

Mobile Phone-Based Self-Management Tools for Type 2 Diabetes: The Few Touch Application

Eirik Årsand, Ph.D.,¹ Naoe Tatara, M.Sc.,¹ Geir Østengen,¹ and Gunnar Hartvigsen, Ph.D.^{1,2}

Abstract

Background:

Mobile phones and other mobile information and communication technology applications and technologies hold great potential as a basis for powerful patient-operated self-management tools within diabetes. The work presented shows how such tools can be designed for supporting lifestyle changes among people with type 2 diabetes and how these were perceived by a group of 12 patients during a 6-month period.

Method:

The study used focus groups, interviews, feasibility testing, questionnaires, paper prototyping, and prototyping of both software and hardware components. The design process was iterative, addressing the various elements several times at an increasing level of detail. The final test of the application was done qualitatively in everyday settings in a cohort of 12 people with type 2 diabetes, aged 44–70 (four men and eight women).

Results:

A mobile phone-based system called the Few Touch application was developed. The system includes an off-the-shelf blood glucose (BG) meter, a tailor-made step counter, and software for recording food habits and providing feedback on how users perform in relation to their own personal goals. User feedback from the 6-month user intervention demonstrated good usability of the tested system, and several of the participants adjusted their medication, food habits, and/or physical activity. Of the five different functionalities, the cohort considered the BG sensor system the best.

Conclusions:

It was shown that it is possible and feasible to design an application where several sensors and feedback applications are integrated in an overall system. The presented Few Touch application challenges people with type 2 diabetes to think about how they can improve their health, providing them with a way to capture and analyze relevant personal information about their disease. The half-year user intervention demonstrated that the system had a motivational effect on the users.

J Diabetes Sci Technol 2010;4(2):328-336

Author Affiliations: ¹Norwegian Centre for Integrated Care and Telemedicine, University Hospital of North Norway, Tromsø, Norway; and ²Department of Computer Science, University of Tromsø, Tromsø, Norway

Abbreviations: (BG) blood glucose, (ICT) information and communication technologies, (RCT) randomized controlled trial, (SUS) System Usability Scale

Keywords: blood glucose, diabetes, mobile phone, nutrition, physical activity, self-management

Corresponding Author: Eirik Årsand, Ph.D., Norwegian Centre for Integrated Care and Telemedicine (NST), University Hospital of North Norway, Box 35, 9038 Tromsø, Norway; email address Eirik.Arsand@telemed.no