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DIGITAL INTERPROFESSIONAL COLLABORATION FOR DIABETIC CARE THROUGH TELEHEALTH AND MOBILE HEALTH INTEGRATION IN THE COMMUNITY: A SYSTEMATIC REVIEW

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Abstract **Background**: Type 2 Diabetes (T2DM) is a preventable yet complex condition, primarily impacted by fragmented healthcare delivery and poor patient adherence to treatment. Despite the potential of digital health solutions such as telehealth and mobile health (mHealth), their integration into interprofessional diabetes care remains limited.

Objectives:. This systematic review examines the integration of telehealth and mHealth into interprofessional collaboration for diabetes care, focusing on the types of interventions, outcomes, and barriers to implementation.

Method: A literature search was conducted across PubMed and Scopus for studies published between January 2015 and October 2025. Studies using telehealth and/or mHealth for diabetes management in community settings, emphasizing interprofessional collaboration, were included. Excluded were studies on pharmacological interventions and non-peer-reviewed articles. Eight studies met the inclusion criteria.

Results: The studies revealed that telehealth and mHealth integration significantly improved diabetes care, enhancing glycemic control and patient engagement. These technologies promoted better self-management behaviors and strengthened communication between patients and healthcare providers. Barriers such as digital literacy, technology access, and inconsistent follow-up protocols were identified, limiting the full potential of these interventions. Despite these challenges, telehealth and mHealth demonstrated significant promise for improving clinical outcomes, especially in underserved areas

Conclusion: Telehealth and mHealth significantly improve diabetes care, particularly in terms of glycemic control and patient engagement. Addressing digital illiteracy and ensuring consistent follow-up are crucial for optimizing these technologies in interprofessional diabetes management.

Keywords: Interprofessional Relations, Mobile Health, Telemedicine, Diabetes Mellitus.

BACKGROUND

Diabetes is a global health crisis, with an estimated 462 million adults living with diabetes in 2017, a number projected to rise to 783 million by 2045 (1). Among these, a significant portion are from low- and middle-income countries (LMICs), where healthcare access and diabetes management infrastructure remain limited (2). According to the World Health Organization (WHO), approximately 90% of diabetes cases are Type 2 Diabetes (T2DM), a preventable condition largely driven by lifestyle factors, including diet and physical activity (3). The increasing burden of diabetes is accompanied by escalating healthcare costs and a rising incidence of complications, including cardiovascular diseases, kidney failure, and amputations, which significantly reduce quality of life and productivity (4).

Despite substantial efforts to address diabetes through traditional clinical models, challenges such as fragmented care, low patient adherence, and the complexity of managing chronic conditions in resource-constrained environments remain pervasive (5). In response to these challenges, digital health technologies, including telehealth and mobile health (mHealth), have emerged as promising solutions to facilitate diabetes care outside of traditional clinical settings (6). By enabling remote consultations, real-time monitoring, and patient education, these tools offer opportunities for more personalized and continuous care, which is essential for managing chronic diseases like diabetes, especially in underserved communities (7).

Recent studies highlight the growing integration of telehealth and mHealth in diabetes care. A study by *Anderson* (8) found that telehealth interventions improved medication adherence and glycemic control among rural populations. Similarly, Gal et al (9) demonstrated the effectiveness of mHealth applications in supporting lifestyle modifications and improving diabetes self-management in low-resource settings in Sub-Saharan Africa. However, while promising, the integration of digital health into interprofessional diabetes care remains underexplored, especially with regard to how these technologies can facilitate collaboration among healthcare teams and patients (10).

Existing literature, such as study in USA (11), shows the potential for telehealth and mHealth to enhance communication between healthcare professionals, but gaps remain in understanding the broader implications of digital interprofessional collaboration for diabetes care. Recent studies in California (12) also reveal challenges in implementation, such as issues with technological literacy, connectivity, and patient engagement (13). Although the benefits of telehealth and mHealth are increasingly recognized, few studies systematically evaluate their integration into collaborative care models for diabetes, particularly at the community level (14). The integration of telehealth and mHealth into interprofessional care could significantly improve outcomes for patients with diabetes.

This systematic review addresses this gap by mapping and synthesizing the evidence on digital interprofessional collaboration in diabetes care, guided by the WHO Integrated Care Model. Specifically, it will explore the types of interventions, behavioral frameworks, outcomes, and barriers to effective implementation

METHODS

Study Design

This systematic review aimed to evaluate the effectiveness of digital interprofessional collaboration for diabetes care, particularly focusing on telehealth and mobile health integration in the community. The systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for systematic reviews, with specific attention to the PRISMA.

Search Strategy

A comprehensive literature search was performed on the 18 th of October, 2025, using three electronic databases: PubMed and Scopus. Keywords for the search included "digital interprofessional collaboration," "telehealth," "mobile health," "diabetes care," "community health," and "integrated care," combined with various Boolean operators. The full search strategy for each database is detailed in Supplementary material 2. Additionally, grey literature was searched via repositories of the World Health Organization (WHO), United Nations Children's Fund (UNICEF), and World Bank, as well as Google Scholar**.**

Eligibility Criteria

Studies included in this systematic review were required to meet the following criteria: (1) focus on interprofessional collaboration in diabetes care, incorporating telehealth and/or mobile health technologies, (2) involve community-based settings, and (3) report outcomes related to the effectiveness of these technologies in managing diabetes. Studies published between January 2015 and the search date, in English, peer-reviewed, and available in full text were included. Exclusion criteria included studies focusing on pharmacological interventions, those not involving telehealth or mobile health, and non-peer-reviewed articles such as editorials, commentaries, and conference abstracts.

