The development of an innovative mobile phone app for type 1 diabetes alcohol education

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Introduction

There is little research relating to the design and use of health-related diabetes apps. However, a review of features of mobile diabetes apps found a critical feature recommended by clinical guidelines - personalised education - was not included in any application. This research suggests a new way of exploring what young people with type 1 diabetes aged between 18 and 21 require by seeking their views and ideas enabling the design of innovative new technological systems which might help to improve their quality of life. It highlights an innovative, patient-centric approach to the development and production of a health based mobile app concerning diabetes education about alcohol which also meets clinical guidelines and trust policy.

Methods

Recruitment was conducted at a district hospital in the South West (and a local university) with data collected by semi-structured, in-depth qualitative interviews (*n*=9). Interviews were transcribed and loaded onto the qualitative data analysis tool NVivo. Baseline data analysis was undertaken to locate potential ideas for mobile app development. The suggestions chosen needed to meet clinic goals, reflect interviewee requirements and comments and follow trust guidelines.

Prototype Development

Prototype development commenced in **February 2012** using sociotechnical design principles.

Development initially took place on the iPhone platform - meaning the app can also be run on Apple's iPad - but can be transferred to other mobile phone operating systems (like Android) as the app was developed using the PhoneGap framework. PhoneGap is a developmental tool which is able to bridge different mobile platforms.

Results

Interviewees suggested that they would find a guide about alcohol limits particularly useful on a night out which could then be accessed via a mobile device:

P: *… I did end up in hospital, um, 'cos of alcohol and ketones…* **[T1-QOL-04]**

P: *No, I, I tend to feel like I can't have anything apart from vodka and beer because I feel, that otherwise it's going to start making my sugar levels go high…so I feel kind of restricted in that, so that's why it would be quite nice to know, (sighs)…* **[T1-QOL-06]**

I: *…have they actually said at the clinic what you're, what they give, give you some ideas about what you should and shouldn't be drinking if you are drinking, in terms of different types of drinks or…*
P: *Erm (thinking), they probably have, perhaps I didn't listen… (Laughs)* **[T1-QOL-07]**

Prototype App Feedback

P: *It's pretty straightforward and fast responding.* **[T1-QOL-08]**

P: *It's because I, it mentions on here about you can drop low during the night, um, I mean it was actually the doctor here that suggested that I have a small snack before I go to bed to make sure that it sort of allows for you know an evening out so… yeah…I think…this looks like one of the sort of thing's I was saying actually, so it's quite good, hah (laughs)…* **[T1-QOL-06]**

Prototype Feedback

Feedback from staff and patients on the prototype app's quality, look and feel and functionality assisted in the development process.

Prototype versions were installed on two iPod Touches which were used by clinical staff to evaluate features and quality of the prototypes - compiled using a questionnaire distributed to staff. This also enabled actual demonstrations to take place during the patient interview process from interview five onwards. A percentage of time allocated in these interviews (*n*=5) concentrated on ascertaining feelings on the prototype app most closely aligned to patient lifestyle or their attractiveness to it - highlighted by other parts of the interview process - to provide high quality, meaningful feedback.

Feedback was recorded on NVivo to analyse positive and negative comments. This was then fed back into the design process (for the developer – look and feel and navigation - and for clinic staff – textual content and the quality and layout of the information provided).

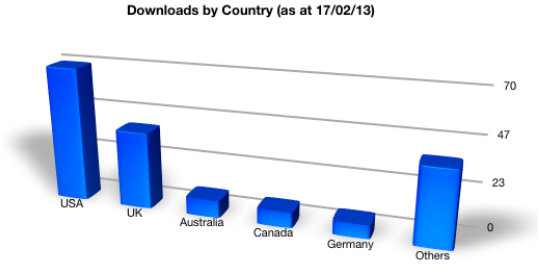
Approval Process

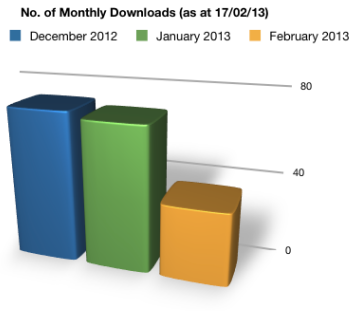
The third, fourth and fifth iterations of the prototype were submitted to the local PALS team for them to give their approval to, as a part of the five step process for standardised patient information.

The third and final submission to PALS was completed during late **November 2012** and was sent out for review soon afterwards. Approval was granted in late **November 2012** by PALS.

The Alcohol app successfully passed the Apple approval process with its initial submission and was offered as a free download on the Apple App Store from **7th December 2012**.

An Android version was approved and released on the Google Play Store on **5th February 2013**.





Type 1 diabetes friend: alcohol guide

Available on the App Store

GET IT ON Google play

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