Abstract

Look to the Future and SMILE: Feasibility of Interactive Voice Assistant Technology to Support Maternal Infant Health

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Abstract

Background: Both maternal and infant mortality rates serve as indicators of population health and are unacceptably high worldwide. Voice assistant (VA) technologies present a potential new modality to support maternal child health. We developed an interactive VA intervention app (SMILE) to deliver brief, maternal-infant education and management skills (eg, perinatal care, stress management, breast feeding, infant-care) using evidence-based content.

Objective: The objective was to understand the feasibility and usability of an interactive VA intervention to support maternal and infant health among a group of pregnant women.

Methods: We employed a mixed methods study design. Pregnant women were recruited via email and word of mouth. Participants completed a baseline demographic and technology-use survey and were asked to use the intervention over the course of two weeks. Postintervention, participants were invited to participate in an individual or group interview. Interviews were conducted to elicit feedback regarding thoughts and attitudes towards VA technology to support the health of mothers and infants. Descriptive analysis was used to summarize quantitative data (ie, survey responses, app logs) and thematic analysis was used for qualitative data (ie, transcriptions of voice recordings collected from SMILE, transcriptions of follow-up interviews).

Results: Out of 46 respondents, 19 participants were consented, completed baseline surveys and used SMILE. Approximately 63% (n=12) of participants participated in exit interviews. The sample was predominantly 25-34 years old (n=16, 84%), part of a two-parent household (n=19, 100%), white (n=15, 79%), and pregnant with their first child (n=12, 63%). Nine participants (47.4%) reported that they practice stress management, and favorable stress-management activities were mainly comprised of exercise activities, yoga, and outdoor activities without technology involvement. Over half of the participants reported using technology to support pregnancy self-management (n=10, 53%). However, participants preferred mobile apps for education and self-management support during pregnancy and relied on the Internet to access health-related information. More than half of participants reported using default VAs on their phone (n=11, 58%) and on smart speakers (n=10, 53%). Yet, VA technology was mainly reported as being used for basic tasks, such as setting a timer or reminder, checking the weather, turning on/off the lights, or playing music. Postintervention, participants verbalized that VA technology was a potential medium for receiving health information, pregnancy-related information, and could be a strategy to engage other family members in the process. Major concerns revolved around security, privacy, trust, and concerns regarding interacting via voice when in public.

Conclusions: Although this research is limited by the small and predominantly white sample size, this research represents one of the first studies to explore perceptions and attitudes towards VA to promote maternal-infant health. As VA technology increases in popularity, adoption and utility to support health and well-being among pregnant women is nascent. While VA technology offers some benefits (eg, reduce literacy barriers, hands-free), familiarity and trust of nonvoice digital health tools (eg, mobile apps, Web-based content) remain important in supporting maternal-child health. Digital health solutions that incorporate multiple platforms (eg, mobile apps, Internet, voice) warrant further exploration to optimize support for maternal child health.

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KEYWORDS

behavioral health; interactive voice response; mobile health; mothers; pregnancy; self care; self-management

Multimedia Appendix 1

Poster.
[PDF File (Adobe PDF File) 844 KB-Multimedia Appendix 1]

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