Study Selection

Two independent reviewers (MFS & INK) initially screened titles and abstracts of all identified records based on the inclusion and exclusion criteria using Rayyan AI software [17]. A third round of screening was performed by reviewing reference lists from eligible studies. In cases of discrepancies, disagreements were resolved through consensus. The full text of potentially eligible studies was then assessed, and data was extracted independently by the same reviewers. The data extracted included study design, participant characteristics, intervention details, outcomes, and limitations. Extracted data were then cross-checked and compiled. A descriptive synthesis of study characteristics was performed using Microsoft Office Excel 2019, with a standardized template, which included author, year, country, study design, intervention, and outcomes.

RESULT AND DISCUSSION

Figure 1 showed a PRISMA flowchart diagram. The systematic literature search identified a total of 579 records from two databases: PubMed (n = 210), Scopus (n = 369). After removing 87 duplicates, 492 unique records were screened for eligibility. Following this, 481 articles were excluded based on predefined exclusion criteria, which included inappropriate study designs (n = 180), publication types (n = 147), populations (n = 87), and outcomes (n = 67). Eleven full-text articles were retrieved for further evaluation. Three reports were excluded at this stage: One for not describing a health intervention and two due to access restrictions (paywall). Ultimately, eight studies met the inclusion criteria and were included in this systematic review.

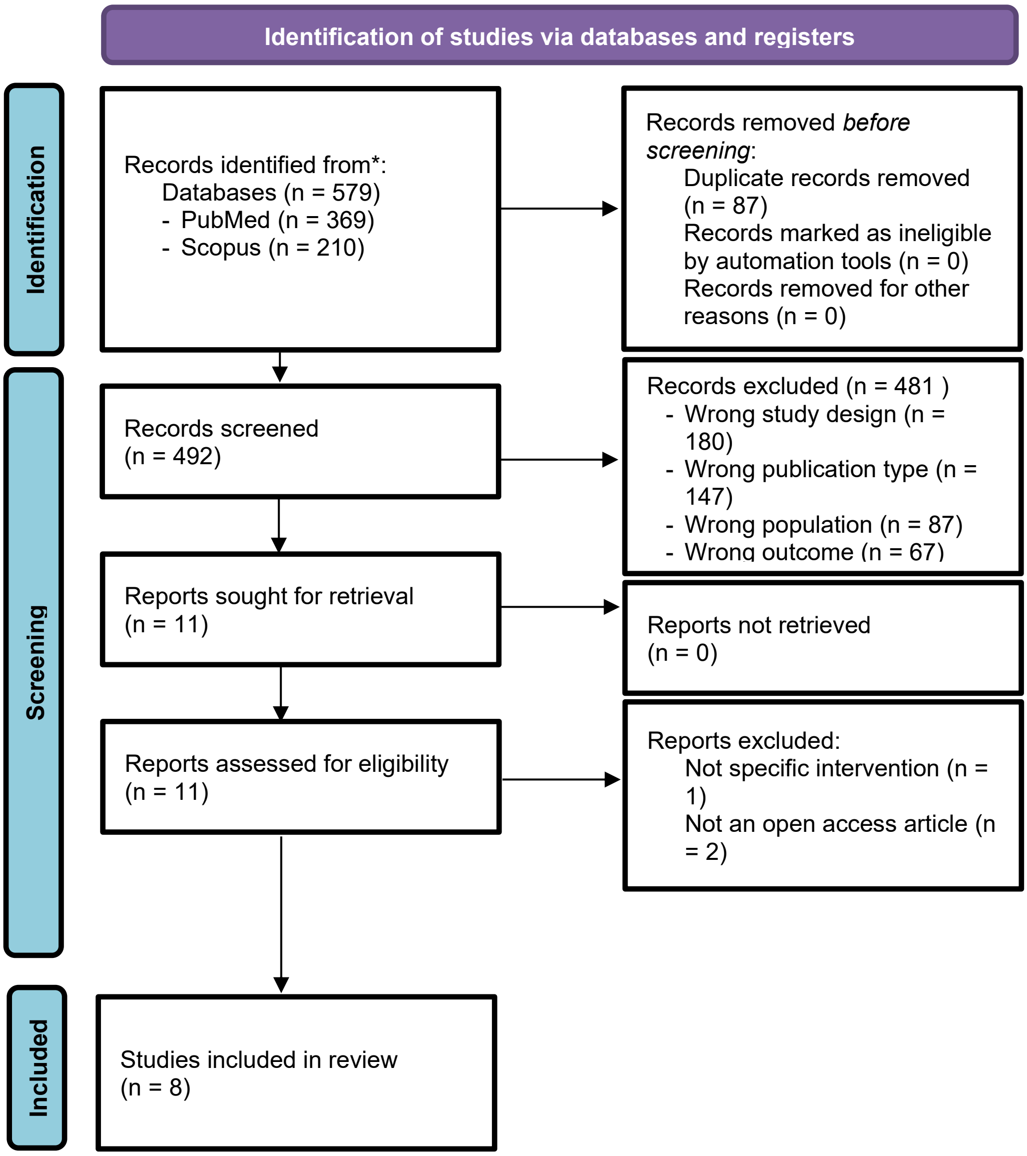

Figure 1. PRISMA flowchart diagram of article selection for a systematic review of Digital Interprofessional Collaboration for Diabetic Care: Telehealth and Mobile Health Integration in the Community**.**

