

ABSTRAK

Latar Belakang: Diabetes melitus tipe 2 (DMT2) merupakan beban kesehatan global dengan prevalensi yang terus meningkat. Kontrol glikemik optimal melalui HbA1c sangat bergantung pada manajemen diri pasien. Konseling gizi digital berkembang sebagai alternatif layanan konvensional, namun bukti efektivitasnya masih terfragmentasi dan tidak konsisten antar *systematic review* yang ada.

Tujuan: Penelitian ini bertujuan untuk mensintesis dan mengevaluasi bukti ilmiah tingkat tertinggi mengenai efektivitas berbagai model konseling gizi digital terhadap kontrol glikemik (HbA1c) dan manajemen diri pada orang dewasa dengan DMT2, ditinjau dari kualitas metodologis, kekuatan bukti, dan konsistensi temuan.

Metode: *Umbrella review* dengan pedoman PRIOR. Pencarian literatur dilakukan pada PubMed, ScienceDirect, *Wiley Online Library*, *Springer Nature Link*, dan *Taylor & Francis Online*. Kualitas metodologis dinilai menggunakan AMSTAR-2, *overlap* studi primer dianalisis dengan *Corrected Covered Area* (CCA), dan sintesis data dilakukan secara naratif-komparatif.

Hasil: Sebanyak 28 *systematic review* dan meta-analysis diinklusi. Keempat model menunjukkan efek bermakna terhadap penurunan HbA1c, namun dengan konsistensi yang bervariasi. Model CM mencatat penurunan HbA1c terbesar secara klinis (MD hingga -1,07%) dan paling konsisten meningkatkan aktivitas fisik, kepatuhan diet, dan SMBG. Model C efektif dengan konseling terpersonalisasi intensif. Model CE menunjukkan efek yang meluruh pada intervensi >3 bulan. Model CEM menampilkan heterogenitas tertinggi. Durasi intervensi lebih pendek secara konsisten menghasilkan efek lebih besar pada seluruh model.

Kesimpulan: Seluruh model konseling gizi digital efektif terhadap HbA1c dan manajemen diri DMT2, dengan model CM yang disertai komponen perilaku manajemen diri menunjukkan bukti paling konsisten. Kompleksitas model tidak berbanding lurus dengan konsistensi efek klinis.

Kata Kunci: diabetes melitus tipe 2; konseling gizi digital; HbA1c; manajemen diri; *umbrella review*

ABSTRACT

Background: Type 2 diabetes mellitus (T2DM) is a global health burden with a steadily rising prevalence. Optimal glycemic control, as measured by HbA1c, relies heavily on patient self-management. Digital nutrition counseling has emerged as an alternative to conventional services; however, evidence regarding its effectiveness remains fragmented and inconsistent across existing systematic reviews.

Objective: This study aimed to synthesize and evaluate the highest level of scientific evidence regarding the effectiveness of various digital nutrition counseling models on glycemic control (HbA1c) and self-management in adults with T2DM, considering methodological quality, strength of evidence, and consistency of findings.

Methods: An umbrella review was conducted in accordance with PRIOR guidelines. Literature searches were performed on PubMed, ScienceDirect, Wiley Online Library, Springer Nature Link, and Taylor & Francis Online. Methodological quality was assessed using AMSTAR-2, primary study overlap was analyzed using the Corrected Covered Area (CCA), and data synthesis was performed using a narrative-comparative approach.

Results: A total of 28 systematic reviews and meta-analyses were included. All four models demonstrated significant effects on reducing HbA1c, though with varying consistency. The CM model showed the greatest clinically significant reduction in HbA1c (mean difference up to -1.07%) and was the most consistent in improving physical activity, dietary adherence, and self-monitoring of blood glucose (SMBG). The C model was effective when involving intensive, personalized counsellings. The CE model showed a waning effect in interventions lasting longer than three months. The CEM model exhibited the highest heterogeneity. Shorter intervention durations consistently yielded greater effects across all models.

Conclusion: All digital nutrition counseling models were effective for HbA1c control and T2DM self-management, with the CM model—incorporating self-management behavioral components—showing the most consistent evidence. Model complexity was not directly proportional to the consistency of clinical effects.

Keywords: type 2 diabetes mellitus; digital nutrition counseling; HbA1c; self-management; umbrella review