Date of Report: [February 20, 2015]
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Group: [10]

Executive Summary

The main goal of this study was to learn more about the problems elders with diabetes had when it comes to managing their health and condition. The participant to part in an interview, questionnaire, and a scenario. The task was to use a currently popular health application and report the pros and cons of it. The participant was able to go through all the tasks without trouble.

Methodology

Who we tested

One participant, having the following characteristics, evaluated S Health, answered a questionnaire and took part in an interview.

Gender

Men	1
Total	1

Age

56-70	1
Total	1

What participants did

The participant took part in an interview which was 30 minutes long, filled out a questionnaire and completed the analysis of the health app.

What data we collected

The data collected was opinions on the health app, technological aptness of the participate, current physical activity, and problems/issues with managing their diabetes.

Major Findings and Results

As there was only one participant, no major claims can be made. However, useful information was given that will work towards finding something to help our target audience. It was found that the technology was not a hindrance to the participant but instead the app itself. The participant expressed a desire to use something to help manage their health, from food intake to exercise, but found that the current apps has too much that they don't need. They felt like a simpler, more streamlined app targeted to their needs would be much more effective.

User Needs List

- Something to track their blood sugar
- Reminders to take insulin
- Reminders to exercise
- Auto log food and blood sugar
- Auto insulin injections

Stakeholders

The stakeholders include elders with diabetes, doctors, nurses, and caretakers. This is simply due to they will be the ones interacting with the data. Families of the user, and manufacturers of the products used (ie phone) with also be impacted.

Primary Persona

Betsy is a caucasian 64 year old who has been diagnosed with diabetes since the age of 12. She lives in Toronto and has a job as a receptionist in a law firm. She lives alone in an apartment but has a busy lifestyle. She has had plenty of time to learn how to deal with her diabetes and has got it down pat. However, old age and her busy lifestyle is start to best her. Recently, she sometimes forget to record her blood sugar level and taking her insulin. Betsy likes to exercise but has recently neglected it due to her work and age.

Betsy decides she needs some help as time is getting the best of her. Since she lives alone she needs something she can do by herself. Betsy tries some of the health apps that are out there with her phone but none of them seem to help. She feels like the are too hard to navigate and do too many unneeded things. Betsy needs something that not only tracks her eating habits, but can track her blood sugar level, remind her to take insulin, and incentivise her to exercise.

"I want something that does what I need and does not have the needless clutter of extra things".

Additional Persona

Frank is 84 years old diabetic and has retired from his job at an old car repair shop. He lives with a caretaker and his wife. He has always had his wife to remind him to take his insulin shots when needed. To lift the burden up from his wife, the caretaker has suggested to use

his phone to remind him. This proves to be a problem for Frank as he never really used phone for anything other than talking. When Frank tries to use a reminder app he does not understand what to do. Frank is stubborn so he doesn't want to get help from his caretaker or wife but still wants to be able to remember to take insulin for himself. "I need something simple and easy to operate"

Scenario

Betsy is a diabetic and works as a receptionist at a law firm. Her doctor gave her a booklet in order to keep track of the food she eats and her blood sugar level. One day while at work she realises she forgot the booklet from her doctor. She becomes stressed as she needs it in order to figure out what to eat.

Task Analysis

0. Predicting Blood Glucose Level

1. Check when and where you took your last insulin injection

    1.1 Remember

    1.2 Check log book

2. Check how much and when you exercise

    2.1 Remember

    2.2 Check log book

3. Check what you are eating

    3.1 Ask the cook

    3.2 Look at the ingredients

4. Calculate blood glucose level

    4.1 Predict blood glucose level based on previous information

Appendix

Research Instruments:

1. Interview Scripts:

INTRO

- introduce yourself
-
- explain the goals of the interview
-
- reassure the participant about the ethical issues (especially privacy and anonymization of their data)
-
- ask for permission to record the interview present the informed consent form for their review and approval

WARMUP

- (It's called warm up in order to break the ice and for the situation to get comfortable.
-
- Start a casual conversation about what technologies the person uses and what they do with them.)
-
- are they users of any types of technology? (Don't just explore computers and smartphones… they may prefer other types.)
-
- if so what do they enjoy ?
-
- with what types would they prefer to extend their knowledge and learn something new?
-
- if they make a particular choice, why?

MAIN BODY

- (This section is likely to raise the sensitive issues, if there are any. We need to be careful and considerate about our probing, but not avoid the issues. We are breaking down this enquiry into a few key parts: first to find out generally what they are supposed to be monitoring and managing; then find out what tools are provided or available to perform the monitoring and managing; then by asking about particular events, we find out innocently about what is actually used. We must be careful about not being judgemental if there is a gap between what they

should be doing and what they are actually doing. In fact, we expect there to be a gap, and we need to explore it considerately.)

- what is involved in managing their diabetes ? (attempt to obtain a full inventory of the management items: i.e. factors to manage)
- what are the tools, or systems, or aids, that are used to manage diabetes ?
- how is this management to be performed (PROCESS question) ?
- describe a few recent recording/decision/required management task events explore the difficulties or obstacles to taking greater advantage of the available tools and processes

COOLOFF PERIOD

- (The preceding questions may have made them a little uncomfortable, so we can give them an opportunity to blow off some steam and even rant a little.)
- what are the emotions that are experienced with the management of diabetes?
- are there supports available from family, physician, health care agencies; 5do they offer new systems, technology, and the training to use them?
- is there something that they would like to use instead, an alternate technology?
- what would they most like to change: about the management requirements, or about the tools, or the processes, or the environment?

