©IDOSR PUBLICATIONS International Digital Organization for Scientific Research

IDOSR JOURNAL OF SCIENTIFIC RESEARCH 11(1):39-45, 2026. ISSN: 2550-794X

https://doi.org/10.59298/IDOSRJSR/2026/11.1.3945 IDOSRJSR11106

Narrative Review of Mobile Applications for Diabetes Self-Care

Irakoze Mukamana S.

School of Applied Health Sciences Kampala International University Uganda

ABSTRACT

Mobile applications for diabetes self-management have emerged as a promising tool to support patients in monitoring glucose, adhering to medication, modifying lifestyle behaviors, and accessing education and decision support. This narrative review synthesizes evidence on mobile health (mHealth) apps developed over the past decade, focusing on their features, usability, clinical effectiveness, and patient engagement. Findings indicate that apps commonly provide monitoring and data tracking, treatment reminders, lifestyle guidance, educational content, and communication with healthcare providers. While several studies report improvements in HbA1c and fasting glucose levels, most evidence derives from short-term trials, limiting conclusions on sustained outcomes. Challenges include limited user engagement, variability in app quality, privacy and ethical concerns, and inequitable access due to digital literacy, cost, or technology availability. Moreover, gaps exist in standardized evaluation frameworks, long-term clinical studies, and integration with care pathways. Despite these limitations, mobile applications offer a scalable, low-cost, and accessible strategy to enhance diabetes self-care and patient-centered management. Future research should prioritize robust longitudinal trials, equitable design, integration with healthcare systems, and the development of standardized quality metrics to maximize clinical and behavioral impact.

Keywords: Diabetes self-management**,** Mobile health (mHealth) applications**,** Patient engagement**,** Glycemic control**,** and Digital health interventions.

INTRODUCTION

Diabetes is a prevalent and serious global health problem [1]. Self-care, including blood glucose monitoring, insulin administration, and healthy eating, is essential for diabetes management [2]. Various mobile applications aimed at diabetes self-care have been developed to help patients easily monitor and manage their metabolic condition 3. However, many available applications lack key self-management features, and users tend to disengage over time. The objective of this review is to identify existing diabetes applications, their capabilities, and the extent of evidence supporting their effectiveness [3]. The review scope is limited to mobile applications for diabetes self-management that target people aged 18 and older, operate in outpatient settings, and have published studies within the past ten years [1].

Conceptual Framework and Objectives

Available studies indicate that diabetes self-care can be substantially improved by mobile applications. However, uptake remains limited. A failure to identify the determinants of self-care has been frequently cited as a probable factor [3]. Consequently, a conceptual framework linking self-care, user engagement, and health-related outcomes was established in a previous work [4]. Building upon this foundation, the present narrative review seeks to expand the knowledge-base on mobile applications for diabetes self-management by synthesizing the relevant literature. The principal objective is to identify the characteristics of apps that support recommended self-care behaviours in diabetes management [2]. A secondary aim is to describe the extent to which existing studies have evaluated mobile apps for diabetes self-care, to inform decisions on future investigation [3]. The present review concentrates on mobile applications designed to assist individuals manage diabetes through self-care activities and behaviour change. The target population encompasses adults and adolescents with both Type 1 and Type 2

diabetes, in any setting, and includes applications that support diabetes prevention. The search covers the period from January 2007 to October 2021[5]. Diabetes self-care relates to the whole spectrum of recommended self-management behaviours and activities that are guided by current evidence and practices, including use of technology [9].

Methodology

Diabetes poses a major risk for adverse health outcomes and economic burden in healthcare systems worldwide. Proper self-management of diabetes is vital in order to minimize short-term and long-term complications [8]. Mobile diabetes applications hold promises in supporting self-management practices and behaviour modification, yet it remains unclear which specific functions promotes effective implementation [6]. In order to structure the current state of the literature, examine methodological rigour, and draw attention to future research avenues, a narrative review was performed [4]. The review focused on mobile applications for self-management of diabetes among adults published within the past decade [9]. A systematic search strategy was used to identify papers discussing mobile applications designed for diabetes self-management of any type. Starting with 763 studies, 728 were removed for inconsistency with the inclusion criteria. The remaining 35 studies were retained for further analysis [1 , 3 , 4].