Table 1 showed the characteristics of each study, including the country, study design, sample size, intervention details, and outcomes observed. The selected studies encompassed a range of interventions that focused on integrating digital technologies, including telehealth and mobile health applications, into diabetes care..

The included studies reported various methods for integrating telehealth and mobile health into diabetes care, involving different combinations of telemedicine consultations, mobile apps, and data-sharing platforms to enhance diabetes management. For example, study in USA (15) conducted a multi-site randomized trial in the USA and found that integrating mobile and wearable data with electronic health records (EHR) enhanced goal tracking, diabetes education, and behavioral outcomes. Similarly, study in USA (16) conducted a retrospective analysis of EHR data and found improvements in glycemic control (HbA1c) and connectivity to care through telehealth visits at community health centers.

The study in USA (17) on cloud-based insulin initiation and titration demonstrated a significant reduction in HbA1c levels with telehealth support, compared to usual care, with no adverse effects on hypoglycemia or weight. Other studies, such as those in USA (18) reported similar findings, with significant improvements in HbA1c levels, enhanced self-management, and better patient engagement through mobile health apps and remote monitoring systems.

The study in Trinidad (19) showed high acceptance of a mobile diabetes self-management support app, with frequent engagement and improved self-management behaviors, though clinical outcomes were not assessed. Study in USA (20) identified six critical themes related to telehealth adaptation post-COVID-19, including remote data access, follow-up scheduling, and team-based workflows, which influenced the quality and equity of telehealth visits.

Study in Canada (21) explored the feasibility and satisfaction of the Technology-Enabled Collaborative Care for Diabetes and Mental Health (TECC-D) model, finding that the model was feasible, scalable, and led to improved self-management, with enhanced integration of physical and mental health care.

In summary, the studies demonstrate that technology-enabled diabetes care, particularly when integrating telehealth and mobile health solutions, can improve clinical outcomes, patient engagement, and overall satisfaction. The most common outcomes measured included HHbA1c reduction, patient satisfaction, and improved self-management behaviors. However, gaps in evidence remain, particularly in terms of long-term outcomes and standardized protocols for integrating technology across diverse healthcare systems.

Table 1. Main characteristics of the studies published on the Interprofessional Collaboration for Diabetic Care Telehealth and Mobile Health Integration in the Community between January 1st, 2015, and October 18st, 2025.

Author (Years)	Country	Study Design	Intervention	Outcome
Wang et al. (2018) (15)	USA	Multi-Site Randomized Trial	Connected system integrating mobile and wearable data with EHR for diabetes education	Enhanced goal tracking, better diabetes education, and improved behavioral outcomes
Simon et al. (2024) (16)	United States	Retrospective analysis of Electronic Health Record (EHR) data	Telehealth (video and telephone visits)	Glycemic control (measured by HbA1c levels) Connectivity to care (measured by number of months connected to care)
Hsu et al. (2016) (17)	United States	Randomized controlled trial	Cloud-based insulin initiation/titration with self-tracking, secure messaging, and virtual visits (PREDICTIVE 303–guided).	Greater HbA1c reduction vs usual care (−3.2% vs −2.0%; P=0.048) and higher satisfaction; no increase in hypoglycemia or weight; less clinic time required.
Onyia et al. (2023) (18)	United States	Three-arm randomized controlled pilot trial	Diabetes-M mobile app (MA) vs. app + telehealth counseling by diabetes nurse	HbA1c fell more in MA (10.4→7.2) and MA-HC (10.2→7.6) vs control (10.1→9.1); between-group differences vs control significant at 6 months; no

