

Letter to Editor

The Roles and Challenges of Mobile Health Apps in the Management of Type 2 Diabetes

*Mohammad Heydari¹ , Kosar Karimi² , Taleb Khodaveisi³ 

1. Department of Health Information Technology, Khalkhal University of Medical Sciences, Khalkhal, Iran.
2. Department of Biostatistics, Faculty of Health, Mazandaran University of Medical Sciences, Sari, Iran.
3. Department of Health Information Technology, School of Allied Medical Sciences, Hamadan University of Medical Sciences, Hamadan, Iran.



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Extended Abstract

Chronic diseases have been increased in the last decade. Treatment of these diseases requires frequent visits to the hospital and monitoring of symptoms [1]. Type 2 diabetes (T2D) as a chronic disease, is one of the most important health challenges in the world, which affects the quality of life and leads to other diseases. The prevalence of T2D has increased with the increase of population due to lifestyle changes. This increase is more in developing countries facing challenges in receiving public health services. The growth and development of digital technologies, including mobile health, have led to their increased use in managing chronic diseases and thus have led to changes in the way healthcare services are delivered [2, 3]. This study aims to examine the roles and challenges of mobile health in the management of T2D.

The T2D is the most common type of diabetes, which is associated with many complications. Lifestyle change and symptom control and management can help reduce the complications of this disease. Patient participation and self-management is the key to diabetes treatment. Self-management refers to the patient's ability to cope with all aspects of the disease, and is considered an essential part of the treatment and care process [4]. Mobile Health applications with different capabilities can help improve the knowledge and awareness of patients. Diabetes self-management

is defined as engaging in behavioral activities to control diabetes such as monitoring blood glucose level, medication, nutrition, exercise, and losing weight [2-5]. Many mobile applications have been developed in the field of self-care and self-management for chronic diseases [6]. Mobile apps with features such as providing a dynamic interactive environment and practical information using pictures, videos, along with sensors for monitoring, can help patients engage in self-care and motivate them to change their high-risk behaviors, gain healthy behavioral skills in disease management, and modify their lifestyles. Reducing the hospitalization rate and patient visits to medical centers and improving the health of patient and society are other benefits of mobile health apps.

Remote care and monitoring and engaging the patient in the treatment process by using mobile health technology are some of the developments in the health sector. Mobile health describes the use of wireless and communication tools such as smartphones and tablets to collect or disseminate health information for improving healthcare delivery [7]. Mobile health offers a range of potential opportunities for patients, healthcare providers, and policymakers to monitor and improve health systems. Mobile Health along with recording and monitoring of vital signs can help manage T2D. Mobile health-based intervention is a cost-effective method to improve self-management; it can improve adherence to medication, exercise, or healthy nutrition. It can support patients with T2D by adjusting the dietary and medication regimens based on the patient's blood glucose monitoring data [8].

* Corresponding Author:

Mohammad Heydari

Address: Department of Health Information Technology, Khalkhal University of Medical Sciences, Khalkhal, Iran.

Tel: +98 (45) 3242200 (EXT: 155)

E-mail: heydari.mohammad12@yahoo.com



Despite having a positive role in managing the diseases, Mobile health apps for diabetes are facing some challenges in Iran. Identifying these challenges by evaluating and removing barriers can improve the effectiveness of mobile health apps. The challenges in this area include concerns related to patients (users), developers, and policymakers. Users' challenges are: the lack of awareness of mobile health apps, low level of health literacy, and practical limitations in using apps. Developers' challenges are: Failure to provide a dynamic interactive environment for monitoring blood glucose level, lack of in-app messaging, poor user interface design, not using evidence-based information, and not considering the age and health literacy of users. The inability to customize the apps according to the needs of users and the changing health needs of users are other key challenges in the development of mobile health apps [8, 9].

The challenges related to policymakers include the lack of standards to create and promote quality apps, no monitoring of health apps for patient safety, and lack of a mechanism to measure the clinical validity of these apps. Ensuring the confidentiality of patients' information and the lack of privacy regulation are other challenges. The confidential information of patients are personal data, disease history, financial or health insurance details, causes of disease, and treatment process. Lack of a data encryption feature in health apps makes it easier for unauthorized users to access patient data. Due to the increase of online medical visits, the lack of an in-app payment feature is other challenge [10]. Monitoring only one aspect of patients' vital signs is another challenge. For example, most of mobile apps for diabetes focus on monitoring blood sugar level, while a diabetic patient needs to check a set of vital signs.

Mobile health apps for diabetes are developing rapidly. With the increasing demand for these apps, their effective roles should be highlighted and their challenges should be addressed. Developers, healthcare providers, and policymakers should be familiar with these apps, be aware of their challenges to help them develop more diabetes management apps, create infrastructure, and develop standards.

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