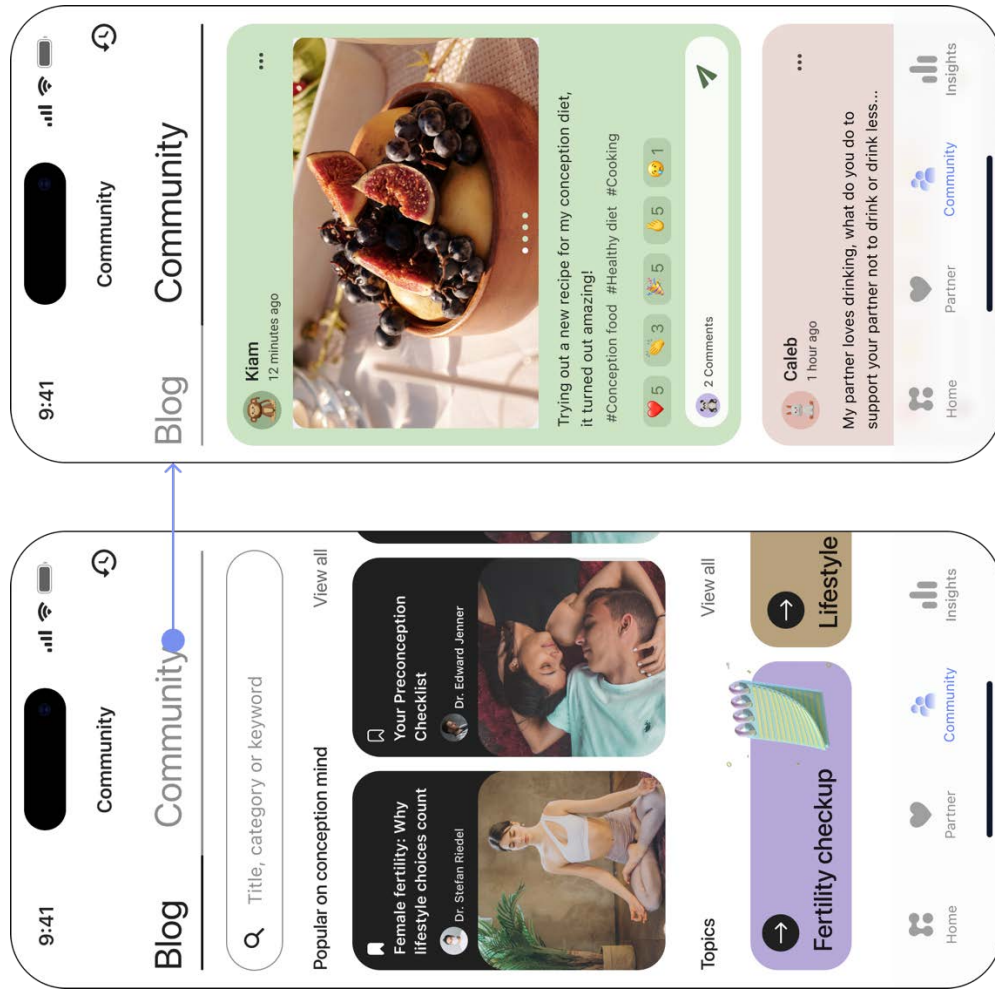




**Appendix: Fertility & Family app UX Flow: Community Feature**

Figure 22