Author (Years)	Country	Study Design	Intervention	Outcome
			(MA-HC) vs. usual care	MA vs MA-HC difference; improved self-management metrics in MA-HC; QoL signals positive.
Davis et al. (2019) (22)	United States	Prospective longitudinal cohort (remote patient monitoring + telehealth)	Home RPM via glucometer + tablet modules, nurse care coordination, specialty access (endocrinology, dietetics), protocol-driven education and follow-up	HbA1c dropped from 9.5% (baseline) to ~7.7–7.9 (3–12 months); significant improvements in TC, LDL, HDL, TG, creatinine clearance, GFR, potassium; no change in weight, BP, BUN, microalbumin; gains peaked by 3–4 months and were sustained.
Sultan S & Mohan P (2015) (19)	Trinidad and Tobago	Two-phase mixed user study (lab usability test and 3-month field trial)	Mobile Diabetes Self-Management Support (DSMS) app enabling peer-support, messaging, trivia, and self-monitoring via Android smartphones	High acceptance (75% willing to use); frequent engagement (avg. 4×/week); collaboration mostly at coordination/cooperation levels; most-used feature was Trivia (32% logs); improved self-management interaction, but clinical outcomes not assessed.
Haynes et al. (2024) (20)	United States	Qualitative study using semi-structured interviews (COREQ-guided content analysis)	Telehealth specialty diabetes care delivery and adaptation strategies post-COVID-19	Identified six themes: remote data access, follow-up scheduling, team-based workflows, leveraging home environment, setting visit expectations, data sharing via screen share; recommended structured workflows, diabetes navigators, and patient engagement protocols to optimize telehealth quality and equity.
Sherifali D et al. (2023) (21)	Canada	Explanatory sequential feasibility trial with qualitative evaluation	Technology-Enabled Collaborative Care for Diabetes and Mental Health (TECC-D) — weekly virtual health coaching via phone/web by Certified Diabetes Educators	The TECC-D model was feasible, acceptable, and scalable. Participants reported improved engagement, perceived integration of physical and mental health care, enhanced self-management, and satisfaction with coaching and multidisciplinary support
Wang et al. (2018) (15)	USA	Multi-Site Randomized Trial	Connected system integrating mobile and wearable data with EHR for diabetes education	Enhanced goal tracking, better diabetes education, and improved behavioral outcomes

List of abbreviations:
EHR - Electronic Health Record

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HbA1c - Hemoglobin A1c
MA - Mobile App
MA-HC - Mobile App + Telehealth Counseling
RPM - Remote Patient Monitoring
TC - Total Cholesterol
LDL - Low-Density Lipoprotein
HDL - High-Density Lipoprotein
TG - Triglycerides
GFR - Glomerular Filtration Rate
BUN - Blood Urea Nitrogen
DSMS - Diabetes Self-Management Support
QoL - Quality of Life
COREQ - Consolidated Criteria for Reporting Qualitative Research
TECC-D - Technology-Enabled Collaborative Care for Diabetes and Mental Health

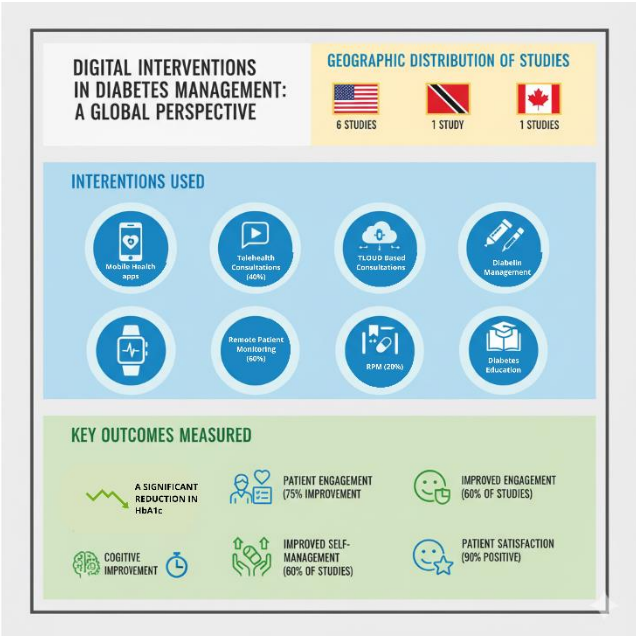

Figure 2. Geographic distribution, intervention types, and key outcomes of digital interprofessional collaboration studies in diabetes care.

Figure 2. summarizes eight included studies examining digital interventions in diabetes management. Most studies were conducted in the United States (n = 6), followed by Trinidad and Tobago (n = 1) and Canada (n = 1). Interventions primarily involved mobile health applications, telehealth consultations (40%), remote patient monitoring (60%), insulin management support, and diabetes education. Key outcomes reported across studies included significant reductions in HbA1c, improved patient engagement (75%), enhanced self-management (60%), cognitive improvement, and high patient satisfaction (90% positive).

Overview of Digital Health Interventions in Diabetes Care

The studies reviewed demonstrate that digital health solutions, like telehealth and mobile health apps, can enhance clinical outcomes, patient engagement, and self-management in diabetes care. Telehealth, including remote consultations and mobile apps, supports frequent monitoring (23), continuous care, and improved patient-provider communication, leading to better diabetes control and timely interventions (24). These

solutions address gaps in traditional care, such as limited access to specialists, care interruptions, and the need for personalized treatment (13). Telehealth interventions, especially video consultations, maintained care continuity during and post-pandemic, particularly for patients in rural or underserved areas (25).
Mobile apps enabled real-time tracking of health metrics, allowing patients to manage their condition proactively. However, success varied across studies due to factors like intervention type, telehealth session frequency, and technology complexity. For instance, study in USA (17) saw greater HbA1c reductions with cloud-based insulin titration and telehealth compared to usual care, while Study in Trinidad and Tobago (19) did not report clinical outcomes, indicating the need for stronger evidence. Digital health's effectiveness comes from continuous monitoring, enabling early issue detection, timely adjustments, and better disease management (26). Telehealth overcomes access barriers, allowing remote care, which is especially beneficial for patients in isolated areas (27). Mobile apps offer personalized recommendations based on real-time data, enabling tailored care (28). The integration of telehealth and mobile health has shown promise in improving clinical outcomes, particularly HbA1c reduction, patient engagement, and self-management, with scalability and versatility across various healthcare settings (29).