WRAPUP/CLOSURE

- thank you
- signal the end of the interview

* follows the format presented in class

* uses some suggestions from ‘WoodSemiStructured Interviewing1997ACM’

2. Questionnaire:

Gender:

Male	Female

Age:

55 -	56-70	71-85	86 +

Do you feel comfortable using the following devices?

- Computer desktop or laptop Yes/No
- Tablet Yes/No
- Smartphone Yes/No
- Other:_____

How useful do you think technology is to help in the diabetes management?

Extremely useful	Useful enough	Not so useful	Extremely Useless

Do you use any technological device to help you in the diabetes management? Yes/No

-> If so, what types of apps do you use with these devices?

__ Reminders
__ Medication dosage control
__ Diet regulation
__ Control of physical exercise
__ Search for general information about diabetes
__ Other: _____
_____

-> If not, would you be learn to use some of those devices only to help you in your health management? Yes/No

What are the difficulties that you have within technology?

__ I cannot find information about what I want.

__ I am afraid of having my personal information stolen.

__ Usually, the color and size of texts and pictures make them hard to see.

__ I do not know if the informations are trustful.

__ Other: _____
_____

-> What is the frequency of use of the device?

__ Several times a daily

__ Daily

__ A few times a week

__ Once a week

__ Less frequently

-> Are there any other tools that would help you?

_____
_____
_____

3. Observation Plans:

OVERVIEW

Through the observation plan, our intentions of researching on these subjects come from our initial interest in the issues that users run into when dealing with diabetes via technology. The initial process should start off with interviews and questionnaires to get to know them. After

knowing more about the subjects, questions could be asked specifying about their use of technology. To be more precise, the amount of usage and interaction they have with their devices that they use to monitor their conditions. A method to gather this information would be a more direct observation approach, such as a fly on the wall, although we are not going to be quiet, we would ask questions while they are going through a certain activity. The technology that the subjects would be using can include glucose monitors, insulin pumps, weight scales, heart-rate monitors, or any other device they find useful.

PLAN

The people that would be conducted in this observation are the people from the user group in phase 1; those who are in their senior years and suffer from a form a diabetes (types 1 or 2). The reason they are being targeted is because they require constant monitoring of their blood glucose levels to stay in good health.

Their surroundings when they are being studied should vary, however it should mainly be taking place inside their home. This is mainly we want information where they feel comfortable and living their life without thinking too much about it.

We would want to pay careful attention to their activity and see if they have any interactions with media and see how they react (frustrated/fine/confused…). Most activities that we would be observing them should not be something new to them so the way they may react may not be odd, but when an activity they do is not normal, more attention should be directed to them.

DETAILS

Things we would focus on:

- The amount of participants (a good number would be 2 each if possible, but aiming for having each member observe 1 person)
-
- Try to focus on a particular activity, but not too long (20-50 minutes)
-
- 15-20 minutes of that time would be the researchers (us) giving the elderly a mobile application or device, and us asking them how much they can figure out of the application in the allotted time

RESEARCH PROTOCOL

1. **Project Title**: Seniors Managing Diabetes

2. **Investigators**: Jeremy Johnston – jeremy.johnston@mail.utoronto.ca, Eric Xue – eric.xue@mail.utoronto.ca, Marc de Niverville – marc.deniverville@mail.utoronto.ca, Jhony Campanha – j.campanha@mail.utoronto.ca, Joseph Lee - josephy.lee@mail.utoronto.ca.

3. **Purpose**: The purpose of our research is to understand the elderly with diabetes mellitus to help us derive requirements for the design of novel interactive computational media that are intended to be useful to elders with diabetes. A brief description of our design concept is: a health app used to monitor and track daily health.

4. **Process to be followed**: We will brief the participants about the purpose of the study, explain the consent form to them, and ensure that they sign the consent form. We will then engage the participants in a roughly hour long, semi-structured interview. We will also with their permission make observations as follows: taking notes of activities, eating habits, and use of technology.

5. **Participant selection**: Participants will be chosen from elders with diabetes. They will be identified via voluntary assessment and selected according to easy of access. In general, they will be characterized by being above the age of 55 and having diabetes.

6. **Relationships:** Our relationship to the participants may be described as follows: no relationship.

7. **Risk and benefit**: There will be minimal risk to the participants, for example that they feel that they have wasted their time. The only benefit will be to contribute to the education of the investigators. Participants are free to withdraw before or at any time during the study without the need to give any explanation.

8. **Consent details**: We will brief the participants about the purpose of the study, and explain the attached consent form to them, and ensure that they consent to participate and sign the consent form.

9. **Compensation**: Participants will receive no compensation.

10. **Information sought**: The information to be sought is described in the attached interview protocol, observation plans and surveys.

11. **Confidentiality**: Information will be kept confidential by the investigators. Names or other identifying or identified information will not be kept with the data. The only other use will be to

include excerpts or copies in the assignment submitted, but names and other identifying or identified information will not be submitted.

Consent Form: Seniors Managing Diabetes

I hereby consent to participate in a research study conducted by Jeremy Johnston, Marc de Niverville, Joseph Lee, Jhony Campanha, and Eric Xue for an assignment in University of Toronto Computer Science 318, Design of Interactive Computational Media.

I agree to participate in this study the purpose of which is to learn about the activities and use of technology by elders with diabetes.

I understand that

- The procedures to be used are interviews and observations.
- I will receive no compensation for my participation.
- I am free to withdraw before or any time during the study without the need to give any explanation.
- All materials and results will be kept confidential, and, in particular, that my name and any identifying or identified information will not be associated with the data.

PARTICIPANT

Name (please print)_____

Signature_____

Toronto, Date_____

INVESTIGATOR(s) Name_____
Signature_____