

# INPLASY

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## Effect of educational program for patients with type 2 diabetes: A systematic review and meta-analysis of randomized controlled trials

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### ADMINISTRATIVE INFORMATION

**Support** - None.

**Review Stage at time of this submission** - Completed but not published.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202620043

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 February 2026 and was last updated on 11 February 2026.

### INTRODUCTION

**Review question / Objective** This systematic review and metaanalysis aimed to evaluate the efficacy of structured education programs versus usual care on clinical outcomes in adults with T2D.

**Condition being studied** Although structured patient education is a cornerstone intervention, a comprehensive and updated synthesis of its effects on glycemic and cardiometabolic outcomes is still required.

### METHODS

**Search strategy** ("Health Education"[Mesh] OR "Patient Education as Topic"[Mesh] OR "Consumer Health Information"[Mesh]) OR ("health education"[tiab] OR "patient education"[tiab] OR psychoeducation[tiab] OR "therapeutic

education"[tiab] OR "consumer health information"[tiab] OR "health knowledge"[tiab] OR "client education"[tiab])

AND

("Diabetes Mellitus, Type 2"[Mesh] OR "type 2 diabetes"[tiab] OR T2DM[tiab] OR "non insulin dependent diabetes"[tiab] OR NIDDM[tiab]).

**Participant or population** Adults (age  $\geq 18$  years) clinically diagnosed with type 2 diabetes, with no restrictions on disease duration, baseline glycated hemoglobin (HbA1c), or comorbidities.

**Intervention** The experimental group received any form of structured, systematic diabetes education program covering one or more aspects of disease knowledge and self-management skills (e.g., diet, physical activity, medication adherence, glucose monitoring), delivered via face-to-face sessions, group workshops, remote education, or a blended format.

**Comparator** The control group received usual care, routine clinic follow-up, a waitlist, or minimal standard health education.

**Study designs to be included** RCTs.

**Eligibility criteria** Studies were included if they met the following criteria: (1) study design: randomized controlled trials (RCTs), including cluster RCTs; (2) participants: adults (age  $\geq 18$  years) clinically diagnosed with type 2 diabetes, with no restrictions on disease duration, baseline glycated hemoglobin (HbA1c), or comorbidities; (3) intervention: the experimental group received any form of structured, systematic diabetes education program covering one or more aspects of disease knowledge and self-management skills (e.g., diet, physical activity, medication adherence, glucose monitoring), delivered via face-to-face sessions, group workshops, remote education, or a blended format; (4) comparator: the control group received usual care, routine clinic follow-up, a waitlist, or minimal standard health education; and (5) outcomes: at least one of the following primary or secondary outcomes was reported: change in HbA1c, body mass index (BMI), systolic blood pressure (SBP), diastolic blood pressure (DBP), or lipid profile (total cholesterol [TC], low-density lipoprotein cholesterol [LDL-C], high-density lipoprotein cholesterol [HDL-C], triglycerides [TG]).

**Information sources** PubMed, Embase, the Cochrane Central Register of Controlled Trials (CENTRAL), and Web of Science.

**Main outcome(s)** Change in HbA1c, body mass index (BMI), systolic blood pressure (SBP), diastolic blood pressure (DBP), or lipid profile (total cholesterol [TC], low-density lipoprotein cholesterol [LDL-C], high-density lipoprotein cholesterol [HDL-C], triglycerides [TG]).

**Quality assessment / Risk of bias analysis** Cochrane Risk of Bias Tool.

**Strategy of data synthesis** A random-effects model was employed to calculate pooled weighted mean difference (WMD) effect estimates and 95% confidence intervals (CIs).

**Subgroup analysis** Subgroup analyses were planned for the primary outcome (HbA1c) based on country (Eastern vs. Western), sample size ( $\leq 100$  vs.  $>100$ ), mean age ( $\leq 60.0$  vs.  $>60.0$  years), proportion of males ( $\leq 60\%$  vs.  $>60\%$ ), BMI ( $\leq 30$  vs.  $>30$  kg/m<sup>2</sup>), baseline glycemic control (HbA1c 6 months).

**Sensitivity analysis** To evaluate the robustness of the findings, a leave-one-out sensitivity analysis was performed by sequentially excluding each study and observing changes in the pooled effect size.

**Language restriction** No restriction.

**Country(ies) involved** China.

**Keywords** educational; type 2 diabetes; glycated hemoglobin; systematic review; meta-analysis.

#### **Contributions of each author**

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