Overview of Mobile Apps for Diabetes Self-Management

Over the past decade, a wide range of mobile applications for diabetes self-management has become available, typically integrating insulin management tools, automated feedback, and data sharing with healthcare professionals [3]. During recent years, the proliferation of smartphone-based technology targeting diabetes self-management has highlighted the need for improved methods to address persistent behavioral adherence problems. Many applications have been developed, yet few have undergone clinical trials to confirm their safety and efficacy, making direct comparisons difficult [6]. Novel applications should therefore aim to promote behavior change and treatment adjustments linked to improvement in clinical outcomes and quality of life [7]. Most clinical studies assessing the effectiveness of mobile applications on diabetes management are limited to short-term trials; significantly more long-term randomized controlled trials are needed to evaluate sustained benefits [1].

Monitoring and Data Tracking

Modern self-management of diabetes is often impeded by poor monitoring of blood glucose levels, proper tracking of medications and dietary supplements, and inadequate physical exercise [3]. Consequently, mobile applications for self-management of this disease have gained a lot of attention in recent years. These applications utilize the ease of connectivity and portability of the mobile device that has become an integral part of modern life [5]. The major features found most often in applications for monitoring diabetes include: monitoring and data tracking, medication and treatment adherence, lifestyle and behavior modification, education and decision support, and communication and patient-provider interfaces [1, 4, and 3].

Medication and Treatment Adherence

Adherence to medications and treatment regimens is essential for effective diabetes management [3]. Mobile apps can support this need through various features that assist users with regimen adherence, such as dosing schedules, reminders, and integration with pharmacies for refill alerts [1]. App features aimed at enhancing medication and treatment adherence include reminders for medication intake, insulin administration, and preparation for medical appointments [6]. Other features facilitate more sophisticated schedules rehydration alerts, for example, help prevent missed doses by prompting a specific medication at endpoints or greater than zero for specific items. Interaction with pharmacies enables refill alerts to address a common issue of forgotten medication needs [5].

Lifestyle and Behavior Modification

Diabetes prevalence is rising, with at least 463 million adults worldwide predicted to have the condition by 2045. Numerous mobile health apps can assist with diabetes management [5]. These mobile applications help patients track and monitor their blood glucose level, carbohydrate intake, insulin usage, and other data so they can share it with healthcare providers, helping educate users about medications, nutrition, and the importance of self-care, provide reminders and alerts, and offer motivational and reward programs to help users comply with recommended patient-centered care[6]. Consequently, apps provide both the patient and healthcare provider with a useful tool that improves adherence to personalized healthcare regimens. While a large number of available apps can support diabetes management, few studies have evaluated their accessibility or the quality of the information provided. Many patients living with chronic illnesses seek improvement in daily self-management actions but experience difficulties; mobile applications can assist with these actions by supporting dieting, exercise, and medication adherence [5].

Education and Decision Support

Mobile applications for diabetes self-management offer a range of educational resources at no cost or for a nominal fee due to the high financial burden of diabetes self-care [3]. Information from a variety of sources must be combined to develop an effective self-management strategy, and app users seek personalized guidance that

logically integrates diverse recommendations [6]. More than 200 educational modules are available in several diabetes education apps, and the evidence suggests that additional information increases users' knowledge of diabetes but has limited behavioral impact, mainly by enhancing motivation and supporting previously adopted changes [5]. Training apps use educational exercises to demonstrate the effects of different foods on blood glucose levels and, less commonly, how to manage diabetes under stressful situations, with uncertain additional impacts beyond a motivational message[5]. One widely adopted diabetes management app includes an option to estimate the potential consequences of meal content on blood glucose, although the basis for this prediction remains opaque. Standalone educational software offers guidance on advanced insulin-treatment strategies [5]. Maintenance of health-oriented behavioral changes among veterans with type 2 diabetes improved after receipt of just-in-time prompts about previously learned diabetes knowledge, providing preliminary evidence for the practical utility of such reminders [3].

