#Health@You: Improving Communication Through Text-based Glanceable Displays

Kimberly Oakes

The University of Alabama

`kloakes@crimson.ua.edu`

Abstract

As teens with diabetes approach adulthood, better management of their disease begins to strain their relationship with their parents. Teen want freedom from parental oversight while parents still want control over the teens and their health. #Health@You is a diabetes management system that uses text-based glanceable displays and online personal health records to promote better communication between users and their primary caregivers. Our study evaluated whether participants could accurately apply the glanceable display terms after 15 minutes of training, and if they preferred this new method to using simple text messages. It also examined what disease-related information participantsparticularly adolescentsfelt comfortable sharing.

1   Introduction

Diabetes is very prevalent in low Socioeconomic Status (SES) families [1]. The amount of overweight preschoolers especially Mexican-American children has increased since the 80s, making these children high risk for type 2 diabetes [2]. Parents of children with diabetes must take on full responsibility of blood glucose management (BGM). They need to discuss process of disease management in order for the child to carry out the practice when they are older [3]. As the child progresses into adolescence, it is important for the parents to release some of the workload and let the young adults practice self-management. In late adolescence, it's important for parents to let go

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more. Parents need to trust their teens, and teens need to maintain that trust by actually having good BGM skills.

2 Related work

By implementing technology in disease management, such as uploading glucometer readings to a computer [4], it is becoming easier for patients to track changes and trends. After seeing several readings over time, users are able to reflect on certain choices like diet and exercise, make the appropriate changes to better manage diabetes [5], and continue making positive choices [6]. However, the management process can often be more difficult when the person with diabetes is a teen. During adolescence especially, the child-parent relationship is very sensitive. Parents want to have full control over their childs disease management, while the teens wants to gain independence and manage the disease themselves [7]. Previous work in disease management studies has shown that teenagers are more likely to remain involved with systems that implement text-messaging, a means of communication with which they are already familiar [8].

3 About the System

#Health@You is a diabetes management system comprised of text messages and an online personal health record (PHR). Information can be sent and received using Short Messaging Services (SMS) messages between people with diabetes and their caregivers. By using SMS messages, #Health@You can operate on any phone with the ability to send text messaging, and requires no special applications or other features. Users can send text messages to our system to record disease management-related information, such as blood glucose levels, set medication or other reminders, or share information with a healthcare provider or family member. It uses text-based glanceable display technology, displays that can be read with one quick glance, for sending and receiving text messages. Instead of storing when they took their medication by texting "I took my blue pill at 4:30," users can simply text "blue (|) @ 4:30," with "(|)" being the symbol for pill. We designed our system with the goals of improving health monitoring by adolescents with diabetes and communication between those teenagers and their parents or guardians. We

also hope that long-term use of our system will improve teens self-efficacy.

4   Study Details

Our study is directed towards teens and adults with diabetes and their caregivers. Our goals are to determine the best approach towards digital diabetes management, which methods of management are prefered, and what information people with diabetes are willing to share with their caregivers. We are also interested in finding out what people with diabetes and their caregivers like to track (e.g. will they mostly inquire about carb amounts in food, HbA1c levels, when Insulin was taken, etc). Through this information, we hope to determine if #Health@You is a system participants would like to use, and if not, how it can be improved. We designed and implemented the study using PHP and MySQL. It is made up of a maximum of 120 participants, 60 teens with diabetes, 30 adults with diabetes, and 30 caregivers. After filling out a background questionnaire about texting habits and current disease management methods, we presented the subjects with three different sets of predetermined text messages. The first set comprised of texts in a normal format, such as, My blood glucose is 120. We asked them to send the texts to our database using their prefered texting methods. We then introduced participants to #Health@Yous glanceable display terms. In the second set, we had them send texts using the new terms, like bg 120. Lastly, we provided them with a mixture of texts in the glanceable display format and normal format. They were asked to read and interpret what they thought each text meant. By having the participants send us texts using their normal methods and the glanceable terms, we were able to compare times and see if the glanceable terms were faster to type. After going through the three different sets, subjects were directed to an exit questionnaire where they could evaluate the system and provide feedback.

5   Conclusions and Future Work

Once we have collected all the data, we will begin the investigation with qualitative analysis techniques, both inductive and deductive, and basic statistical methods. The information collected should allow us to either pursue creating our #Health@You software or provide us information with how to

improve the software.

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