Nursing Sciences Journal. Vol. 10, No. 1, April 2026
P- ISSN: 2598-8220, E-ISSN: 2598-8212

THE EFFECTIVENESS OF GROUP-BASED PSYCHOEDUCATION IN REDUCING STRESS LEVELS IN PEOPLE WITH DIABETES MELLITUS TYPE 2 : A SYSTEMATIC REVIEW

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ABSTRACT

Type 2 Diabetes Mellitus is often accompanied by diabetes distress, which can impair self-management and glycemic control. Group-based psychoeducation has been developed as a psychosocial intervention to address this issue. Objective: This study aims to analyze the effectiveness of group-based psychoeducation in reducing stress in patients with type 2 diabetes mellitus through a systematic review approach. This study used a systematic review design following of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The PICO framework includes Population = type 2 diabetes mellitus patients; Intervention = group-based psychoeducation; Comparison = standard care or control conditions; Outcome = diabetes distress. Articles were systematically searched from PubMed, Scopus, Google Scholar, and ScienceDirect. Thirteen studies from various countries, predominantly randomized controlled trials and quasi-experiments, were included. The findings consistently showed that group-based psychoeducation significantly reduced diabetes distress compared to standard care or baseline conditions. Additional benefits included improved self-efficacy, better self-care behaviors, and improved glycemic control (HbA1c). Group-based psychoeducation is effective in reducing diabetes distress and supporting self-management in patients with Type 2 diabetes mellitus. It is recommended to integrate this intervention into routine nursing care through structured group programs and continuous evaluation to optimize patient outcomes.

Keywords: Group-Based Psychoeducation, Stress, Type 2 Diabetes Mellitus

INTRODUCTION

Type 2 diabetes mellitus is a chronic disease with an increasing prevalence globally and has a significant impact on the physical and psychological condition of its sufferers (Saeedi et al., 2019; Hasina et al., 2021). Ongoing self-management demands, such as lifestyle management, therapy adherence, and complication prevention, are often a persistent source of stress and can hinder patient engagement in optimal diabetes management (Young-Hyman et al., 2017). Psychological comorbidity is high in people with Type 2 diabetes with extensive research demonstrating that 30% of patients experience depressive affect (Perrin et al., 2017; Safitri & Mahyuvi, 2025).

One of the common psychological responses is diabetes stress, which is emotional stress that is specifically related to the challenges of managing diabetes. This condition is experienced by about one-third of people with type

Article History:
Received: February 11, 2026; Revised: April 27, 2026; Accepted: May 03, 2026

2 diabetes mellitus and is known to be associated with low self-care behaviors and poor glycemic control, and is even reported to have a stronger relationship with glycemic control than depression (Fisher et al., 2019; Skinner et al., 2020). Depression is associated with higher glycated haemoglobin (HbA1c), higher rates of complications and mortality (Nanayakkara et al., 2018).

Psychosocial interventions are an important component in the management of type 2 diabetes mellitus, especially in overcoming diabetes stress. Group-based psychoeducation is one of the approaches that aims to improve patient understanding, coping skills, and social support through group dynamics. Several previous systematic reviews have shown that psychoeducation has the potential to reduce diabetes stress, although results between studies still show variation and most studies place diabetes stress as a secondary outcome (Mathiesen et al., 2018; Schmidt et al., 2018; Mahyuvi & Nursalam, 2020; Safitri & Mahyuvi, 2024).

In addition, people with type 2 diabetes mellitus have different sources of psychological stress than people with type 1 diabetes, including the existence of social stigma related to lifestyle (Orben et al., 2022). Therefore, a study is needed that specifically focuses on people with type 2 diabetes mellitus with diabetes stress as the main outcome. This systematic review aims to evaluate the effectiveness of group-based psychoeducation in reducing the level of diabetes stress in patients with type 2 diabetes mellitus.