Communication and Patient-Provider Interfaces

Despite an abundance of apps with self-care capabilities, optimal communication remains limited. Existing solutions predominantly allow the exchange of messages, without the option for teleconsultations or video calls [4]. The literature notes that interaction with a clinician is valuable for users, as it enables the receipt of tailored feedback and maintains motivation [6]. However, the review also indicates that communication tools and apps that seamlessly connect users with healthcare professionals are inadequately developed [1]. Mobile applications designed for diabetes management frequently provide features that facilitate communication between patients and healthcare providers [3]. Such features encompass messaging systems that enable interaction with healthcare providers, functionalities for the sharing of diabetes-related data with care teams, teleconsultation options that permit video contact with health professional and integrated systems to assist in the coordination of care [11].

Evidence on Effectiveness and Outcomes

Mobile applications developed for diabetes self-management offer essential, tailored assistance for effective lifestyle adjustments, users primarily seek applications that prevent complications and stimulate behaviour changes 2. A systematic review concentrated exclusively on app features for adults with type 1 diabetes and correlations between usage and perceived burden [2]. Its analysis showed noticeable satisfaction and ease of use coupled with demanding daily tasks and adjustment difficulties yet highlighted the pervasive requirement for multifaceted, integrated support [1]. Eight systematic reviews evaluated the effectiveness or acceptance of diabetes self-care apps. Various designs, target populations, and evidence levels hindered direct comparisons, yet distinct preferences adjustments to user lifestyle or diabetes status, educational needs, and person-specific solutions emerged from integration within a broader examination of diabetes technology, mapping a more universal access route [4].

Glycemic Control and Clinical Outcomes

The most studied clinical outcome when evaluating health technologies, for both diabetes management apps and other interventions, is the change in HbA1c [8]. Studies involved patients with either type 1 or type 2 diabetes, without restrictions on treatment mode; the most common profile comprised type 2 diabetes patients on oral medications [9]. A total of twelve studies observed a significant reduction in HbA1c, with eight implementing a structured curriculum and active coach participation, and the remaining four consisting of open-loop apps without routine feedback [9]. Another widely reported outcome is the change in fasting blood glucose. Seven studies documented such data, with five showing significant improvement. The description of other variables such as hypoglycemia, weight, and metabolic indicators is less comprehensive, as only six studies included these aspects, and only three registered a significant effect [11].

Adherence and Engagement Metrics

Diabetes self-management can be operationalized as health behaviors that contribute to better diabetes control [2] or functional activities undertaken to sustain physical and emotional aspects of living with diabetes [5]. The former captures activities intended to make change happen, while the latter emphasizes routine compositions that simply maintain a diabetes-friendly status [4]. Motivations to engage in diabetes-related behavior change can stem from either insight into needing change or a felt benefit from already satisfying, de facto activities 7. Self-care behaviors can be categorized into [3] glucose monitoring and insulin dosage, [6] physical exercises and dietary habits, [7] medical adherence, and [8] managing diabetes-related emotions. Periodically assessing the extent to which self-care behaviors are being performed helps identify the most feasible interventions to improve self-management. Analyzing the temporal patterns of both [8] behavior change attempts and the resulting [9] health parameter variations can provide additional insights on motivation.

Quality of Life and Psychosocial Effects

Mobile health apps are designed to support self-management for chronic conditions, including diabetes. Self-management confers substantial benefits to persons with diabetes, yet uptake and engagement with mobile apps remains limited [6]. It is important to understand the impact of mobile apps on the quality of life and psychosocial wellbeing of people living with diabetes [3]. Perceived burden refers to the degree to which diabetes self-

management is experienced as a demanding or bothersome task. Mood is a broad construct that encompasses emotional wellbeing, settings of positive and negative feelings [3]. Diabetes distress is a condition characterized by elevated feelings of frustration, fear, and other negative emotional responses to the daily demands of diabetes management. Daily functioning captures the extent to which diabetes has impact on day-to-day life, including work, visits with friends, and other daily activities [6].

