An mHealth App Designed for Fertility Patients: from Conception to Pilot Testing

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INTRODUCTION

Infertility is a distressing chronic condition affecting one in six couples. Treatment is emotionally, physically and financially stressful.

- Patients seek:
  - Information on diagnoses and treatment options, but medical information found online is often inaccurate or hard to understand
  - Connection with others who have lived through infertility
- Online forums that might provide social support are seldom monitored and may disseminate potentially misleading information or insensitive comments

Qualitative research shows men and women experience infertility and its treatment differently:

- Women undergo more medical interventions and report greater infertility related distress; they tend to be proactive in their care and information seeking
- Men often feel left out of the treatment process. They worry about the well-being of their partner and often suffer in silence.
- There is a lack of resources geared specifically to men

OBJECTIVE

Here we describe the development of an mhealth app, infotility™ designed to provide:

- Evidence-based reproductive health information
- A monitored message board to provide social support

EVALUATION

The intervention was pilot tested with male and female fertility patients

- Pre – post study
- Qualitative Interview sub-study

THE PROCESS OF APP DEVELOPMENT

Complex Health Intervention Development Process

Current Information Evaluation
85 websites evaluated
- French & English
- Readability – Suitability – Quality
  - Readability difficult 16 grade
  - Moderately suitable
- Quality ratings found in national associations such as the Canadian Fertility and Andrology Society

Peer Training
18 Peers
- English, French and bilingual
- Previous fertility patients
- Volunteers
- Available (ranging shifts 0-7 days/week)
- Received training and monitoring
- Peers were part of a separate study that examined their experience

Literature Review and Summaries
Exhaustive literature review:
- Over 1000 scientific articles read for content creation
- Synthesis and expert review of summaries
- Edited for grade 8 reading level

Stakeholder engagement: Needs Assessment Surveys
Fertility Clinics
- 245 male & 304 female fertility patients
- 137 fertility care providers: physicians, nurses, mental and administrative staff
- Questions asked about desired features and content on app

Technology Partner
- Design partner: branding, logo, look and feel
- UI / UX, responsive design
- Personalization with gender specific portals
- Integration to study surveys for one site log on
- Content Management System

Features
- Avatars for user names, whale mascot
- Bookmarks, thumbs up/thumbs down rating, help section, contact us, glossary of terms
- Flip side: women and men had content geared specifically to them, but pages were animated to “flip” to see the opposite sex’s information

PILOT TEST: RESULTS

Patients were recruited in fertility clinics in Toronto and Montreal to try infotility for 8 weeks

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th>N</th>
<th>% or Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>184</td>
<td>35.22 (4.71)</td>
</tr>
<tr>
<td>Men</td>
<td>72</td>
<td>36.50 (5.11)</td>
</tr>
<tr>
<td>Immigrant Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-ethnic</td>
<td>405</td>
<td>72.4%</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>159</td>
<td>78.4%</td>
</tr>
<tr>
<td>Treatment Duration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than a year</td>
<td>128</td>
<td>52.8%</td>
</tr>
<tr>
<td>Cause of infertility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male factor</td>
<td>64</td>
<td>24.7%</td>
</tr>
<tr>
<td>Female factor</td>
<td>77</td>
<td>29.1%</td>
</tr>
<tr>
<td>Mixed factor</td>
<td>39</td>
<td>15.1%</td>
</tr>
<tr>
<td>Inter testing/Uknown/Other</td>
<td>75</td>
<td>30.1%</td>
</tr>
</tbody>
</table>

The most commonly viewed pages were tracked using Google Analytics

- Men and women were equally likely to access pages about lifestyle:
  - Exercise
  - Nutrition
  - Complementary and alternative medicinal treatments

Women
- Medical information
- Men
- Legal information

Most appreciated elements

- Peer support
- Clear and credible information
- Appealing design
- Helpful format

Suggested improvements

- More detailed information
- Interactive features
- Frequent updates of information

The “Connect” forum reduced stress and isolation and normalized the experience of infertility

- 39 different conversations
- 244 posts
- 14 private messages
- 40 participants

DISCUSSION

Testing revealed important goals of successful digital health care solutions were met:

- Those participants who accessed Connect rated it highly, stating it created a sense of community
- Content of the app was described as informative and educational in open ended survey questions and qualitative interviews with participants
- The app appealed to a wide range of patients including men and women of different ethnic backgrounds and mother tongues

“Connect” forum made me feel that I’m not the only one going through an infertility problem.”

“I liked the peer support very much, it helped me calm down and feel like I have someone I can vent to.”