METHODS

Design Study

This research is a systematic review prepared with reference to the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) to ensure transparency, consistency, and quality of reporting of research results. The research process is carried out systematically and in a structured manner, starting from the formulation of research questions, the preparation of literature search strategies, the identification and selection of articles, to the synthesis of research results.

This systematic review aims to identify and synthesize scientific evidence related to the effectiveness of group-based psychoeducation in reducing the level of stress in people with type 2 diabetes mellitus. This approach was used to obtain a comprehensive picture of the types of group psychoeducational interventions, the characteristics of the participants, and their impact on the level of stress experienced by patients with type 2 diabetes mellitus.

Source Information

A comprehensive literature search was conducted through several electronic databases, namely PubMed, Scopus, and Google Scholar, to identify articles relevant to the research topic. The search was limited to articles published within the last ten years to ensure that the scientific evidence used is up-to-date and relevant to current developments in psychoeducational interventions. In addition, the search is focused on empirical studies that evaluate group-based psychoeducational interventions or group psychosocial

Article History:
Received: February 11, 2026; Revised: April 27, 2026; Accepted: May 03, 2026

interventions with the main outcome in the form of stress or diabetes stress in patients with type 2 diabetes mellitus.

Search strategy

The literature search strategy was carried out systematically by combining Boolean operators (AND/OR), Medical Subject Headings (MeSH), and relevant free terms. Keywords used include: ("group psychoeducation" OR "psychoeducation" OR "group intervention" OR "psychosocial intervention") AND ("diabetes mellitus type 2" OR "type 2 diabetes") AND ("stress" OR "diabetes stress" OR "psychological stress"). The search strategy is tailored to the characteristics of each database to maximize the sensitivity and specificity of the search results.

Inclusion and Exclusion criteria

Articles are included in this systematic review if they meet several inclusion criteria, namely original research articles with a quantitative, quasi-experimental, randomized controlled trial (RCT), or mixed-methods design. Included studies should evaluate group-based psychoeducation or group psychosocial interventions as independent variables, with stress levels including diabetes stress or psychological stress as the main outcomes of the study. The subject of the study was a person with type 2 diabetes mellitus, and the article was published in Indonesian or English. In addition, only articles available in full-text form are included in the analysis to ensure the completeness and accuracy of the extracted data.

On the other hand, articles are excluded from the analysis if they use a purely qualitative research design or fall into the category of narrative reviews, editorials, letters to editors, case reports, proceedings, or non-scientific publications. Articles are also excluded if they do not involve psychoeducational interventions or do not use a group-based approach. In addition, studies that did not measure stress or diabetes stress as a study outcome were not included in this systematic review.

Selection process

The article selection process is carried out gradually and systematically in accordance with the PRISMA guidelines. In the initial stage, all articles obtained from the literature search results are compiled and managed using Mendeley's reference management software. Duplicate articles are identified and removed to avoid data redundancy. Furthermore, the title and abstract are filtered to assess the suitability of the article for the purpose of the research. Articles are eliminated if they are irrelevant to the topic of group-based psychoeducation, do not involve people with type 2 diabetes mellitus, or do not measure stressed outcomes.

Articles that pass the initial screening stage are then further evaluated through full-text review. At this stage, an assessment was carried out on the suitability of the research design, the characteristics of the intervention, the

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stress measurement method, and the completeness of the data presented. Studies that met all inclusion criteria were then analyzed and data extracted, including the study design, respondent characteristics, types of group psychoeducational interventions, stress measurement instruments, and the main results of the study. All stages of article selection are presented transparently in the PRISMA flowchart, thus ensuring the reliability of the systematic review process and providing a clear synthesis of scientific evidence on the effectiveness of group-based psychoeducation in reducing the level of stress in people with type 2 diabetes mellitus.

