

# What are men's user requirements towards digital health interventions whilst preparing for conception?

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## ABSTRACT

Preparing to have a baby can be daunting; both men and women often look online for information on how to prepare or what to expect. This PhD aims to explore user requirements of men who are attending fertility clinics towards digital health interventions to improve their health and wellbeing in preparation for conception. The literature indicates that men are less likely to engage in seeking health information for themselves and online sources are preferred. There is little evidence on how to design digital interventions specifically for men. Although applications (apps) for preconception care exist, it is not clear whether they fulfil their target users' requirements. A review of online forum comments identified the informational needs of men who are preparing for conception. These include wanting information, validation and reassurance for their emotions. I have a number of planned studies to investigate the user requirements of my target population in order to identify opportunities where digital interventions can support men attending fertility clinics to prepare for conception.

## Author Keywords

Digital Interventions; Design; Gender HCI; Preconception Care; Men; Health.

## ACM Classification Keywords

H.5.2 Information Interfaces and Presentation (e.g.,HCI):  
H.5.m Miscellaneous; J.3 Life and Medical Sciences. Health.

## BACKGROUND AND RELATED WORK

During the time period when couples are planning a pregnancy, their choices of information and support range from actively seeking advice from a qualified health professional, searching online or asking their friends and family [20]. As pregnancy planning is considered a private and personal affair, it is often not publicly shared and

confidential digital sources of information are favoured [16]. The use of smartphone apps to track or change behaviours is becoming increasingly popular; however, there is no research that clearly articulates the user journey or user needs in the context of preparing for pregnancy.

Pregnancy planning and preparation research, including intervention studies are often targeted to women [2], and men are repeatedly excluded [11,23]. Awareness of preconception health in men is generally low [13], however when asked whether it is important to improve health and well-being prior to pregnancy, overwhelmingly their response is yes [11]. There is a perceived gap between awareness and knowledge of and access to preconception care [19]. Men's health, specifically their sperm health, is particularly important prior to conception [10, 12].

This multidisciplinary digital health PhD is influenced by human computer interaction approaches and techniques, whilst the context is routed in population health sciences and reproductive health. During this PhD, I aim to identify opportunities for digital health interventions to support men who are attending fertility clinics and explore how to best design for this specific population. I will also test whether digital interventions are the best method of delivery in this context by identifying the user needs of the population of men who are anticipating conception.

## FINDINGS

### Literature review: Designing for men

I undertook a literature review to understand what was already known about designing digital interventions and technological support specifically for men. However, I found there was an absence of literature that detailed 1- how technology is specifically designed for optimal use by men and 2- how men use digital interventions to prepare for conception. Therefore, I focussed on the literature that concerned how men generally use digital technology and software in order to establish which features and design options are best suited to or preferred by this target group.

Overall I found the literature on gender and design focused on: 1- the importance of gender neutrality [5,7,9], 2- the importance of inclusion of women [1,17], and 3- comparing how men and women use technologies differently to one

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another [3-4,6,8,14-15,18,21,22], with men often presented as the “control group” [4].

Although it is well documented that men and women have distinctive preferences on design features and functions when using digital technology [4,15,18], I did not find literature exploring or explaining how to best design technology or digital interventions specifically for men.

### **Preconception care app search and review**

To identify existing digital interventions that support men during their preconception care period, I undertook a functionality review of smartphone apps to explore what information was presented and whether it was either tailored towards men alone or women and men. I then analysed reviews submitted by users to ascertain user satisfaction of existing apps.

Apps to support couples to prepare for conception do exist, yet they are not easy to find with the keywords of “pregnancy planning” or “preconception” if you require more than an ovulation tracker or fertility predictor. Most of the apps provide basic information but no support regarding how to achieve or maintain the advised behaviour change to prepare for conception. There are a small number of apps targeting men’s health in preparation for conception that predominantly focus on sperm health.

The analysis of user reviews identified that over 80% of the reviews were positive therefore users seem pleased with the existing applications. The reliability and quality of content as well as the absence of software bugs is vital to keep a user engaged and satisfied. Users demand working features, functionality and engaging information for optimal use. Users are most likely to be deterred from using an app if the content is unengaging or if the app processes are slow to load or do not work.

