

# Developing a fertility mHealth app: What features do patients want?

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## INTRODUCTION

Mobile Health (mHealth) applications (apps) may be a novel way to meet participants' needs for information and support. mHealth apps are easily accessible, interactive, have the potential to provide personalized care, and promote patient engagement with health interventions.

Prior research indicates that patient characteristics, such as gender, immigration status, and psychological distress can impact their experience of infertility, and consequently the types of information and resources they may want. Accordingly, to aid in the development of a patient-centered fertility app, this study examines app use and feature preferences amongst a diverse group of fertility patients.

## RESEARCH QUESTIONS

1. Do participants want to receive fertility information via an mHealth app?
2. What app features do participants endorse?
3. Are participant characteristics (gender, immigration status, stress and depressive symptomatology) associated with app feature endorsements?

## METHODS

We conducted a needs assessment survey of 567 individuals undergoing fertility treatment from clinics in Toronto and Montreal.

**Participant characteristics:** We examined gender, immigration status, perceived stress scores, depressive symptomatology, use of fertility apps, and attitudes towards them.

### Measures

- Perceived Stress Scale-4 (PSS-4) was used to capture stress. Scores range from 0-16, with higher scores indicating greater perceived stress.
- Patient Health Questionnaire -2 (PHQ-2) assessed depressive symptomatology. Scores range from 0-6, with a score of 3 or higher indicating a positive screen for depression.

**App Features:** were conceptually grouped into 6 categories: credibility, clarity, medical and psychosocial information, legal information, external resources, and technical features.

**Statistic analysis:** Bivariate analysis using chi-squared tests and Pearson's correlations examined associations between patient characteristics and app feature preferences.

Table 1: Summary statistics of our participant sample

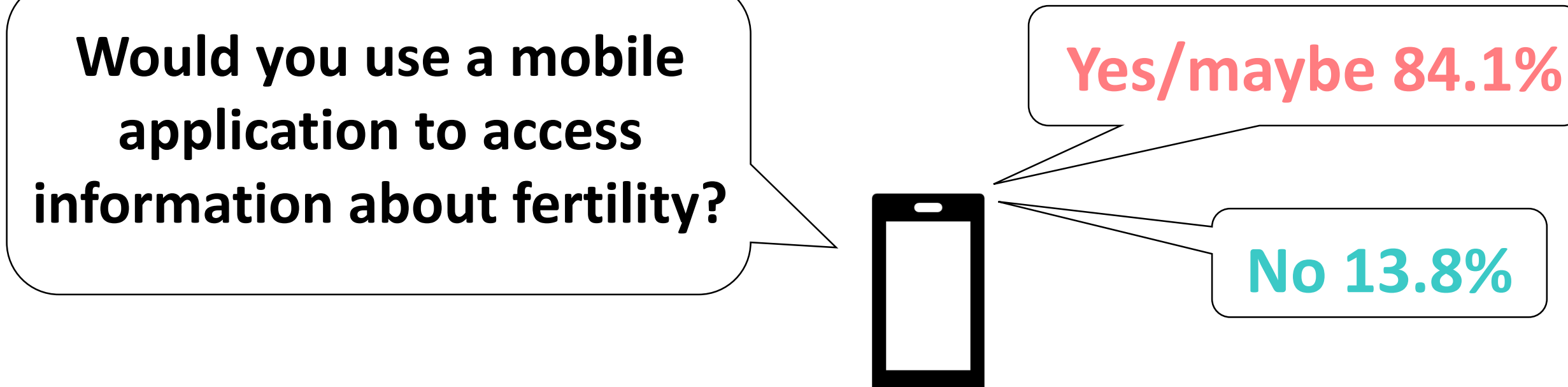
Covariate	Frequency	Percentage	Missing %
Sex			--
Male	289	43.9%	
Female	370	56.1%	
Immigration Status			2.65
Yes	264	46.6%	
No	388	50.8%	
Covariate	Mean	Range	SD
PSS-4 score	5.81	0-15	2.972
PHQ-2 score	1.27	0-6	1.401

### Selected References

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## RESULTS

Most participants (N= 442, 78.10%) did not report using a fertility app, but the majority of our sample (N= 476, 84.10%) responded "yes" or "maybe" when asked if they would be interested in using one.



The following graph presents the results of participants' app feature preferences, reported as the percentage of individuals who "agreed" or "strongly agreed" for a feature's inclusion in an app. The five most popular features are numbered.

## WHICH APP FEATURES DID PARTICIPANTS ENDORSE?

Percentage of respondents who agreed that feature should be included in a fertility app