RESULTS

Based on Figure 1, the PRISMA flow chart illustrates the systematic article selection process in a systematic review of the effectiveness of group-based psychoeducation in reducing the level of stress in patients with type 2 diabetes mellitus. At the identification stage, a total of 359 articles were successfully identified from four databases, namely PubMed (112 articles), Scopus (86 articles), Google Scholar (108 articles), and ScienceDirect (53 articles). Furthermore, 128 duplicate articles were deleted, leaving 231 articles that continued to the screening stage. At the screening stage, an assessment is carried out based on the title and abstract to assess the suitability for the research objectives. A total of 96 articles were removed because they were irrelevant, so that 135 articles met the initial criteria and continued to the eligibility stage in the form of a full-text assessment. All articles at this stage were successfully retrieved (reports not retrieved = 0).

At the eligibility stage, an in-depth assessment was carried out on the suitability of the population, the type of intervention, the research design, and the outcomes studied. A total of 122 articles were issued for the following reasons: not people with type 2 diabetes mellitus (56 articles), not using psychoeducational interventions (14 articles), diabetes stress not as the main outcome (23 articles), non-randomized controlled trial research design (33 articles), and limited access to complete text (6 articles). Finally, at the included stage, as many as 13 articles met all inclusion criteria and were further analyzed in a systematic review. This selection process shows that the study was carried out systematically, strictly, and transparently in accordance with the PRISMA guidelines, so that the results of the synthesis obtained have good validity in explaining the effectiveness of group-based psychoeducation in reducing the level of stress in patients with type 2 diabetes mellitus.

Article History:
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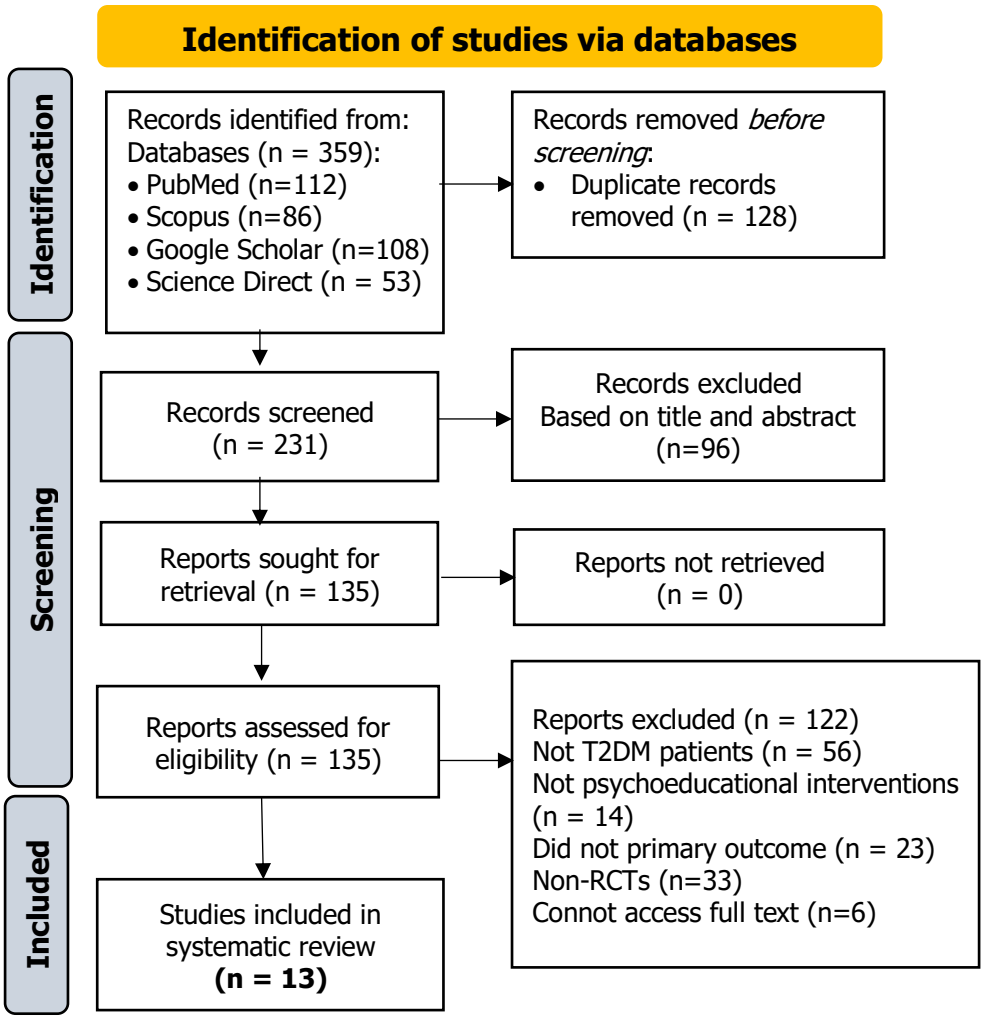

