

Assessing the Effectiveness of Mobile Technologies for Diabetes Self-Management

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Abstract

Diabetes is a chronic illness that afflicts 1 in 10 adults above the age of 20 in the US, and is a leading cause of death. The overall estimated cost of diabetes to the US economy in the year 2012 was approximately \$245 billion, of which 72% was for direct medical care and the remainder due to lost productivity. Thus, improving diabetes care will not only enhance the wellbeing of millions of patients but also reduce the burden on the economy. The research question that we are trying to address in this research is how can health IT be used to improve diabetes care. In particular, we want to explore the effectiveness of mobile technologies, such as, mobile apps and devices in improving diabetes management.

Self-Management of diabetes, which refers to a set of practices in which the patient plays an active role in managing his/her health condition, has been advocated as a means to enhance patient engagement and improve his/her overall wellbeing. Successful practice of diabetes self-management is known to lower healthcare cost, improve quality of life, and reduce the risk of premature death. In recent years, there has been a proliferation of mobile apps and devices that promise to help diabetics manage their conditions. While the number and variety of such apps and devices are in the rise, very little research has been devoted to studying their effectiveness in helping diabetics self-manage their conditions. As a first step to fill this gap in research we propose to devise a mechanism to measure the effectiveness of mobile technologies to support diabetes self-care.

We rely on two streams of research literature to accomplish this: (1) Evidence-based, diabetes self-care behavior framework, advocated by the American Association of Diabetes Educators, which promotes positive behavioral change among diabetes patients; (2) Affordance theory, with its roots in perceptual and ecological psychology, conceptualizes the affordances of an object as the interactions between the object and the user in the context of its use. It offers a fresh perspective on assessing the effectiveness of mobile apps and devices in diabetes management. We are in the process of developing and validating an instrument to measure the affordances of mobile apps and devices in helping diabetes patients adhere to the self-care behavior framework, and would like to receive feedback from TREO session audience on this line of research.

The proposed research is expected to make several contributions. First, it will help us objectively assess the effectiveness of various apps and devices currently available to assist in diabetes self-care. Second, it will also help us make design recommendations for these apps and devices, which can lead to the development of more effective mobile technologies for diabetes self-management. Finally, the measurement process will lay the foundation to create a generic framework to assess the effectiveness of mobile apps and devices in managing other chronic illnesses, such as, heart disease and cancer.