

The Caretekmedical smartphone app to highlight risk factors in pregnancy - a usability study

Aglaia Gantzopoulou¹, Makrina Savvidou^{2,3}, Christos Iacovou², Philip J Steer³
¹Horizon Fellow, Chelsea and Westminster NHS Foundation Trust, ² Chelsea and Westminster NHS Foundation Trust, ³Imperial College London

Introduction

Pregnancy is an exciting and usually happy time for parents, but sometimes problems can develop. Some of these are preventable with special attention from caregivers in response to ‘risk factors’ suggesting that problems are more likely than average.

Unfortunately, many pregnant people are unaware of what these ‘risk factors’ are, and the extra care they deserve. Risk factors will usually be identified and acted upon by caregivers, but in a busy service they can be overlooked, resulting in inappropriate care.

A smart phone app has been developed with the aid of a grant from Innovate UK, which allows pregnant people to enter their medical, family, and obstetric history. The app identifies risk factors and displays them in an easily understandable summary for parents and caregivers, to prevent them being overlooked. In addition, information from national guidelines related to any risk factors detected is displayed.

An example of identified risk factors



Objective

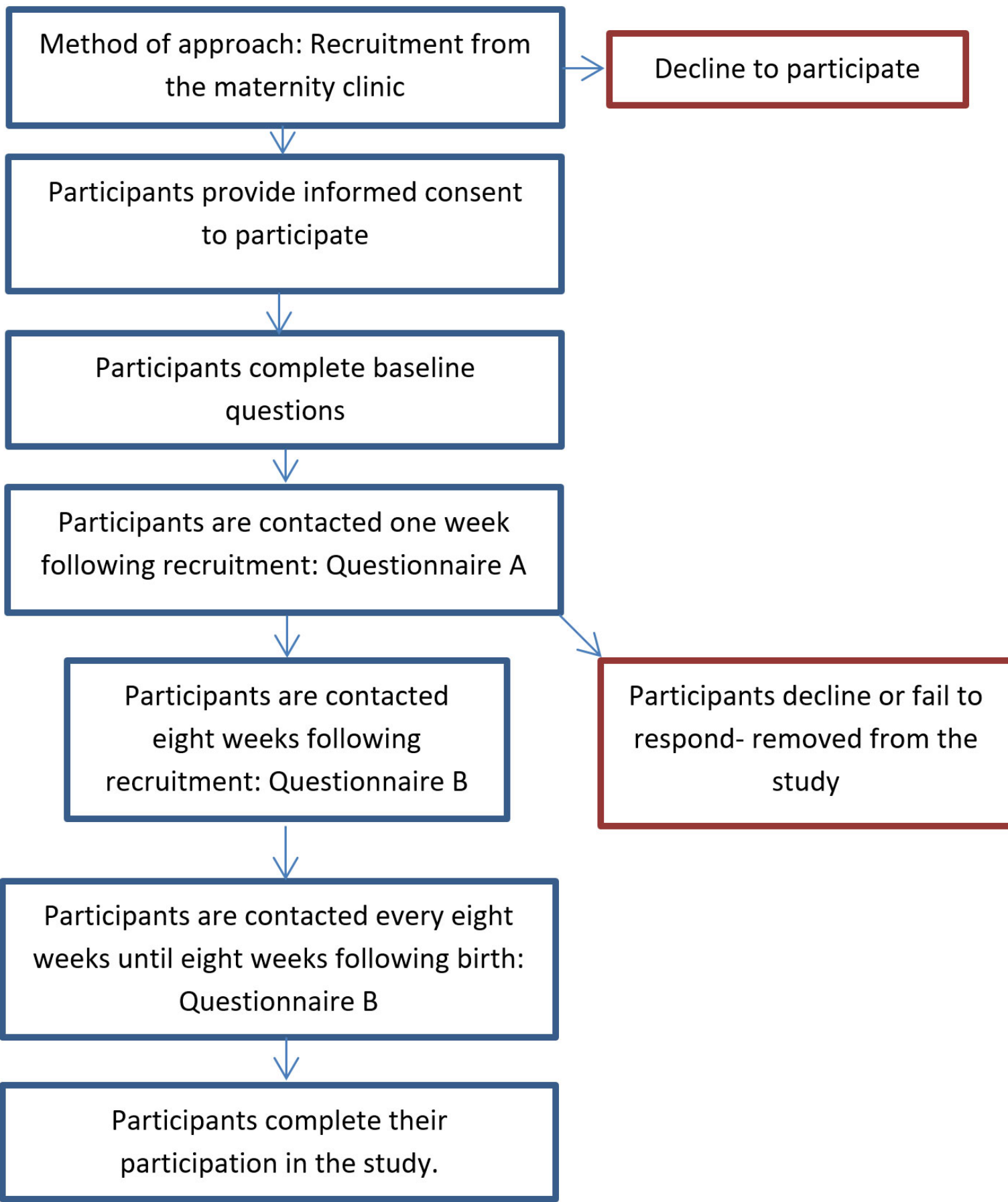
To assess the ease of use and usefulness of a smartphone app for pregnant people designed to identify personal pregnancy risk factors.