Figure 1. PRISMA Flowchart on the Effectiveness of Group-Based Psychoeducation in Reducing Stress Levels in People with Type 2 Diabetes Mellitus

Article History:
Received: February 11, 2026; Revised: April 27, 2026; Accepted: May 03, 2026

Table 1. Summary of Primary Study on the Effectiveness of Group-Based Psychoeducation in Reducing Stress Levels in People with Type 2 Diabetes Mellitus

Author (Year) Country	Design/ Population & Sample Size	Description of Intervention	Comparison	Outcome Measures	Results
(Abbas et al., 2023) Pakistan	2 arm RCT/ Total: 90 Adult patients with type 2 diabetes mellitus who experienced diabetic stress and depressive symptoms	CBT: 8 to 10 CBT-based therapeutic sessions were com pleted in 16 weeks, and frequency was one session in 10–12 days intervals with 45–60 min. The main components were psychoeducation, cognitive conceptualization, adherence training, activity scheduling, problem-solving, improving coping strategies, muscle relaxation and imagery, and, lapse and relapse prevention.	Waitlist Control	Diabetes stress (DDS 17); depression; Anxiety; quality of life; adherence treatment; physical activity	CBT resulted in a significant reduction in diabetes stress, depressive symptoms, and health anxiety, and significantly improved quality of life, treatment adherence, and physical activity compared to the waitlist control group ($p < 0.001$)
(Chew et al., 2018) Malaysia	RCT clusters/ Total 124 adult patients with DMT2	Value-based emotion–cognition-focused educational programme (VEMOFIT) consisted of four biweekly group sessions focusing on value-based emotion-focused education, followed by one booster session at 3 months and a 6-month follow-up	Attention control	Diabetes stress (DDS-17); depressive symptoms; self-efficacy; disease control (HbA1c)	Diabetes stress significantly decreased in both the VEMOFIT and control groups; however, no significant between-group difference was observed in DDS-17 scores or other outcomes
(DiNardo et al., 2022) USA	2 arm RCTs/ Total: 132 Military veterans with type 2 diabetes mellitus	Mind-STRIDE + DSMES: 90 min intervention delivered follow in the DSMES. The intervention was adapted from MBSR and consisted of group discussion, a didactic presentation of chronic stress and diabetes, formal meditation practice, and activities targeting sensory, cognitive, and behavioral awareness. A 30 min booster	DSMES: a one-session 3-hour group session	Diabetes stress (PAID 20); Diabetes self-care; Diabetes self-efficacy; Post-traumatic stress; depression; Mindfulness; HbA1c; Mean arterial pressure; Anthropomet ric	Both groups showed significant improvement in diabetes stress over time; however, greater distal improvement in diabetes stress was observed in the intervention group between weeks 12 and 24