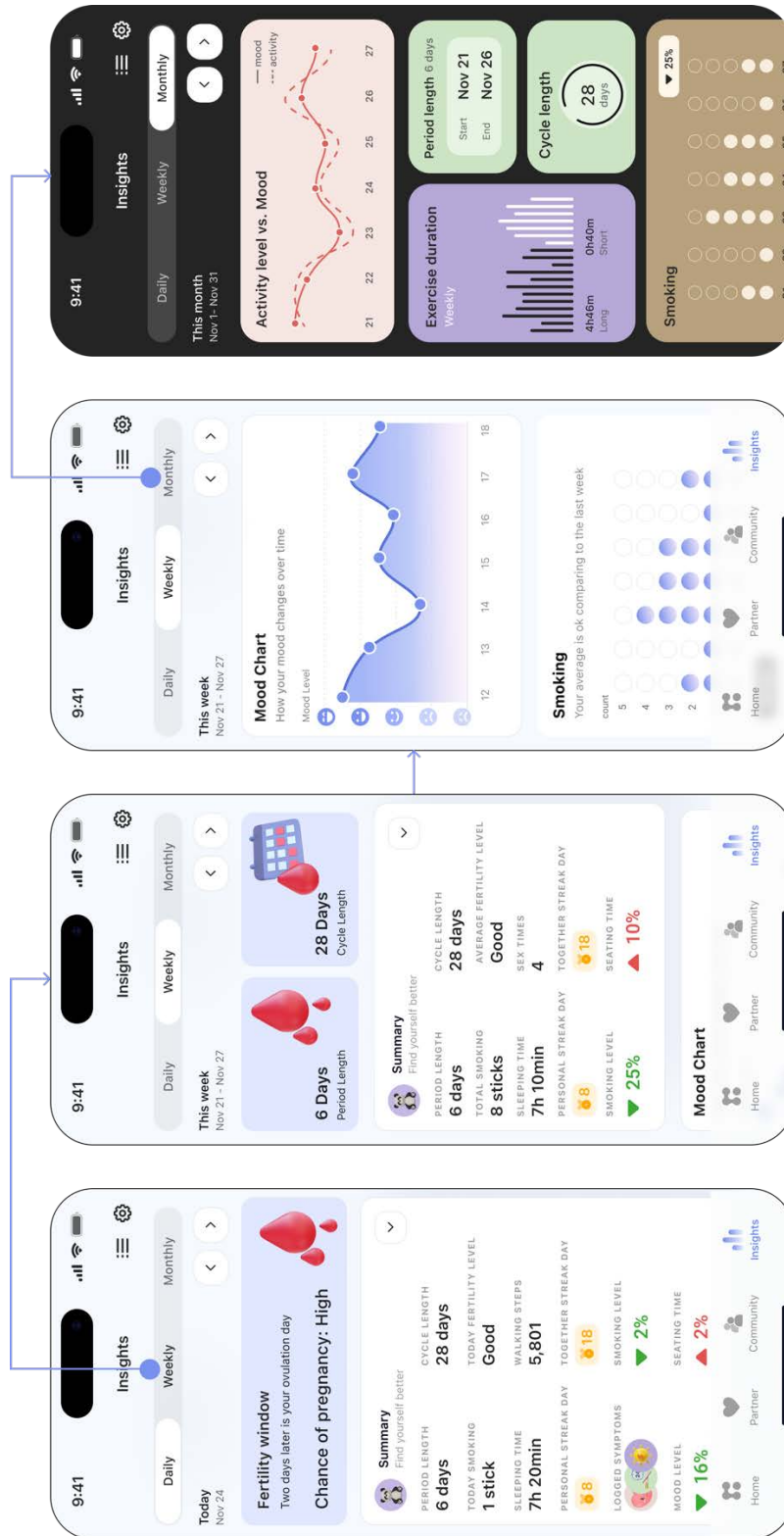
Fertility & Family app UX Flow: Community Feature