Design

Prospective study of a convenience sample of 120 pregnant people aged 18 to 50 years attending an immunisation clinic who could speak English, of whom 75 agreed to download the Caretek app and 38/75 (51%) actively participated.

Methods

Participants completed an initial questionnaire (A), about ease of downloading, accessing the app and entering their data, within the first four weeks from downloading the app. They were contacted by email after four weeks and asked to complete a second questionnaire (B1) about their experience with initial use of the app. After a further eight weeks, the users were contacted again and asked to complete a further questionnaire (B2) regarding their use of the app during checkup visits. This was repeated every eight weeks until the birth.



Results

The study ran from April 2024 to March 2025. Nine people (12%) were unable to download the app and ten (13.3%) subsequently withdrew from the study – five due to time constraints, one moved abroad, one declined to share her data, one had a ‘difficult pregnancy’, one had a termination of pregnancy for medical reasons, and one gave no reason.

Of the remaining 65 participants, 38 (58%) submitted questionnaire A. 24/38 (63%) found downloading very easy, 10 (26%) easy, 3 (8%) were neutral and one (3%) found it difficult. No participants found it very difficult. 34/38 (89%) completed the initial data entry successfully, and 24 (63%) said it was easy (n=12) or very easy (n=12). The modal time taken to fill in the data was 5 minutes IQR 5-10, minimum one minute and maximum 10. Once the data had been entered, the participants were able to view the summary screens. When asked if they found these helpful, 2 (5%) strongly agreed, 20 (53%) agreed, 13 (34%) were neutral and 3 (8%) disagreed.