Telehealth and Glycemic Control
The evidence reviewed in this study highlights the significant impact of telehealth on glycemic control, particularly in reducing HbA1c levels. For instance, studies in USA (16) illustrate the ability of telehealth to facilitate consistent, timely interventions that contribute to improved glycemic control. The consistency of findings across studies that report reduced HbA1c levels suggests that telehealth interventions can be an effective strategy for diabetes management (30). Telehealth enables regular monitoring and adjustments to treatment plans, which is crucial for managing diabetes (31). However, the degree of success varied depending on the study's setting and intervention approach. For example, study in USA (17) achieved a significant reduction in HbA1c through cloud-based insulin titration, highlighting the role of advanced technology in glycemic control.
Conversely, study in USA (16) found improvements in connectivity to care but with more moderate improvements in glycemic control, indicating that telehealth might be more effective in ensuring access to care than in directly improving glycemic outcomes. Telehealth supports glycemic control by enabling more frequent patient-provider interactions, allowing for timely adjustments to treatment plans (32). Additionally, regular monitoring through telehealth promotes adherence to treatment regimens, leading to better control over blood glucose levels.Telehealth plays a pivotal role in managing glycemic control for patients with diabetes, particularly in underserved areas (24). Its ability to facilitate continuous care and real-time adjustments makes it a valuable tool in maintaining optimal diabetes management (33).

Patient Engagement and Mobile Health Apps
Mobile health applications, especially when used alongside telehealth interventions, improve patient engagement and self-management behaviors. Studies in USA (18) and Trinidad & Tobago (19) demonstrate that patients using mobile health apps showed better engagement, adherence to treatment regimens, and improvements in self-management metrics. Mobile health apps provide patients with real-time feedback on their health metrics, which can improve adherence to diabetes management strategies and foster more proactive behavior. The study in USA (18) showed significant reductions in HbA1c in patients using a mobile app combined with telehealth counseling. However, study ini Trinidad & Tobago (19) highlighted high engagement with a mobile diabetes self-management support app but did not report clinical outcomes, suggesting the need for more comprehensive studies that integrate clinical measures with app usage. Mobile apps support diabetes management by allowing patients to track health metrics such as blood glucose levels, medication adherence, and physical activity (34).
This real-time data collection enables better decision-making and helps patients stay

engaged with their care plans (35). The integration of mobile apps with telehealth counseling enhances patient engagement, leading to improved self-management and HbA1c reduction (36). However, further studies are needed to assess the long-term clinical impact of these apps

Remote Patient Monitoring and Team-Based Care

The integration of remote patient monitoring (RPM) with team-based care, as seen in USA (22), provides substantial benefits for patients, particularly in rural and underserved settings. RPM enables continuous monitoring, which helps in early detection of issues and ensures timely interventions (37). RPM, combined with care coordination, improves the efficiency of diabetes management by reducing the need for frequent in-person visits and enabling healthcare providers to intervene proactively (38). The study in USA (22) showed significant improvements in HbA1c levels and other health metrics such as lipid profiles, underlining the effectiveness of RPM in preventing complications associated with diabetes.

However, the challenge remains in ensuring seamless integration of RPM data into clinical workflows and maintaining patient engagement (39). RPM helps monitor critical diabetes parameters continuously, allowing for timely adjustments to treatment plans and ensuring that patients remain within their target ranges for blood glucose and other key metrics (40). RPM is an effective tool for improving clinical outcomes and reducing healthcare costs by preventing hospitalizations and enabling preventive care (41). Its integration into team-based care models further enhances the quality and accessibility of care (41).

Challenges and Barriers to Digital Health Integration

Several barriers to the successful integration of digital health technologies into diabetes care have been identified, particularly issues related to digital literacy, access to technology (20), and inconsistent follow-up protocols (21). Although digital health solutions have demonstrated significant benefits, challenges remain in their widespread implementation (42). Patients with low digital literacy or limited access to technology may face difficulties in fully utilizing telehealth and mobile health platforms (43). The lack of standardized workflows for follow-up care also hinders the sustainability of these interventions (43). Overcoming these barriers will require targeted efforts to improve digital literacy, ensure equitable access to technology, and establish structured follow-up protocols (44). Barriers such as digital illiteracy and inconsistent access to technology create disparities in the effectiveness of digital health interventions (45).

These issues are especially pronounced in lower-resource settings, where internet connectivity and access to smartphones or computers may be limited (46). Addressing these barriers is critical for ensuring that digital health solutions are accessible to all patients, particularly those in underserved or rural areas (47). Further research into scalable solutions for overcoming these challenges is essential.

Implications for Integrated Care Models

The integration of physical and mental health care through telehealth and mobile health, as exemplified study in Canada (21) presents a promising approach for patients with comorbidities, enhancing both self-management and overall health outcomes. Integrated care models that address both physical and mental health needs provide a holistic approach to diabetes care (48). The TECC-D model demonstrated that combining diabetes care with mental health support through telehealth resulted in improved self-management and enhanced patient satisfaction (21). Such integrated models can be particularly beneficial for patients with comorbid conditions, where managing both aspects of care simultaneously can improve quality of life and reduce complications (49). Integrating mental health care with diabetes management helps address the psychological barriers to effective diabetes control, such as depression and anxiety, which are common in people with diabetes (50).

