

Mobile Applications for Diabetes Self-Management: Status and Potential

Omar El-Gayar, Ph.D.¹ Prem Timsina, B.E.¹ Nevine Nawar, M.D., M.P.H., Ph.D.^{,2}
and Wael Eid, M.D., FACP, C.D.E.^{3,4}

Abstract

Background:

Advancements in smartphone technology coupled with the proliferation of data connectivity has resulted in increased interest and unprecedented growth in mobile applications for diabetes self-management. The objective of this article is to determine, in a systematic review, whether diabetes applications have been helping patients with type 1 or type 2 diabetes self-manage their condition and to identify issues necessary for large-scale adoption of such interventions.

Methods:

The review covers commercial applications available on the Apple App Store (as a representative of commercially available applications) and articles published in relevant databases covering a period from January 1995 to August 2012. The review included all applications supporting any diabetes self-management task where the patient is the primary actor.

Results:

Available applications support self-management tasks such as physical exercise, insulin dosage or medication, blood glucose testing, and diet. Other support tasks considered include decision support, notification/alert, tagging of input data, and integration with social media. The review points to the potential for mobile applications to have a positive impact on diabetes self-management. Analysis indicates that application usage is associated with improved attitudes favorable to diabetes self-management. Limitations of the applications include lack of personalized feedback; usability issues, particularly the ease of data entry; and integration with patients and electronic health records.

Conclusions:

Research into the adoption and use of user-centered and sociotechnical design principles is needed to improve usability, perceived usefulness, and, ultimately, adoption of the technology. Proliferation and efficacy of interventions involving mobile applications will benefit from a holistic approach that takes into account patients' expectations and providers' needs.

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Author Affiliations: ¹College of Business and Information Systems, Dakota State University, Madison, South Dakota; ²College of Arts and Sciences, Dakota State University, Madison, South Dakota; ³St. Elizabeth Healthcare Regional Diabetes Center, Covington, Kentucky; and ⁴Department of Internal Medicine-Division of Endocrinology, Sanford School of Medicine, Royal C. Johnson VA Medical Center, Sioux Falls, South Dakota

Abbreviations: (AAS) Apple App Store, (EMR) electronic medical record, (FDA) Food and Drug Administration, (HbA1c) hemoglobin A1c, (HIPAA) Health Insurance Portability and Accountability Act, (PHR) Patient Health Record

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Corresponding Author: Omar El-Gayar, Ph.D., Dakota State University, 820 N. Washington Ave., Madison, SD 57042; email address Omar.El-Gayar@dsu.edu