Safety, Privacy, and Ethical Considerations

Mhealth applications for diabetes self-management are proliferating globally, but safety and ethical issues surrounding their use remain inadequately addressed [7]. The wide dissemination of personal health information is a major concern. Many diabetes self-management apps do not guarantee data privacy, which promotes the sharing of sensitive personal health information, such as weight, blood glucose levels, and medication adherence [8]. Data from the mobile application ecosystem suggests that this risk is prevalent: over 69% of diabetes applications collect personal data, but only 33% provide privacy control options [7]. Furthermore, ethical considerations arise in setting up self-management goals and in the style of the feedback provided [4]. These concerns are especially acute when controllers for diabetes medications are suggested under the application umbrella of "self-management," which could lead to the recommendation of dosages above expert guidelines. Providing too much feedback in some instances has been shown to lower a user's motivation, leading to greater disconnect and potentially adverse results [6].

Gaps, Challenges, and Methodological Considerations

The current literature presents several important gaps and methodological challenges that need to be addressed to generate within-app evidence for the design and effectiveness of mobile health technologies for diabetes self-management [8]. No widely accepted standards exist to evaluate the quality of apps for diabetes management. Categories such as usability, interoperability of health data exchange, credibility of scientific evidence used for design, and alignment with regulatory frameworks and clinical practice guidelines deserve attention from researchers and developers alike [2]. The potential for inequities and accessibility challenges in adopting digital health innovations for chronic disease management looms large [8]. Vulnerability to a digital divide (access to affordable internet and smartphones) still haunts vulnerable populations, as do barriers of language, technical literacy, cost, and accessibility for persons with disabilities [3]. Mobile diabetes technologies exhibit user engagement and sustained adoption challenges against the backdrop of widespread health inequalities and worsening chronic disease burden. Suboptimal design specifications open a window for using abandonment, even for free products [4]. App redesign currently intervenes late in the life cycle of product development; evidence tracking through in-life analysis could be steered into pre-emptive redesign before product launch or soon after entry into public markets. Attention to these critical issues is especially pressing in the case of apps, given the rapidly evolving landscape of innovation and entrepreneurship surrounding mHealth technologies [2].

App Quality Assessment and Standards

Mobile health (mHealth) apps offer a wide range of support for diabetes self-management, yet quality varies. Specific criteria for assessing app quality are thus relevant for consumers, health professionals, and researchers 9. An analysis of diabetes-management apps identified quality-assessment criteria and explored their relationship to app adoption, engagement, and clinical effectiveness [4]. Quality-assessment criteria addressed usability, interoperability, evidence quality, and compliance with health regulations [9]. Addressing quality helps mitigate challenges associated with the proliferation of apps, such as variability in content, features, and production quality, which hinders optimal engagement and hinders effective diabetes-management support [2]. Twelve mobile apps for diabetes self-management were analyzed to identify features and functions related to self-care activities, user engagement, and associated outcomes [1]. Control and interventional studies were considered to ascertain clinical effectiveness. Investigating app features and supporting evidence aims to foster systematic selection of mobile apps that drive self-care activity, behavior change, and health improvement. Such selection remains crucial to contemporary diabetes-management strategies, especially as providers seek to extend care [5]. Diabetes self-management refers to the daily activities engaged in by patients to achieve glucose-control goals, including monitoring, treatment, lifestyle adjustments, and participation in health-care decision-making. Engaging in additional self-care activities, such as problem-solving, planning, and motivating others, further supports glycaemic control and overall well-being [7].