This holistic approach ensures that both physical and psychological health are considered in treatment plans (48).The scalability and feasibility of integrated care models make them an effective solution for managing complex health needs, particularly in virtual care settings where access to multidisciplinary teams can be limited (51).

Despite the promising findings, this systematic review has several limitations. Firstly, the studies included were heterogeneous in terms of intervention types, study designs, and outcomes

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measured, which may limit the generalizability of the results. Secondly, many of the studies focused on short-term outcomes, and long-term effects of digital health interventions remain underexplored. Additionally, a significant gap in the literature exists regarding standardized protocols for implementing digital health solutions across different healthcare systems, particularly in low-resource settings. Further research is needed to address these gaps, including large-scale, long-term studies to evaluate the sustained impact of digital health interventions on patient outcomes and healthcare utilization.

CONCLUSION

Telehealth enables more frequent monitoring and continuous care, allowing for timely interventions that are essential in managing diabetes, particularly for patients in rural or underserved areas. Mobile health apps, when integrated with telehealth interventions, further enhance patient engagement by enabling real-time tracking of health metrics and providing personalized treatment recommendations. The studies also highlight the effectiveness of telehealth in improving glycemic control, particularly HbA1c reduction. However, success varies depending on factors such as the type of intervention, frequency of visits, and technological complexity.

COMPETING INTERESTS

The authors declare that there are no conflicts of interest related to this study.

AUTHOR'S CONTRIBUTION

Muhammad Firmansyah: Screening, Data curation, Writing - Original draft preparation. Inti Kalun Nafi'ah: Screening, Data curation, Writing - Original draft preparation. Ikhwan Yuda Kusuma: Supervision, Data interpretation, Writing - Reviewing and Editing.

REFERENCES

1. Khan MAB, Hashim MJ, King JK, Govender RD, Mustafa H, Al Kaabi J. Epidemiology of Type 2 Diabetes – Global Burden of Disease and Forecasted Trends: J Epidemiol Glob Health. 2019;10(1):107.

2. Atun R, Davies JI, Gale EAM, Bärnighausen T, Beran D, Kengne AP, et al. Diabetes in sub-Saharan Africa: from clinical care to health policy. Lancet Diabetes Endocrinol. 2017 Aug;5(8):622–67.

3. Ayele AA, Emiru YK, Tiruneh SA, Ayele BA, Gebremariam AD, Tegegn HG. Level of adherence to dietary recommendations and barriers among type 2 diabetic patients: a cross-sectional study in an Ethiopian hospital. Clin Diabetes Endocrinol. 2018 Dec;4(1):21.

4. Oh SH, Ku H, Park KS. Prevalence and socioeconomic burden of diabetes mellitus in South Korean adults: a population-based study using administrative data. BMC Public Health. 2021 Dec;21(1):548.

5. Saidi S, Milnes LJ, Griffiths J. Are we doing it right? Self-care support for patients with type 2 diabetes in urban areas in Malaysia. Enferm Clínica. 2019 Sept;29:691–7.

6. Ebekozien O, Fantasia K, Farrokhi F, Sabharwal A, Kerr D. Technology and health inequities in diabetes care: How do we widen access to underserved populations and utilize technology to improve outcomes for all? Diabetes Obes Metab. 2024 Mar;26(S1):3–13.

7. Ezeamii VC, Okobi OE, Wambai-Sani H, Perera GS, Zaynieva S, Okonkwo CC, et

al. Revolutionizing Healthcare: How Telemedicine Is Improving Patient Outcomes and Expanding Access to Care. Cureus [Internet]. 2024 July 5 [cited 2025 Oct 20]; Available from: https://www.cureus.com/articles/265705-revolutionizing-healthcare-how-telemedicine-is-improving-patient-outcomes-and-expanding-access-to-care

8. Anderson A, O'Connell SS, Thomas C, Chimmanamada R. Telehealth interventions to improve diabetes management among Black and Hispanic patients: a systematic review and meta-analysis. J Racial Ethn Health Disparities. 2022;9(6):2375–86.

9. Gal RL, Cohen NJ, Kruger D, Beck RW, Bergenstal RM, Calhoun P, et al. Diabetes telehealth solutions: improving self-management through remote initiation of continuous glucose monitoring. J Endocr Soc. 2020;4(9):bvaa076.

10. Agarwal G, Gaber J, Richardson J, Mangin D, Ploeg J, Valaitis R, et al. Pilot randomized controlled trial of a complex intervention for diabetes self-management supported by volunteers, technology, and interprofessional primary health care teams. Pilot Feasibility Stud. 2019 Dec;5(1):118.

11. Sun CA, Shenk Z, Renda S, Maruthur N, Zheng S, Perrin N, et al. Experiences and perceptions of telehealth visits in diabetes care during and after the COVID-19 pandemic among adults with type 2 diabetes and their providers: qualitative study. JMIR Diabetes. 2023;8:e44283.

