Improving Glycemic Control in Type 2 Diabetes: A Comparison of In-Person vs. Telehealth Diabetes Education

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Background

The management of type 2 diabetes (T2D) remains a significant public health challenge, with rising prevalence rates globally. Effective glycemic control is essential to prevent complications associated with diabetes, such as cardiovascular disease, neuropathy, and retinopathy (Gerber et al., 2023). Traditional diabetes management relies on pharmacotherapy; however, lifestyle interventions and mobile health (mHealth) technologies have emerged as promising strategies to enhance patient self-management and treatment adherence (Yang et al., 2020). These interventions target physiological outcomes and address psychosocial factors influencing diabetes management (Bae et al., 2024). Understanding the effectiveness of these approaches is critical for improving patient outcomes and informing clinical practice.

Purpose

- Evaluate the effectiveness of structured DSME with telehealth support for type 2 diabetes.
- Compare outcomes of DSME with telehealth versus basic education or DSME without telehealth.

Answers the following PICOT question:

"Among adults with type 2 diabetes, how does structured DSME with telehealth support compare to basic education or DSME without telehealth in improving HbA1c levels and self-management skills over 6 months?"

CNL Role

- CNLs lead interdisciplinary collaboration, integrating DSME and mobile health interventions into patient care for comprehensive diabetes management.
- CNLs play a key role in educating patients on the effective use of mobile health tools and enhancing self-management and treatment adherence.
- CNLs support the integration of technology-driven solutions, tailoring interventions based on patient needs and available evidence.
- CNLs advocate for policies that support reimbursement for mobile health programs, improving access and quality of diabetes care.

Methods and Results

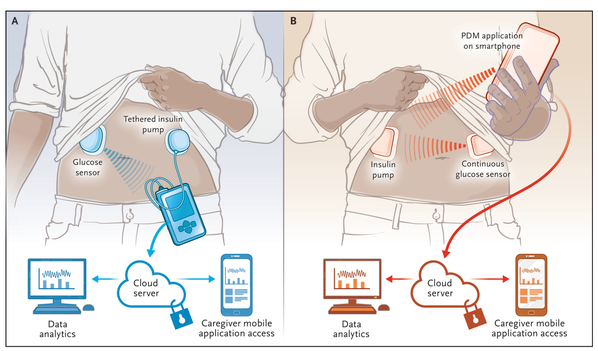
- Study Design: Comprehensive literature review of randomized controlled trials (RCTs) published in the last seven years.

Search Strategy:

- Databases: PubMed, CINAHL, and Google Scholar.
- Keywords: "type 2 diabetes," "glycemic control," "mobile health interventions," "lifestyle interventions," and "HbA1c."
- Inclusion Criteria: Studies focusing on patient self-management, HbA1c outcomes, and integration of health or lifestyle components.
- Results: Over 300 studies were identified; narrowed to 5 RCTs focused on DSME or telehealth interventions with HbA1c outcomes.

- Gerber et al. (2023): Significant HbA1c reduction (−0.79%) in the intervention group versus −0.24% in controls (P = .005); improved self-efficacy and adherence with real-time feedback
- .Bae et al. (2024): Notable HbA1c reductions and enhanced mental health outcomes; better adherence in disadvantaged groups using a combined physical and mental health mobile app.
- Johansen et al. (2017): HbA1c decreased by −0.26% (95% CI, −0.52 to −0.01%); 73.5% of the lifestyle group reduced medication use versus 26.4% in standard care, highlighting lifestyle intervention benefits.
- Popp et al. (2022): Personalized and low-fat diets led to weight loss and HbA1c improvement, with no significant differences between diet types.
- Yang et al. (2020): Significant HbA1c improvement (−0.30%, P = .003) and higher patient satisfaction with mobile glucose monitoring and feedback.

Figures



(Hughes et al., 2023)

Conclusions

- Effective Interventions: Both mobile health technologies and lifestyle changes improve glycemic control in type 2 diabetes (Gerber et al., 2023; Johansen et al., 2017).

- Mobile Health Tools: Glucose-monitoring apps offer accessible, sustainable diabetes management solutions.
- Lifestyle Modifications: Interventions like exercise and diet reduce medication use and promote long-term health.
- Personalization: Dietary interventions may need customization for better outcomes (Popp et al., 2022).
- Role of the CNL: Role of CNLs: Lead interdisciplinary collaboration.
  Train staff in digital health tools and advocate for holistic, patient-centered care.

Implications of Nursing

- Patient Empowerment and Education : Mobile health and DSME interventions enhance self-management through tailored, ongoing education, improving glycemic control and reducing complications (Gerber et al., 2023; Bae et al., 2024).

- Interdisciplinary Coordination: CNLs play a crucial role in leading collaboration across healthcare teams, integrating mental and physical health support for comprehensive patient care

- Cost-Effective Solutions: Digital tools and lifestyle interventions lower healthcare costs by reducing medication use and the need for frequent in-person visits (Johansen et al., 2017).

- Technology Integration and Advocacy: Nurses must address digital literacy barriers, train patients and staff, and advocate for reimbursement policies to ensure broader access and effective use of mobile health tools (Popp et al., 2022).

Bibliography