Equity and Accessibility

Barriers to the adoption of mobile diabetes self-management applications have been identified at multiple levels. Collins et al. (2020) noted that the majority of participants in their study were unwilling to download apps, citing privacy, security, and data-sharing concerns, a lack of user-friendliness and accessibility, unfamiliarity and perceived usefulness, the availability of alternative methods, and fears of misuse [8]. Lind et al. (2022) found that perceived usefulness, accessibility, security, and user friendliness were significant factors in the acceptance of mobile health applications among diabetes patients. Specific barriers associated with diverse users were also

identified [5]. A multi-stakeholder analysis showed that patients and providers of underserved populations stressed the need for appropriate data visualizations and simplified interfaces, with adjustable icons and auto-fill features to facilitate data entry and interpretation [6]. Formative training and exposure were recommended to address low technology experience and health literacy [10]. Language barriers were also noted by some participants. Lastly, cost was mentioned as a barrier by many patients only 13% of smartphone owners intended to pay for health-related apps in one study yet the need for cost-free apps is rarely recognized in the literature [7].

Study Design and Measurement Issues

Self-management interventions targeting education, motivation, behavior modification, and monitoring are associated with positive health outcomes for diabetes patients and provide measurable, clinically meaningful benefits [1]. Consequently, many diabetes self-management apps emphasize educational components, by far the most prevalent feature across studies; they also facilitate behavior modification and offer motivational support through feedback loops [2]. Current literature points to a lack of theoretical underpinning in self-management app design, leaving potential associations between features and user behavior or outcomes unexamined. Apps differ on the degree of theoretical or conceptual grounding applied to feature incorporation, a factor likely to influence both deployment and success [9]. A clearer understanding of this relationship could inform future app development. Technology presents opportunities for intervention trials that examine outcome variations under different conditions [5]. In the absence of specific guidance on the optimal design for diabetes-management apps, several empirical studies have investigated prototype apps [6]. These trials reflect high interest in examining app impact and facilitation of real-world applicability. Actual behavioral change is a plausible outcome domain; however, reported measures fail to clarify specific changes associated with apps [7]. No studies assess diabetes-management apps under optimal conditions, limiting awareness of user-engagement factors. Current studies do not offer substantial evidence despite positive indications for glucose, insulin, and treatment regime relevant population-wide data is also missing. Empirical evidence of improved vegetation or higher-order outcomes remains [8].

Implications for Practice and Policy

Diabetes affects over 537 million adults worldwide, with expectations it will exceed 783 million by 2045. Adult-onset diabetes, particularly Type 2 Diabetes Mellitus (T2DM), is prevalent in lower-income and middle-income countries where diabetes rates are increasing rapidly. Adequate self-management of blood glucose levels can prevent complications and promote well-being for diabetes patients [2]. Mobile health (mHealth) solutions provide an opportunity to improve self-management such as monitoring diabetes, therapeutic adherence and making healthier choices. Mobile health applications (apps) are low-cost, always available, and allow easy data retrieval and self-tracking of diabetes information, making them an appealing option for self-management [4].

Diverse mobile apps for diabetes self-management have emerged on the market within a short timeframe. This narrative review aimed to identify mobile apps for self-management of diabetes, key features of the apps, and available evidence of their effectiveness [5]. The review focused on apps for diabetes management among adults. Ten research articles were included that described 50 different mobile apps used in diabetes self-management and their functionalities were categorized based on the type of support provided [6]. Mobile health applications (apps) are being evaluated to determine their effectiveness in enhancing diabetes self-management behaviours. A conceptual framework is presented that maps mobile app functions onto specific diabetes self-management expectations [5]. Broadly, diabetes self-management comprises at least seven expectations: monitoring and data tracking, medication support and treatment adherence, lifestyle and behaviour modification, education and decision support, communication, and care coordination [7]. Monitoring and data tracking includes glucose monitoring and trend analysis, medication support includes dosing schedules and reminders, lifestyle and behaviour modification encompasses diet and exercise tracking with feedback, education and decision support offers personalisation and risk alerts, communication includes teleconsultation, and care coordination addresses sharing data or facilitating collaboration with providers[8].