12. Tierney AA, Payán DD, Brown TT, Aguilera A, Shortell SM, Rodriguez HP. Telehealth Use, Care Continuity, and Quality: Diabetes and Hypertension Care in Community Health Centers Before and During the COVID-19 Pandemic. Med Care. 2023 Apr;61(Suppl 1):S62–9.

13. Tierney AA, Payán DD, Brown TT, Aguilera A, Shortell SM, Rodriguez HP. Telehealth use, care continuity, and quality: diabetes and hypertension care in community health centers before and during the COVID-19 pandemic. Med Care. 2023;61:S62–9.

14. Jia W, Zhang P, Zhu D, Duolikun N, Li H, Bao Y, et al. Evaluation of an mHealth-enabled hierarchical diabetes management intervention in primary care in China (ROADMAP): A cluster randomized trial. Basu S, editor. PLOS Med. 2021 Sept 21;18(9):e1003754.

15. Wang J, Chu CF, Li C, Hayes L, Siminerio L, others. Diabetes educators' insights regarding connecting mobile phone–and wearable tracker–collected self-monitoring information to a nationally-used electronic health record system for diabetes education: descriptive qualitative study. JMIR MHealth UHealth. 2018;6(7):e10206.

16. Simon J, Eggleston A, Bright D, Driscoll P, Morrison J, Yang TY, et al. The Role of Telehealth in Improving Care Connections and Outcomes for Community Health Center Patients with Diabetes. J Am Board Fam Med. 2024 Mar;37(2):206–14.

17. Hsu WC, Lau KHK, Huang R, Ghiloni S, Le H, Gilroy S, et al. Utilization of a Cloud-Based Diabetes Management Program for Insulin Initiation and Titration Enables Collaborative Decision Making Between Healthcare Providers and Patients. Diabetes Technol Ther. 2016 Feb;18(2):59–67.

18. Onyia AU, Berhie G, Cecchetti A, Hines A. The Use of Digital Telehealth for the Self-

Management of Type 2 Diabetes Patients in Hinds County, Mississippi: A Pilot Study. J Patient Exp. 2023 Jan;10:23743735231188835.

19. Sultan S, Mohan P. An Investigation into the Role of Mobile Technology in Collaborative Disease Management for Persons Living with Type 2 Diabetes. EAI Endorsed Trans Pervasive Health Technol. 2015 May 18;1(1):e6.

20. Haynes SC, Sarkisian M, Neinstein AB, Wong JC, Teng PF, Marcin JP, et al. From Surviving to Thriving: A Qualitative Study of Adapting Telehealth Systems for Specialty Diabetes Care Across Four California Medical Centers. Clin Diabetes. 2024 Oct 1;42(4):497–504.

21. Sherifali D, Whitmore C, Naeem F, Melamed OC, Dragonetti R, Kouzoukas E, et al. Technology-Enabled Collaborative Care for Type-2 Diabetes and Mental Health (TECC-D): Findings From a Mixed Methods Feasibility Trial of a Responsive Co-Designed Virtual Health Coaching Intervention. Int J Integr Care. 2024 Feb 16;24:12.

22. Davis TC, Hoover KW, Keller S, Replogle WH. Mississippi Diabetes Telehealth Network: A Collaborative Approach to Chronic Care Management. Telemed E-Health. 2020 Feb 1;26(2):184–9.

23. Eiland L, Datta P, Samson K, Anzalone J, Donovan A, McAdam-Marx C. In-person and telehealth provider access and glycemic control for people with diabetes during the COVID-19 pandemic. J Diabetes Sci Technol. 2023;17(4):895–900.

24. Shao Y, Shi L, Nauman E, Price-Haywood E, Stoecker C. Telehealth use and its impact on clinical outcomes in patients with type 2 diabetes during the COVID-19 pandemic. Diabetes Obes Metab. 2024;26(1):118–25.

25. Hooker SA, Truitt A, Anderson JP, Kane S, O'Connor PJ, Sperl-Hillen JM. Impact of the COVID-19 pandemic on type 2 diabetes care delivery. Clin Diabetes. 2022;40(4):442–8.

26. Wang R, Rouleau G, Booth GL, Brazeau AS, El-Dassouki N, Taylor M, et al. Understanding whether and how a digital health intervention improves transition care for emerging adults living with type 1 diabetes: protocol for a mixed methods realist evaluation. JMIR Res Protoc. 2023;12(1):e46115.

27. Lo Presti L, Testa M, Maggiore G, Marino V. Key drivers involved in the telemonitoring of COVID-19 for self-health management: An exploratory factor analysis. BMC Health Serv Res. 2022;22(1):520.

28. Okolo CA, Babawarun O, Arowoogun JO, Adeniyi AO, Chidi R, others. The role of mobile health applications in improving patient engagement and health outcomes: A critical review. Int J Sci Res Arch. 2024;11(1):2566–74.

29. Sang H, Kim S, Hwang J, Woo S, Hwang Y, Kim J, et al. Impact of the WellCheck smartphone app linked to electronic health records on clinical outcomes in patients with type 2 diabetes: Study protocol for primary care-based, prospective, multicenter, cluster-randomized, pragmatic clinical trials. PLoS One. 2025;20(8):e0329003.

