



The role of contemporary mobile applications in diabetes management

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Dear Editor,

Diabetes mellitus (DM) is a chronic metabolic disease requiring continuous monitoring and lifestyle modifications, with a high risk of long-term complications. In recent years, technological advancements and digital health tools have emerged as essential adjuncts in diabetes management. Mobile health (m-Health) applications integrate multiple aspects of care including glucose tracking, insulin dose adjustment, carbohydrate counting, physical activity monitoring, and nutritional analysis into unified digital platforms. These innovations enhance patients' self-management capacities, facilitate collaboration with healthcare providers, and improve adherence to therapy.

Through mobile applications, patients can monitor their blood glucose levels daily, calculate

carbohydrate intake and insulin requirements, and track physical activity using features such as pedometers and exercise logs. Visual tools that analyze food intake and macronutrient balance further increase awareness of dietary planning. Such tools support not only glycemic control but also therapeutic motivation, self-efficacy, and psychosocial well-being. The clinical impact of mobile applications is increasingly supported in the literature. A meta-analysis by Hou et al. reported that the use of mobile apps was associated with a significant reduction in hemoglobin A1c (HbA1c) levels by 0.49% in type 2 DM and 0.36% in type 1 DM patients [1]. Additionally, follow-up systems based on short message service (SMS) have demonstrated approximately 0.5% improvement in glycemic control. These findings highlight the meaningful contributions of mobile tools to diabetes care effectiveness.

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Integrating digital solutions into diabetes management improves not only clinical parameters but also patient satisfaction, quality of life, and access to healthcare. Benefits such as reduced hypoglycemia episodes, continuity in patient–physician communication, and enhanced motivation through personalized goals are frequently reported. Furthermore, technology-based psychosocial support programs improve patients’ coping strategies for diabetes-related stress and contribute to better treatment adherence.

In this context, the 2025 Diabetes Technologies Guideline published by the Turkish Society of Endocrinology and Metabolism (TSEM) serves as a timely and practical reference for healthcare professionals [2]. This guideline comprehensively addresses clinical use of mobile applications, principles of data security, criteria for scientific validity, and processes for patient education. Physicians’ informed and secure use of these technologies is critical for both patient safety and optimal therapeutic outcomes. Despite these advantages, several limitations remain. These include a lack of evidence-based content in some apps, insufficient data privacy and user confidentiality, device incompatibilities, frequent software updates, and challenges in usage among individuals with low health literacy [3,4]. Therefore, app implementation should be guided by healthcare professionals, supported by accurate patient education, and integrated with traditional medical follow-ups.

In conclusion, mobile health applications represent powerful tools that improve clinical outcomes, increase patient motivation, and enhance quality of life in diabetes care. The 2025 TSEM Diabetes Technologies Guideline aims to address knowledge gaps and raise awareness among healthcare professionals regarding the use of digital health tools. Effective, safe, and sustainable implementation of mobile apps requires physicians to be well-informed, actively involved in patient education, and aligned with evidence-based recommendations.

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Table 1 Selected Mobile Diabetes Applications and Their Features

Application	Features
MySugr, Glooko, One Drop, Livongo	Estimated reduction in HbA1c by 1.0–2.0%; reduction in hypoglycemia episodes
GoCARB	Image recognition to estimate plate-based carbohydrate content
Dreamed Advisor Pro, KarbApp	Automated calculation of bolus insulin doses
MyFitnessPal, Nike+ Running, Track3	Monitoring of exercise and physical activity
Carbs and Cals, DiabCalc, Low Carb Program	Carbohydrate counting and bolus estimation