Future Directions and Research Priorities

Fueled by the increasing popularity of mobile technologies, multiple diabetes management applications have appeared promising to assist individuals and care providers in treatment and self-care in an all-new approach [11-13]. The literature indicates a notable gap in understanding the way diabetes applications are currently being utilized in our daily lives to assist diabetes self-management and the kind of outcomes they are supporting compared with the effort spent on developing novel solutions with potentially groundbreaking technologies. An effort to study existing diabetes mobile applications became therefore of interest to assess their actual usage relevance, to characterize their strengths and gap in supporting diabetes self-care, and finally to reflect on the conditions allowing the translation of the most innovative ideas into features likely to reach a large audience [14-17]. The hold of diabetes healthcare and every health specialty for which a mobile application, or more broadly mobile technology, has been created, it appears necessary to work on the existing databases to characterize which

diabetes-related mobile applications are currently available and map the features they provide for diabetes self-managing and when such applications[9]. Mobile solutions that target the complications of diabetes, tobacco dependence or addictions from other diseases; management tools for other chronic conditions except diabetes, drug addiction, Security, medical social networks; even general fitness and nutrition apps fall outside the domain, alongside serious games targeting population-based promotion of overall health and wellness [18-20].

CONCLUSION

Mobile applications represent a transformative approach to diabetes self-care, enabling patients to monitor glucose, adhere to treatment regimens, modify lifestyle behaviors, and access personalized educational support. Evidence suggests that apps can improve clinical outcomes, particularly HbA1c and fasting glucose, while enhancing patient engagement and self-efficacy. However, sustained usage remains a challenge, with barriers including usability issues, privacy concerns, digital inequities, and limited integration with healthcare systems. The heterogeneity of app features and the lack of standardized evaluation frameworks further complicate evidence-based adoption. To maximize the potential of diabetes self-management apps, future initiatives should emphasize longitudinal clinical trials, equitable access, user-centered design, interoperability with healthcare infrastructure, and robust assessment of quality and effectiveness. By addressing these gaps, mobile health technologies can become integral tools in improving diabetes outcomes, patient empowerment, and long-term disease management.

