





A Review of Mobile Applications' Features for Pregnant Women's Self-care

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Abstract

Mobile applications have been proposed as a helpful tool to provide health-related information to people, and this is more important in pregnancy-related mobile applications. This review study aimed to investigate the features of Persian and English mobile apps for self-care in pregnancy.

This descriptive cross-sectional study was done on all Persian and English mobile applications related to pregnancy in 2022. A search was conducted on Iranian digital app market (Bazaar) and "Google Play", using the following keywords: "pregnancy", "pregnant women", "obstetrics", and their Persian translations. For each app, the extracted information included name, user satisfaction rate, and the features and provided information by mobile app.

The total number of retrieved applications was 416 apps. After removing the duplicates and applying the inclusion criteria, 63 applications were selected for features extraction. Reviewing the features and information provided by the applications showed that the most frequent categories of information included the following items: childbirth and pregnancy (including timing contractions, fetal movement, symptoms of pregnancy and predicting delivery time), restrictions and limitations (including behavioral limits, sexual restrictions, smoking and alcohol, cosmetics and pregnancy and drug use during pregnancy), and monitoring and control tools (BMI Calculator, managing weight gain during pregnancy, control of blood pressure).

Paying attention to pregnant women and meeting their information needs could lead to healthier generation. A wide range of mobile applications related to pregnancy are available with many capabilities. Considering pregnant women's need for information and using these apps in self-care, it seems essential to develop and design a series of high-quality apps matching pregnant women's needs.

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Extended Abstract

Background

Pregnancy and delivery is one of the most important experiences in women's lives. As pregnant women's lives change and they go through various physical, psychological, and social changes, their need for information and seeking behavior often increase. Mobile applications have emerged as a popular resource to provide information to pregnant women, with more apps available than for any other medical topic. According to studies, the most common reasons women used apps were as follows: monitoring fetal development, obtaining information on nutrition, and antenatal care. Also, they used apps for self-management of pregnancy complications to improve pregnancy outcomes. Due to the number of apps available for pregnant women, it is essential to know what apps are available, how to select among them, and what information and features women are seeking. The aim of this work was to extract the main features of existing mobile apps related to self-caring of pregnant women.

Methods

This study aimed to offer a set of features for mobile apps designed for pregnant women self-care. In March 2022, a keyword search for Android apps was conducted in Iranian digital app market (Bazaar) and "Google Play", using the keywords: "pregnancy", "pregnant women", "obstetrics", and their Persian translations. Apps were considered eligible for inclusion in this review if they (a) contained any pregnancy-specific content, (b) met the eligibility criteria on popularity, (c) were in English or Persian, and they (d) were applicable in Android system. To identify the most popular apps, those with an average user rating of ≥ 4 out of five based on at least 20 ratings were included. Data for each app identified in the initial search were extracted including app name and user satisfaction rate. App store descriptions were then further screened for eligibility. Included apps were downloaded by two researchers for data extraction. For each app, the extracted information included name, user satisfaction rate, and the features and information provided by mobile app. A table including data sets and information items was used for data extraction.

Information was categorized as Persian applications and English applications.

Results

The search strategy identified 416 apps (Google Play $n = 234$; Bazaar $n = 182$), of which 343 were excluded. The remaining 73 apps were further screened for eligibility based on ratings and installs resulting in 63 apps (20 Persian apps and 43 English apps).

The most common topics (82.42%) were "childbirth and pregnancy" (including timing contractions and fetal movement 22 apps, symptoms of pregnancy 23 apps, and predicting delivery time 16 apps), "restrictions and limitations" (53 apps) (including behavioral limits 25 apps, sexual restrictions 10 apps, smoking and alcohol 10 apps, cosmetics and pregnancy 6 apps, and drug use during pregnancy 2 apps), "monitoring and control tools" (68.28%) (BMI Calculator 10 apps, managing weight gain during pregnancy 31 apps, control of blood pressure 2 apps), and "nutritional education" (42 apps) (nutritional needs during pregnancy 28 apps, foods and beverages to avoid 5 apps, prenatal vitamin limits 4 apps, healthy recipes for pregnancy 5 apps). The least number of topics were "types of contraception" (1.5%), "vaccination in pregnancy" (3.17%), "sexually transmitted diseases (STDs)" (3.17%), and linking to a digital store (3.17%).

The most common topics in Persian mobile apps were "childbirth and pregnancy" (18 apps) (labor contractions and fetal movement 2 apps, symptoms of pregnancy 6 apps and predicting delivery time 10 apps), "nutritional needs during pregnancy" (15 apps), "gestational calculator" and "pregnancy week by week" (70% of apps), and "diseases and medical conditions and pregnancy" (65% of Persian apps). Persian mobile applications did not mention any information about "contraception and preventing pregnancy", "pregnancy centers serving women", and "prolonged pregnancy".

The most common topics in English mobile apps were "childbirth and pregnancy" (100%), "restrictions and limitations" (90.69% of apps), "monitoring and control tools" (79.09%), "gestational calculator" (65.11%), "nutritional needs during pregnancy" (62.7%), and "pregnancy week by week" (60.4%).

Conclusion

The use of mobile-based applications is a useful way to increase knowledge, promote the health of pregnant mothers, facilitate their access to medical information, and acquire the necessary skills. Mobile applications providing self-care for pregnant women are supposed to incorporate all the essential elements required for the health of the mother and fetus in an integrated way. The results of this review support suggestions made in a recent review of apps available in the Google Play or

Bazaar for prenatal health professionals, health researchers, and app developers to co-design pregnancy-related apps that have standard well-being quality and contain evidence-based information. There should be some regulation of health and medical apps available in Google Play or Bazaar to remove the large number of poor-quality apps currently available on the app markets and to help protect pregnant women from exposure to false or misleading advice.