**Appendix: Fertility & Family app UX Flow: Insights Feature**

Figure 23

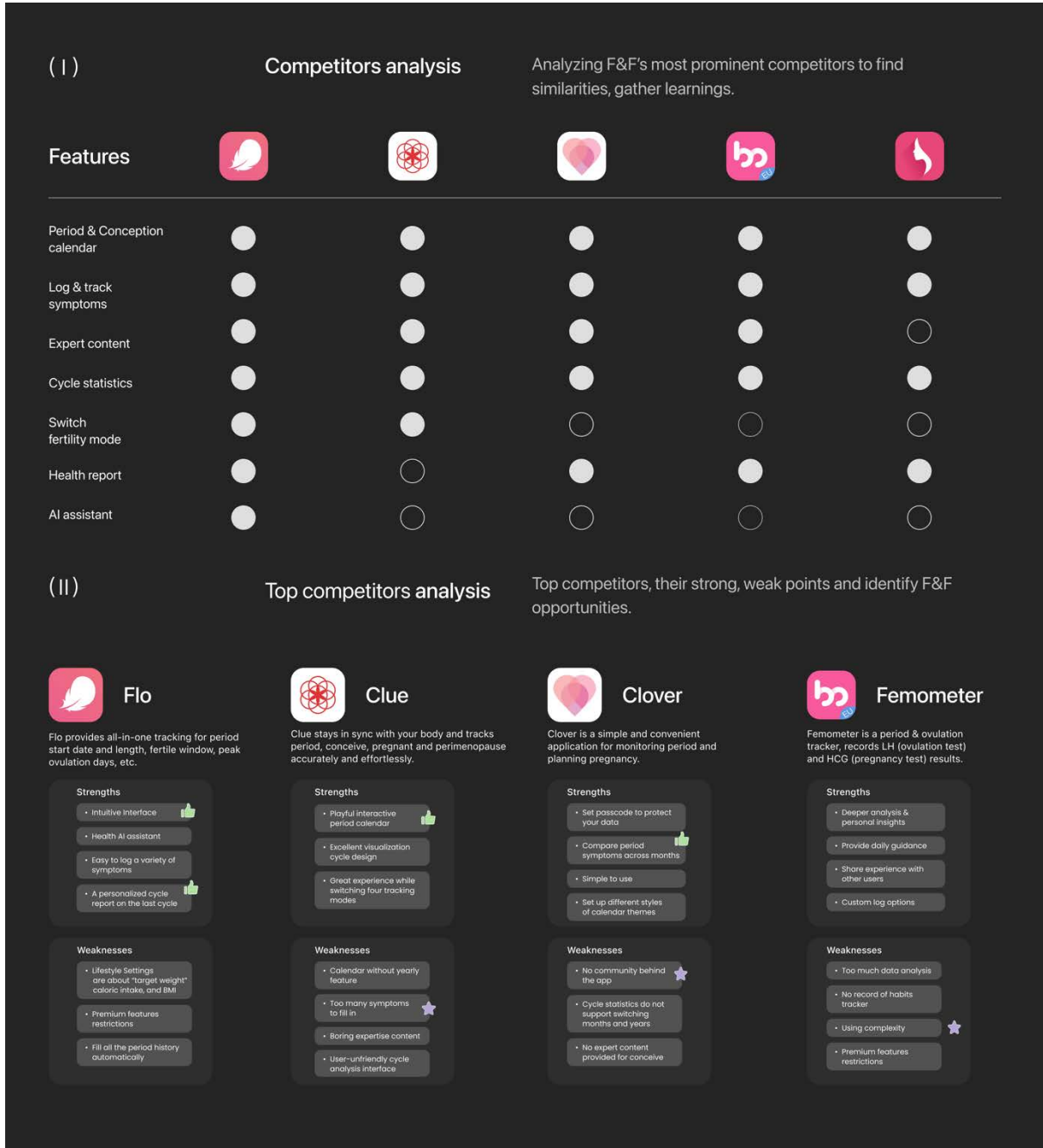
Fertility & Family app UX Flow: Insights Feature