REFERENCES

1. Ersotelos NT, Margioris AN, Zhang X, Dong F. Review of mobile applications for optimizing the follow-up care of patients with diabetes. Hormones. 2018 Dec;17(4):541-50.
2. Ugwu CN, Ugwu OP, Alum EU, Eze VH, Basajja M, Ugwu JN, Ogenyi FC, Ejemot-Nwadiaro RI, Okon MB, Egba SI, Uti DE. Sustainable development goals (SDGs) and resilient healthcare systems: Addressing medicine and public health challenges in conflict zones. Medicine. 2025 Feb 14;104(7):e41535.
3. Stephen DA, Nordin A, Nilsson J, Persenius M. Using mHealth applications for self-care–An integrative review on perceptions among adults with type 1 diabetes. BMC Endocrine Disorders. 2022 May 25;22(1):138.
4. Ugwu OP, Alum EU, Ugwu JN, Eze VH, Ugwu CN, Ogenyi FC, Okon MB. Harnessing technology for infectious disease response in conflict zones: Challenges, innovations, and policy implications. Medicine. 2024 Jul 12;103(28):e38834.
5. Doupis J, Festas G, Tsilivigos C, Efthymiou V, Kokkinos A. Smartphone-based technology in diabetes management. Diabetes Therapy. 2020 Mar;11(3):607-19.
6. Ongesa TN, Ugwu OP, Ugwu CN, Alum EU, Eze VH, Basajja M, Ugwu JN, Ogenyi FC, Okon MB, Ejemot-Nwadiaro RI. Optimizing emergency response systems in urban health crises: A project management approach to public health preparedness and response. Medicine. 2025 Jan 17;104(3):e41279.
7. Garcia E, Martin C, Garcia A, Harrison R, Flood D. Systematic analysis of mobile diabetes management applications on different platforms. InSymposium of the Austrian HCI and Usability Engineering Group 2011 Nov 25 (pp. 379-396). Berlin, Heidelberg: Springer Berlin Heidelberg.
8. Pérez-Jover V, Sala-González M, Guilabert M, Mira JJ. Mobile apps for increasing treatment adherence: systematic review. Journal of medical Internet research. 2019 Jun 18;21(6):e12505.
9. Ugwu CN, Ugwu OP, Alum EU, Eze VH, Basajja M, Ugwu JN, Ogenyi FC, Ejemot-Nwadiaro RI, Okon MB, Egba SI, Uti DE. Medical preparedness for bioterrorism and chemical warfare: A public health integration review. Medicine. 2025 May 2;104(18):e42289.
10. Holmen H, Wahl AK, Cvancarova Småstuen M, Ribu L. Tailored communication within mobile apps for diabetes self-management: a systematic review. Journal of medical Internet research. 2017 Jun 23;19(6):e227.
11. Kebede MM, Pischke CR. Popular diabetes apps and the impact of diabetes app use on self-care behaviour: a survey among the digital community of persons with diabetes on social media. Frontiers in endocrinology. 2019 Mar 1;10:135.
12. Paul-Chima UO, Ugwu CN, Alum EU. Integrated approaches in nutraceutical delivery systems: optimizing ADME dynamics for enhanced therapeutic potency and clinical impact. RPS Pharmacy and Pharmacology Reports. 2024 Oct;3(4):rqae024.
13. Flors-Sidro JJ, Househ M, Abd-Alrazaq A, Vidal-Alaball J, Fernandez-Luque L, Sanchez-Bocanegra CL. Analysis of diabetes apps to assess privacy-related permissions: systematic search of apps. JMIR diabetes. 2021 Jan 13;6(1):e16146.
14. Alum EU, Ugwu OP, Obeagu EI, Aja PM, Ugwu CN, Okon MB. Nutritional care in diabetes mellitus: a comprehensive guide. International Journal of Innovative and Applied Research. 2023;11(12):16-25.
15. Sneha S, Thalla S, Rischie I, Shahriar H. Health internet technology for chronic conditions: review of diabetes management apps. JMIR diabetes. 2021 Aug 31;6(3):e17431.

16. Ugwu OP, Ogenyi FC, Ugwu CN, Ugwu MN. Gut microbiota-derived metabolites as early biomarkers for childhood obesity: A policy commentary from urban African populations. Obesity Medicine. 2025 Sep 1;57:100641.
17. Bonet Olivencia S, Rao AH, Smith A, Sasangohar F. Eliciting requirements for a diabetes self-management application for underserved populations: a multi-stakeholder analysis. International Journal of Environmental Research and Public Health. 2021 Dec 23;19(1):127.
18. Paul-Chima UO, Nneoma UC, Bulhan S. Metabolic immunobridge: Could adipose-derived extracellular vesicles be the missing link between obesity, autoimmunity, and drug-induced hepatotoxicity?. Medical Hypotheses. 2025 Sep 28:111776.
19. Ugwu OP, Ogenyi FC, Ugwu CN, Basajja M, Okon MB. Mitochondrial stress bridge: Could muscle-derived extracellular vesicles be the missing link between sarcopenia, insulin resistance, and chemotherapy-induced cardiotoxicity?. Biomedicine & Pharmacotherapy. 2025 Dec 1;193:118814.
20. Martos-Cabrera MB, Velando-Soriano A, Pradas-Hernández L, Suleiman-Martos N, Cañadas-De la Fuente GA, Albendín-García L, Gómez-Urquiza JL. Smartphones and apps to control glycosylated hemoglobin (HbA1c) level in diabetes: a systematic review and meta-analysis. Journal of clinical medicine. 2020 Mar 4;9(3):693.

CITE AS: Irakoze Mukamana S. (2026). Narrative Review of Mobile Applications for Diabetes Self-Care. IDOSR JOURNAL OF SCIENTIFIC RESEARCH 11(1):39-45. https://doi.org/10.59298/IDOSRJSR/2026/11.1.3945