

Designing mobile patient-centric self-help terminals for people with diabetes

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ABSTRACT

The aim of this PhD-project is to establish new knowledge in design methodology of user-interface on mobile terminal-based self-help tools that are easy and intuitive to use and unobtrusive in daily life, and that enhance motivation in self-management of diabetes.

Categories and Subject Descriptors

H.5.2 [Information Interfaces and Presentation]

General Terms

Design, Experimentation, Human Factors

Keywords

Health care, Diabetes, mobile terminal, user interface

1. OVERVIEW OF THE PROJECT

Diabetes is one of the most prevalent chronic diseases and it is very important that the people with diabetes continuously perform self-management in proper manner. Self-management of diabetes consists of basically exercises, nutrition control, and blood glucose measurement and following medications if necessary. Especially for the people with Type 2 diabetes, inappropriate lifestyle is a large reason for the disease. To change lifestyle is hard to do. In order to help this situation, there are various self-help tools. Among them, mobile phones are considered to be ideal as a platform of self-help application for diabetes management due to its ubiquitous characteristic and pervasiveness. In addition, the rapidly evolving technologies used for mobile phones increase the potential of mobile phones enhancing usability by facilitating ideal functions on self-help tools for diabetes. However, even with the rapid growth of technologies, there are certain limitations in physical specification of mobile devices, such as limited size of display or physical user interaction. In the design process of self-help applications, it is necessary to make the followings compatible, by taking the situations in use into account; the necessary functions to support the self-management activities, operability, easiness in understanding, giving effective feedback to keep on motivating the users, and unobtrusiveness in daily life.

In order to achieve this, this project focuses on the following aspects considering perception and cognition:

- Visual interfaces and application structure for enhancing ease of operation and effective and motivating interaction.
- Voice and tactile interfaces including their operability itself and

their effect in usability by use of them with visual interface.

- Automatic tailoring, context awareness and self-configuration of the user interface depending on user's cognitive level, disease severity and preferences.

The methods basically follow design principles of human-computer interaction, with an emphasis on involving real users in the design process. A self-help tool developed at the Norwegian Centre for Integrated Care and Telemedicine [1] was tested by 12 patient-users for 6 months. The feedback from the users was positive, and all users wanted to continue to use the tool after the test period. Based on the users' experience, possible design improvements are going to be made for each component of aspects described above, considering the general knowledge obtained in surveys of relevant studies and the general user interface design principles. They are going to be tested in laboratory-setting where usage situation is taken into consideration. The redesign process will be iterated and the final design solutions will be implemented in the application and tested out for long-term in the users' real life situations. The lessons learned will give specific knowledge basis on the design principles on the mobile terminal-based self-help applications for general purpose as well.

2. RESULTS TO DATE

A review of state-of-the art technologies and academic researches about mobile terminal-based self-help tools for diabetes was published in February 2009 [2].

The 6-month user testing of the self-help tool was finished in March 2009 with closing user meeting where their experience from using the self-help tool for half a year was investigated.

3. REFERENCES

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