### **Behaviour Change apps for men**

The review of existing preconception care apps found very few apps that were specifically focused towards men and therefore provided limited data regarding how men use apps to prepare for conception and what features and design options are favoured during this period of recommended behaviour change. Therefore, I undertook a further review of existing apps, focussing on those that promoted health behaviour change specifically for men in order to explore whether I could ascertain recurrent design features targeted at men.

Search results were dominated by exercise and fitness apps, unless the search terms were specific to male-related health conditions, such as testicular or prostate cancer. Most apps had similar design features, including few, mostly dark colours, and simple navigation and layout of content.

### **Literature review: Men’s health information seeking behaviours**

In order to ensure the validity of my proposed project which aims to investigate the digital health needs of men when preparing for conception, I undertook a further literature

review to explore men’s health information seeking behaviours. This included a review of men’s preferred sources of information and methods of obtaining health related support as well as perceived barriers to accessing healthcare and health related information. This review explored the need or preference for digital methods for health information, support and the factors that encouraged or discouraged men to seek health information online.

Overall I found that men are less likely to seek health related information from any source for themselves in comparison to women. Factors that affect this are feelings of required privacy, assumed responsibility for others around them and the impact of their gendered identities of masculinity. Men are more likely to use digital sources of information for ease of access, privacy and confidentiality, if the information is perceived to be “reliable”.

### **Analysis of online forum comments**

To identify the user needs of men who use online forums whilst preparing for conception, we undertook an analysis of over 100 threads, which included over 600 posts.

We found that whilst men seek different kinds of information from online forums these can be categorised into 3 overall categories; for advice, for reassurance or to obtain validation. The main theme discussed on online forums was giving or receiving emotional support when experiencing difficulties when trying to conceive.

Next stages of research will include establishing the user needs of this specific population of men who use digital mediums for support whilst preparing for conception and whether existing digital interventions fulfil these needs or whether novel digital interventions are required.

### **RESEARCH PLANS AND METHODS**

Firstly, I aim to identify what digital support is required by my target users. I propose to do this through undertaking one to one interviews with men attending fertility clinics, where men preparing or considering conception discuss their thoughts, opinions and feelings. Next, I will explore how to best design for this target population through evaluating the use of an existing app and exploring user’s design preferences.

Interviews with men: I will explore the views, opinions and needs of my target users directly as well as explore what design features and functionality of digital interventions are preferred and what factors affect men’s use of a digital health intervention. This can also identify needs that are not currently being met as well as opportunities that can be satisfied through the use of digital health interventions.

Understand which factors influence sperm health: In order to provide support to men in their preconception period, there is a need to understand what behaviour changes would be beneficial for their health and well-being in preparation for conception. One vital aspect is men’s sperm quality; therefore, I will undertake a systematic review of the existing

evidence on the modifiable factors that affect sperm health to inform a component of the content of a digital intervention.

Evaluation of existing interventions: In order to further assess whether a digital health intervention would fulfil users' needs, I will evaluate the use of an existing digital health application, Trak: Sperm Health. This was the only app found in my review of existing preconception care apps that was aimed specifically at men and had behaviour change tracking features. This evaluation will help me to investigate whether users are satisfied with using digital health interventions, whether the existing app fulfils their needs and expectations and identify any gaps not fulfilled by the existing intervention. This will be undertaken as a diary study with follow up interviews. I will observe how users respond to the existing app, what features work well and what may not be as agreeable to the users. This will enable me to evaluate how users feel when they use the existing app, or whether they use it at all. The aim is to identify what can be improved, if anything, in the existing app and whether a new app or design modifications are desired by the target users.

Development of a prototype digital app: If the above studies indicate the need for a new digital intervention, participatory design methods will be used to design, develop and test a prototype digital app to support men attending fertility clinics to prepare for conception.

### **EXPECTED CONTRIBUTIONS**

This project primarily aims to make an empirical contribution to knowledge by understanding and presenting the user needs and requirements of men, who are attending fertility clinics, towards digital interventions. This project will also identify opportunities for digital health interventions to support this target population when preparing for conception.

I aim to develop a prototype of a digital health intervention to support men whilst preparing for conception, who are repeatedly excluded from preconception care research.

Furthermore, I will add to the existing literature base by identifying how to design for and the design preferences of men in this specific time in their life-cycle of preparing for conception.

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