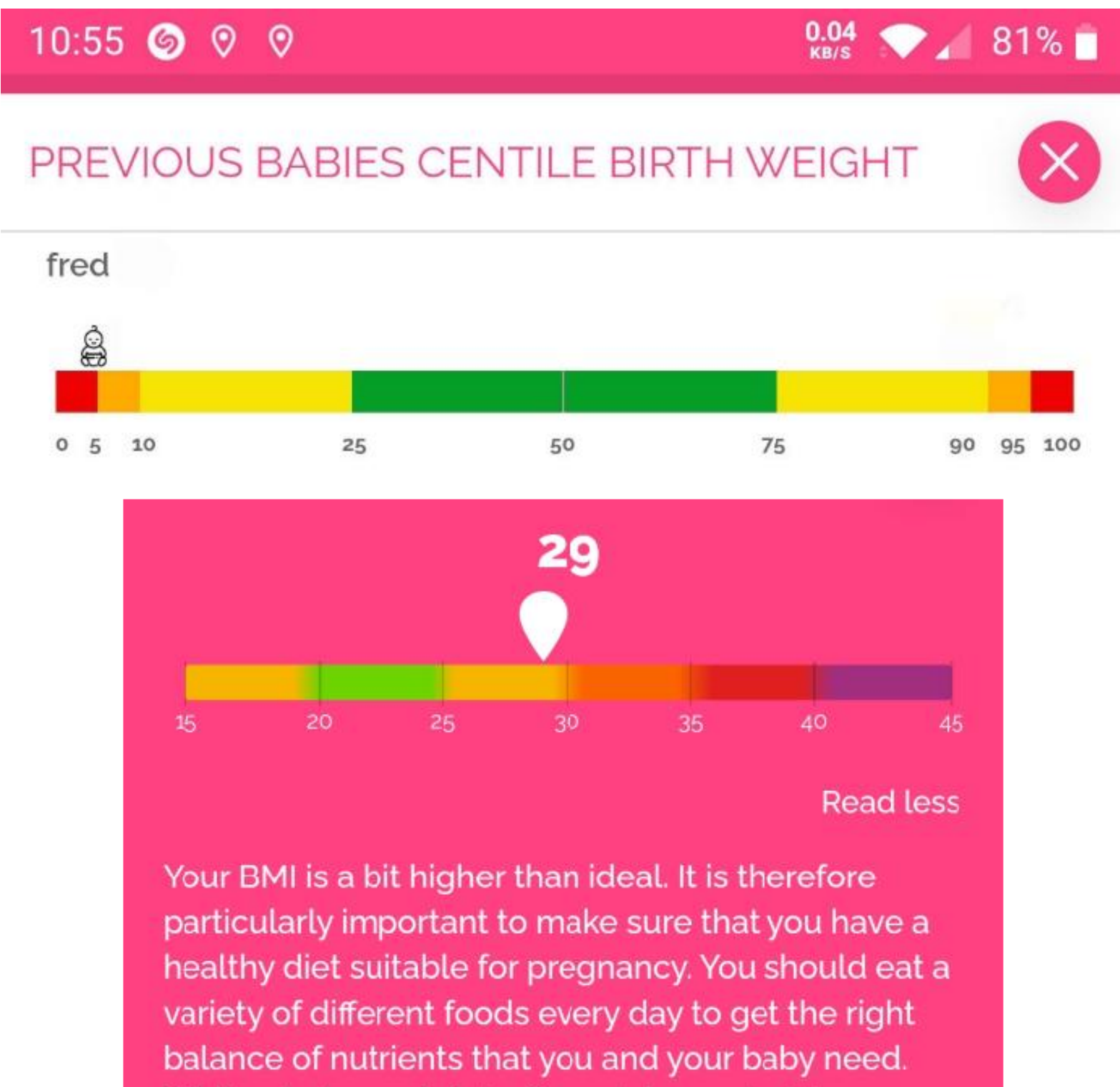
19/38 (50%) participants completed questionnaire B1 between four-eight weeks after downloading the app. When asked again if they found the summary screens helpful, 2 (11%) strongly agreed, 6 (32%) agreed, 8 (42%) were neutral and 3 (16%) disagreed. None had used the summary screens in their interactions with their caregivers. Only 9/19 (47%) had filled in any of the regular visit screens. 18/19 (95%) found the reminders to attend the regular visit either ‘neutral’ (10) or ‘unhelpful’ (8). Only 5 (13.1%) participants responded to questionnaire B2 and one to B3.

Discussion and conclusions

A strength of our study was the detailed longitudinal analysis of the role a personal pregnancy risk assessment might play in enhancing the quality of antenatal care. It demonstrated that the technical implementation of the questions was satisfactory and most women could use the app successfully. The reluctance of the participants to use the feedback generated by the app in their discussions with their caregivers may reflect a ‘power imbalance’ between recipients and givers of care, with recipients being reluctant to question or challenge the caregivers.

However, our study demonstrates that It is feasible to implement a pregnancy risk assessment program for smartphones which can be downloaded by the majority of pregnant people, most of whom found it user-friendly and helpful in the assessment of pregnancy-related risks.

Find further information at <https://caretekmedical.net>



Examples of risk screens