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Author (Year) Country	Design/ Population & Sample Size	Description of Intervention	Comparison	Outcome Measures	Results
		session at 4 weeks. Home practice was supported by a workbook and a mobile application.		characteristics; Patient satisfaction; Participant Engagement	
(Guo et al., 2022) China	2 arm RCT / Total: 100 people with type 2 diabetes mellitus	Nurse-led MBSR therapy + diabetes education: 8 daily sessions of 120 min plus an 8-week technology-based maintenance practice. The eight themes are mindfulness training, nonjudging, patience, the beginner's mind, trust, nonstriving, acceptance, and letting go.	Regular Diabetes Education	Diabetes stress (DDS-17); Diabetes self-efficacy; Diabetes self-management; HbA1c	Significant reduction in diabetes stress in the intervention group compared to control ($p < 0.05$)
(Kılıç et al., 2023) UK	2 arm RCT / Total: 33 adults with type 2 diabetes mellitus who experienced psychological stress (depression, anxiety, and diabetes stress).	ACSBT-D: integrated psychological flexibility and self compassion concepts from ACT and MSC; 5 weekly sessions delivered online (Qualtrics), each approximately 30 min. The sessions focused on developing acceptance, commitment, and self-compassion and self-care in diabetes	Waitlist Control	Diabetes stress (PAID 20); depression; anxiety; well-being, diabetes-re lated quality of life; He is self-governing; self-compassion; psy chological inflexibility	Although estimates of treatment effects were difficult to interpret due to low treatment completion and retention rates, the intervention showed potential benefits in reducing psychological stress. Feasibility was limited, indicating the need for improved acceptability and trial procedures
(Li et al., 2020) China	2 arm RCTs / Total: 225 adult patients with type 2 diabetes mellitus	An education program using MI techniques: The educa tion program consisted of four modules, held once a week, that each lasted approximately 1.5 to 2 h. The content was designed based on MI theory and the theory of patient empowerment, and was grouped	Health Education	Diabetes stress (SF PAID-C); Patient Enablement Index; Stages of Change score	Diabetes-related stress significantly improved in the intervention group compared with the control group at post-intervention and 3-month follow-up

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Author (Year) Country	Design/ Population & Sample Size	Description of Intervention	Comparison	Outcome Measures	Results
		into four broad headings: Knowing Diabetes, Diabetes Self-Care, Healthy Diet, and Physical Exercise.			
(Maghsoudi et al., 2019) Iran	2 arms RCT / Total: 80 patients with type 2 diabetes mellitus who experienced diabetes-related emotional stress	ACT intervention: eight 90-min sessions, one session per week. The sessions mainly included introduction, core concepts in ACT, conclusion and home work.	Routine Educations	Diabetes stress (DDS-17)	Emotional stress scores were significantly lower in the intervention group compared to the control group immediately after the intervention and at 2-month follow-up (p = 0.02)
(Ngan et al., 2023) China	2 arm RCTs / Total: 48 Adult patients aged 18–64 years with type 2 diabetes mellitus and moderate levels of diabetes stress	ACT-DE: 5-session ACT-integrated diabetes education over 6 weeks. Each session lasted about 120 min in groups of 6 participants. The sessions mainly included diabetes educa tion, ACT sessions, and a booster session	diabetes education and usual care	Diabetes stress (CDDS-15); diabetes self-care behavior; self-efficacy; psychological inflexibility	The ACT-DE group showed a significantly greater reduction in diabetes stress (Cohen's d = 0.65) and significant improvements in exercise and foot-care behaviors compared with the control group. The intervention was well accepted with a high completion rate
(Pearson et al., 2018) Australia	2 arms RCTs / Total: 67 Adult patients with type 2 diabetes mellitus who were psychologically stressed,	Mindfulness intervention: an audio CD of guided breath awareness with an instruction sheet. Participants were asked to listen for 30 min/day over 8 weeks	usual care	Diabetes stress (PAID 20); Depression, Anxiety and Stress; Diabetes Self-Care; HbA1c; blood pressure	The mindfulness intervention significantly reduced depression (p = 0.02) and stress (p = 0.03) compared to the control group. HbA1c levels decreased significantly over 12 weeks in the intervention group (time × group interaction p = 0.02), while improvements in blood glucose monitoring were not statistically significant