**Appendix: Fertility & Family app UX Flow: Competitors Analysis**

**Figure 24**

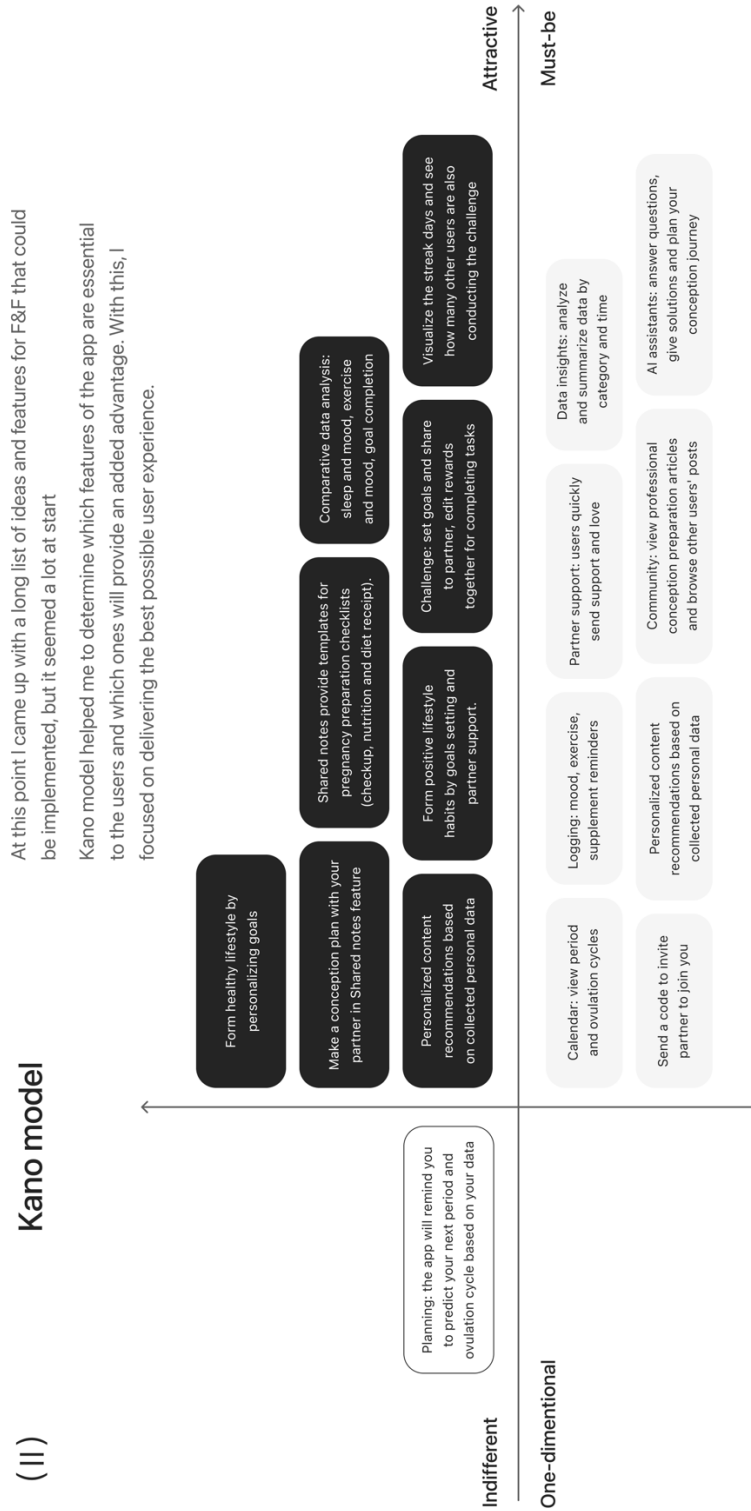
*Fertility & Family app UX Flow: Competitors analysis*



