
Title

Are e-Health Interventions Effective in Reducing Diabetes-Related Distress and Depression in Patients with Type 2 Diabetes? A Systematic Review with Meta-Analysis

Abstract

Background: e-Health refers to any health care service delivered through the internet or related technologies, to improve quality of life. Despite the increasing use of e-health interventions to manage type 2 diabetes (T2D), there is a lack of evidence about the effectiveness on diabetes distress and depression, which are common issues in those living with T2D. Purpose: To synthesize and determine the effects of e-health interventions on diabetes distress and depression among patients with T2D. Methods: We systematically searched PubMed, Scopus, Cochrane CENTRAL, and Web of Science for randomized controlled trials (RCTs), non-RCTs and observational cohort studies for the effects of e-health interventions on diabetes distress and depression in patients with T2D up to September 14, 2022. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 recommendations were followed. The risk of bias was assessed according to the Risk-of-Bias 2 tool (RCTs), the Risk Of Bias In Non-randomised Studies-of Interventions (ROBINS-I) (non-RCTs) and the National Institute of Health tool (observational). The standardized mean difference (SMD) and its related 95% confidence intervals (CIs) were estimated with the DerSimonian-Laird method through random-effect models. A pooled raw mean difference (MD) meta-analysis was conducted for RCTs comparing the effects of e-health versus control on diabetes distress screening to display the clinical impact. Results: A total of 41 studies (24 RCTs, 14 non-RCTs, and 3 observational) involving 8,667 individuals were included. The pooled SMD for the effect of e-health versus the control group on diabetes distress was -0.14 (95% CI = -0.24 to -0.04 ; $I^2 = 23.9\%$; $n = 10$ studies),

being -0.06 (95% CI = -0.15 to 0.02; I2 = 7.8%; n = 16 studies) for depression. The pooled raw MD on diabetes distress screening showed a reduction of -0.54 points (95% CI = -0.81 to -0.27; I2 = 85.1%; n = 7 studies). Conclusion: e-Health interventions are effective in diminishing diabetes distress among adults with T2D, inducing clinically meaningful reductions. Copyright 2024, Mary Ann Liebert, Inc., publishers.

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