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Author (Year) Country	Design/ Population & Sample Size	Description of Intervention	Comparison	Outcome Measures	Results
(Rees et al., 2017) Australia	RCT pilot / Total 40 Adult patients with type 2 diabetes mellitus who have diabetes stress and complications of diabetic retinopathy	Problem-solving therapy for diabetes delivered as a structured psychological intervention focusing on regimen-related stress and coping skills	Control group receiving usual care	Diabetes Stress Scale (DDS); PHQ-9; SDSCA; HbA1c	At 6-month follow-up, the PST-D group showed significant improvements in regimen-related stress, depressive symptoms, and HbA1c compared to the control group ($p < 0.05$)
(Restiningrum et al., 2024) Indonesia	One-group pretest–posttest / Total = 5 Patients with type 2 diabetes mellitus who experience psychological stress.	Group-based psychoeducation combining information about diabetes, recognition of psychological stress, coping strategies, and mutual support among group members	None	Psychological stress measured using Kessler Psychological Stress Scale (K10)	Posttest scores showed a reduction in psychological stress from severe (>30) to moderate (<25) category after psychoeducation
(Susila et al., 2025) Indonesia	Quasi-experimental/ Total = 22 Type 2 diabetes mellitus patients who experience diabetic stress	Peer support group intervention conducted in group sessions to provide emotional support, shared experiences, and coping strategies for managing diabetes stress	Control group without peer support intervention	Diabetes stress (instrument not specified)	Wilcoxon test showed a significant reduction in diabetes stress in the intervention group ($p = 0.014$), while no significant change was observed in the control group ($p = 1.00$)
(Tunsuchart et al., 2020) Thailand	Quasi-experimental pretest–posttest with control group/ Total = 56 Adult patients with uncontrolled type 2 diabetes mellitus and having moderate to high diabetes-related stress	Six weekly sessions of brief group cognitive behavioral therapy focusing on emotional regulation, coping strategies, lifestyle behavior, and medication adherence	Conventional care	Diabetes-Related Stress measured using Diabetes Stress Scale (DDS-17); HbA1c; food consumption behavior; physical activity; medication adherence	BG-CBT significantly reduced diabetes-related stress, improved food consumption behavior, and reduced HbA1c levels compared to the control group

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Received: February 11, 2026; Revised: April 27, 2026; Accepted: May 03, 2026

Based on Table 1, this study summarizes a primary study that examines the effectiveness of group-based psychoeducation in reducing diabetes stress in patients with type 2 diabetes mellitus. The studies reviewed came from different countries with varied research designs, dominated by randomized controlled trials (RCTs) and quasi-experiments. The study population was generally adult patients with type 2 diabetes mellitus. A total of 13 studies were reviewed from several countries, namely China (n = 3), Indonesia (n = 2), Australia (n = 2), and the United States (n = 1), Iran (n = 1), Malaysia (n = 1), Pakistan (n = 1), the United Kingdom (n = 1), and Thailand (n = 1).

In general, the results of the study showed that group-based psychoeducation was consistently able to reduce the rate of diabetes stress, both compared to standard treatment and pre-intervention conditions. In addition, several studies have also reported positive impacts on self-efficacy, self-care behavior, and glycemic control (HbA1c). These findings indicate that the group approach is not only psychologically effective, but also supports comprehensive diabetes management, despite differences in effects between countries and types of interventions.