**Appendix: Fertility & Family app UX Flow: Kano model**

**Figure 25**

*Fertility & Family app UX Flow: Kano model*

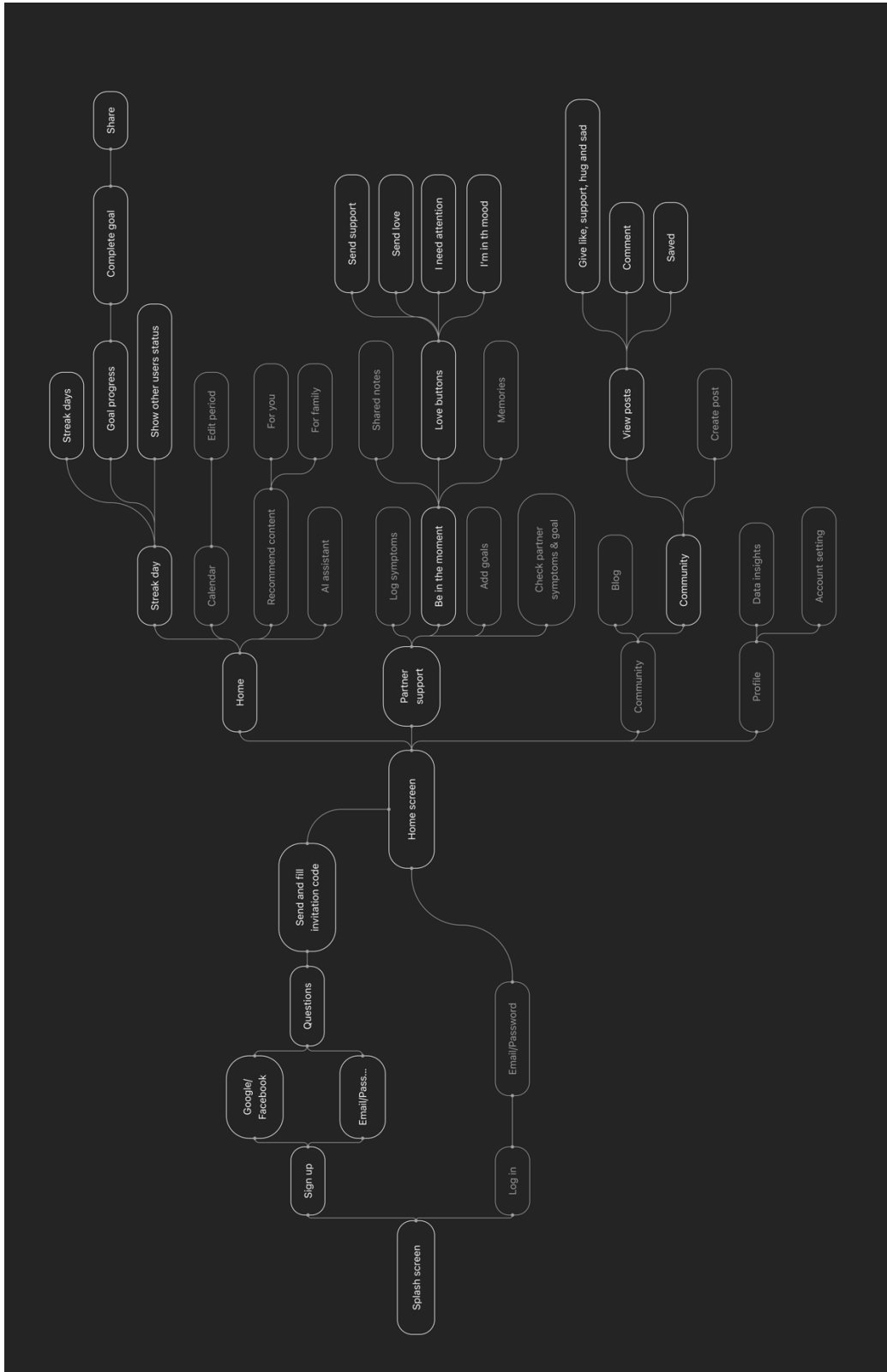




**Appendix: Fertility & Family app UX Flow: Information Architecture**

Figure 26

Fertility & Family app UX Flow: Information Architecture



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