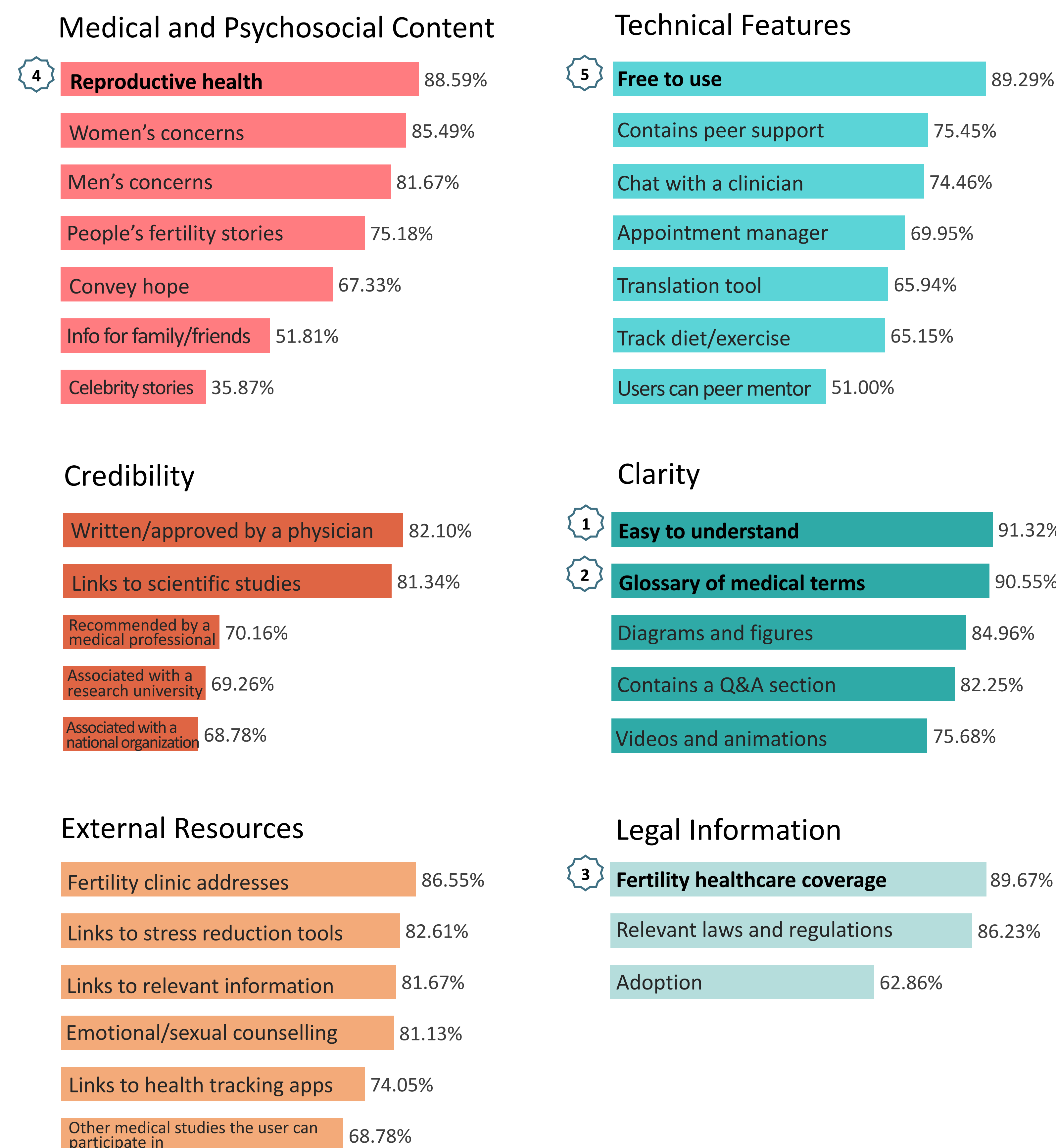


Table 2: Associations between gender and app feature preferences

	Women (percentage, N)	Men (percentage, N)
<b>Medical/psychosocial</b>		
Women's concerns	90% (275)***	80% (196)
People's fertility stories	80% (246)**	69% (169)
Convey hope	71% (218)**	62% (153)
<b>External resources</b>		
Stress reduction tools	86% (267)***	77% (189)
Emotional/sexual counselling	86% (261)**	76% (186)
<b>Technical Features</b>		
Chat with a HCP	79% (241)**	69% (170)
Peer support	82% (248)***	68% (167)

Note: \* = p ≤ 0.05, \*\* = p ≤ 0.01, \*\*\* = p ≤ 0.001

**Gender Differences:** Chi-squared tests indicated that compared to men, women were more likely to endorse features relating to medical and psychosocial content, such as information addressing women's concerns (X<sup>2</sup>(1)=10.68\*\*\*), people's fertility stories (X<sup>2</sup>(1)=9.99\*\*), and an app that conveyed hope (X<sup>2</sup>(1)=5.33\*\*). Women were also more likely to endorse the provision of certain external resources, such as links to stress reduction tools (X<sup>2</sup>(1)=10.33\*\*\*) and emotional/sexual counselling (X<sup>2</sup>(1)=8.83\*\*).

**Perceived Stress:** Increased stress was correlated with endorsing links to emotional and sexual counselling resources (Pearson's Rho = 0.13\*\*) and peer support (Pearson's Rho = 0.088\*).

**Technical Features:** Several participant groups endorsed the provision of technical features. A "chat with a healthcare provider" tool was endorsed by greater percentage of women (X<sup>2</sup>(1)=6.68\*\*) compared to men, and immigrants compared to non-immigrants (78% vs. 71%, X<sup>2</sup>(1)=4.05\*\*). A peer support function was endorsed by more women (X<sup>2</sup>(1)=13.76\*\*\*) and participants below the PHQ-2 cut-off (74% vs 85%, X<sup>2</sup>(1)=4.22\*).

## DISCUSSION

Regarding individual app features, **patients prioritize items that improve the app's accessibility:** the app should be free of charge, written for a general audience, and contain a glossary of medical terms.

Although more women than men endorsed features related to medical and psychosocial content, the majority of men also highly endorsed this category, indicating that both genders desired this information. Those with greater levels of stress wanted links to emotional and sexual counselling resources. Participants may not be receiving this information elsewhere, and an mHealth app could fill this knowledge gap and increase patient use of such services.

**Several respondent groups endorsed technical features that facilitate communication,** including a peer support function, indicating that participants want to connect with others and share their experiences, and a "chat with your healthcare provider" tool, suggesting that respondents want quicker access to fertility health professionals.

**Ultimately, our findings indicate that patients want to receive easy to understand, comprehensive fertility information via an mHealth app.**