DISCUSSION

The results of this systematic review show that group-based psychoeducation and group psychological interventions are generally effective in reducing diabetes-related stress in people with type 2 diabetes mellitus (type 2 DM). These findings are consistent with evidence from several systematic reviews and meta-analyses reporting that psychological interventions have a significant impact on reducing diabetes stress and, in some cases, improving glycemic control compared to standard care or conventional education (Zu et al., 2024; Safitri & Mahyuvi, 2025). Several systematic reviews have shown that psychological interventions specifically designed to address diabetes stress significantly lower rates of diabetes stress in adults with type 2 diabetes mellitus. For example, a recent meta-analysis showed that psychological interventions significantly lowered stress immediately after the intervention was administered (SMD = −0.56; 95% CI = −0.90 to −0.22; p = 0.001) (Zu et al., 2024).

Group-based psychoeducation in this review includes a variety of approaches, such as cognitive behavioral therapy (CBT), acceptance and commitment therapy (ACT), mindfulness-based interventions, and peer support programs. Evidence from systematic reviews suggests that CBT interventions and third-wave *CBT* approaches (including ACT and mindfulness) significantly lower diabetes stress and related psychological symptoms compared to controls (Jenkinson et al., 2022; Safitri & Mahyuvi, 2025). This approach works by modifying the cognitive and emotional responses to the demands of diabetes care, thereby improving the patient's coping ability. Group CBT-based interventions, such as short group CBT, have been reported to not only reduce diabetic stress but also improve glycemic control (HbA1c) in patients with type

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Received: February 11, 2026; Revised: April 27, 2026; Accepted: May 03, 2026

2 diabetes with poor blood sugar control (Tunsuchart et al., 2020). These findings support the assumption that a decrease in emotional stress may have a positive impact on medication adherence and self-care behaviors, ultimately contributing to improved clinical outcomes.

The group-based ACT approach has also shown promising effectiveness. A systematic review of mindfulness and acceptance-based interventions reported a significant reduction in diabetes stress as well as moderate improvement in HbA1c (Ngan et al., 2023). ACT emphasizes acceptance of chronic conditions, reduction of avoidant behaviors, and increased psychological flexibility, which are particularly relevant in the context of long-term diabetes management.

The main advantage of group-based psychoeducation lies in the existence of social support and peer interaction, which allows participants to share experiences, normalize negative emotions, and reinforce each other's coping strategies. Peer support has been identified as an important component in diabetic psychosocial interventions and contributes to increased patient involvement in self-care (Mathiesen et al., 2018; Mahyuvi, Bahrudin, et al., 2026)). However, several studies also showed that a decrease in diabetes stress occurred in both the intervention and control groups. This indicates an attention effect, where the patient's active involvement in diabetes education programs, even without an intensive psychological component, can provide emotional benefits (Chew t al., 2018; Safitri & Mahyuvi, 2024). These findings underscore the importance of ongoing attention, communication, and support in diabetes services.

Overall, the available evidence supports that group-based psychoeducation is an effective and feasible approach to reducing levels of stress in people with type 2 diabetes, particularly when interventions are structured, based on clear psychological theories, and conducted on an ongoing basis. However, the quality of the evidence still varies, requiring further research with large-scale RCT designs, longer follow-up durations, and standardization of diabetes stress measurement instruments to strengthen clinical conclusions and implications.

CONCLUSION AND RECOMMENDATIONS

A systematic review of 13 articles concluded that group-based psychoeducation is consistently effective in reducing diabetes-related stress among patients with Type 2 Diabetes Mellitus. Based on these findings, it is recommended that nurses integrate group-based psychoeducation into the nursing process by conducting routine assessments of diabetes distress, identifying psychosocial nursing diagnoses, and incorporating structured group interventions into care planning. Implementation can be carried out through interactive group sessions that include education, coping strategies, and peer support, while continuous evaluation is needed to monitor changes in stress levels and improve patient self-management outcomes.

Article History:
Received: February 11, 2026; Revised: April 27, 2026; Accepted: May 03, 2026

ACKNOWLEDGMENT

Thank you to the authors whose articles were included in this systematic review study.

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Article History:
Received: February 11, 2026; Revised: April 27, 2026; Accepted: May 03, 2026