30. Walker B, Stoecker C, Shao Y, Nauman E, Fort D, Shi L. Telehealth and medicare type 2 diabetes care outcomes: evidence from Louisiana. Med Care. 2023;61:S77–

82.

31. Lee PA, Greenfield G, Pappas Y. The impact of telehealth remote patient monitoring on glycemic control in type 2 diabetes: a systematic review and meta-analysis of systematic reviews of randomised controlled trials. BMC Health Serv Res. 2018;18(1):495.

32. Santos DS, Batistelli CRS, Lara MM dos S, Ferreira E de S, Moreira TR, Cotta RMM. The effectiveness of the use of telehealth programs in the care of individuals with hypertension and, or diabetes mellitus: systematic review and meta-analysis. Diabetol Metab Syndr. 2022;14(1):76.

33. German J, Eldridge MR, Esteve L, Alexopoulos AS, Drake C, Lewinski A, et al. Perceptions of a Comprehensive Telehealth Intervention in Patients with Persistently Poor Type 2 Diabetes Control. J Clin Transl Sci. :1–22.

34. Chong CJ, Bakry MM, Hatah E, Mohd Tahir NA, Mustafa N. Effects of mobile apps intervention on medication adherence and type 2 diabetes mellitus control: a systematic review and meta-analysis. J Telemed Telecare. 2025;31(2):157–73.

35. Burda V, Mráz M, Schneider J, Novák D. Managing diabetes using Mobiab: long-term case study of the impact of a mobile app on self-management. JMIR Diabetes. 2022;7(2):e36675.

36. LeSeure P, Chin E, Zhang S. A Culturally Sensitive Mobile App (DiaFriend) to Improve Self-Care in Patients With Type 2 Diabetes: Development Study. JMIR Diabetes. 2024;9:e63393.

37. Sawyer K, Saxon D, Zane R, Patel H, McDermott M, Singh V, et al. A successful remote patient monitoring program for diabetes. Front Endocrinol. 2025;16:1524567.

38. Judson T, Patel B, Hernandez A, Talley M. Implementation of Diabetic Remote Patient Monitor for Underserved Population. CIN Comput Inform Nurs. 2025;43(3):e01236.

39. Kirkland EB, Johnson E, Bays C, Marsden J, Verdin R, Ford D, et al. Diabetes remote monitoring program implementation: A mixed methods analysis of delivery strategies, barriers and facilitators. Telemed Rep. 2023;4(1):30–43.

40. Judson T, Patel B, Hernandez A, Talley M. Implementation of Diabetic Remote Patient Monitor for Underserved Population. CIN Comput Inform Nurs. 2025;43(3):e01236.

41. Zeng B, Bove R, Carini S, Lee JSJ, Pollak J, Schleimer E, et al. Standardized integration of person-generated data into routine clinical care. JMIR MHealth UHealth. 2022;10(2):e31048.

42. Hechenleitner-Carvallo M, Ibarra-Peso J, Flores SV. Assessment of Telehealth Literacy in Users: Survey and Analysis of Demographic and Behavioral Determinants. In: Healthcare. MDPI; 2025. p. 1825.

43. Haimi M, Goren U, Grossman Z. Barriers and challenges to telemedicine usage among the elderly population in Israel in light of the COVID-19 era: a qualitative

study. Digit Health. 2024;10:20552076241240235.

44. Cheng J, Arora VM, Kappel N, Vollbrecht H, Meltzer DO, Press V. Assessing disparities in video-telehealth use and eHealth literacy among hospitalized patients: cross-sectional observational study. JMIR Form Res. 2023;7:e44501.

45. Dixit N, Van Sebille Y, Crawford GB, Ginex PK, Ortega PF, Chan RJ. Disparities in telehealth use: How should the supportive care community respond? Support Care Cancer. 2022;30(2):1007–10.

46. Maita KC, Maniaci MJ, Haider CR, Avila FR, Torres-Guzman RA, Borna S, et al. The impact of digital health solutions on bridging the health care gap in rural areas: a systematic review. Perm J. 2024;28(3):130.

47. Lai J, Saleh-Singh A, Olisaekee G. Implementing Home-Based Digital Health in Rural Canada: A Systematic Review. medRxiv. 2025;2025–08.

48. Alodhialah AM, Almutairi AA, Almutairi M. Short-Term impact of digital mental health interventions on psychological Well-Being and blood sugar control in type 2 diabetes patients in Riyadh. In: Healthcare. MDPI; 2024. p. 2257.

49. Whitmore C, Forsythe J, Benzaquen A, Domjancic M, Melamed OC, Selby P, et al. Understanding primary care provider perspectives of the implementation of an integrated diabetes and mental health care solution. Prim Health Care Res Dev. 2025;26:e63.

50. Aceves B, Ruiz M, Ingram M, Denman C, Garcia DO, Madhivanan P, et al. Mental health and diabetes self-management: assessing stakeholder perspectives from health centers in Northern Mexico. BMC Health Serv Res. 2021;21(1):177.

51. Piper S, Davenport TA, LaMonica H, Ottavio A, Iorfino F, Cheng VWS, et al. Implementing a digital health model of care in Australian youth mental health services: protocol for impact evaluation. BMC Health Serv Res. 2021;21(1):452.

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