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REVIEW

A Scoping Review of Psychoeducational Interventions for Managing Type 2 Diabetes Mellitus in Asian Countries

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Background: Diabetes mellitus (DM) is a chronic disease that significantly affects patients' quality of life and mental health. Psychoeducational approaches have been recognized as an effective strategy to improve knowledge and self-care skills and to reduce psychological burden. However, scoping reviews focusing on psychoeducational interventions and their outcomes in patients with type 2 diabetes mellitus in Asian contexts remain limited.

Purpose: This scoping review aimed to identify, map, and synthesize existing evidence on psychoeducational interventions for adults with type 2 diabetes mellitus in Asian countries.

Methods: A scoping review was conducted in accordance with the Arksey and O'Malley framework and reported in accordance with PRISMA guidelines. Literature searches were conducted across CINAHL, PubMed, Scopus, and Taylor & Francis databases through July 28, 2025, complemented by manual searches in Google Scholar. Eligible studies were randomised controlled trials (RCTs) published in English that involved patients with diabetes types 2 in Asian countries. Methodological quality was appraised using the Joanna Briggs Institute (JBI) checklist, and data were synthesised through thematic analysis.

Results: There were 13 RCT articles analyzed in this review. The psychoeducational interventions identified could be classified into three main models: cognitive-behavioral and acceptance-based interventions, mindfulness and stress-reduction interventions, and educational and coaching-based interventions. The reported outcomes also clustered into three domains: psychological, behavioral/self-management, and clinical. The most consistent improvements were observed in psychological and behavioural outcomes, while clinical outcomes, such as reduced HbA1c, cortisol levels, and PAI-1, also improved.

Conclusion: Psychoeducational interventions are diverse and effective in improving psychological well-being and self-management among patients with diabetes in Asia. Culturally-based adaptation and integration into primary healthcare systems are essential to ensure sustainability and long-term effectiveness.

Keywords: Asia, diabetes mellitus, intervention, psychoeducation, quality of life

Introduction

Diabetes mellitus (DM) is a public health burden that continues to increase globally, particularly in the Asian region. Globally, the International Diabetes Federation (IDF) estimates that 451 million adults worldwide had diabetes in 2017, which is projected to increase to 852.5 million by 2050.[1] More than 95% of people with diabetes have type 2 diabetes.[2] In Asia, the IDF projects that the number of people with diabetes in the Southeast Asia Region will increase by 73%, reaching 185 million by 2050.[3] The proportion of undiagnosed diabetes is the third highest of all Regions at 42.7%.[3] Asia faces a significant and growing diabetes burden, with high prevalence rates and a trend of earlier onset and diagnosis in younger individuals compared to other regions.[4,5]

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The increasing prevalence rate in the DM population is in line with rapid urbanization, population aging, increasing obesity, and unequal access to prevention and treatment, especially in low- to middle-income countries.[6,7] Social determinants of health, such as socioeconomic status, education, physical environment, and access to care, substantially influence diabetes risk and outcomes.[8,9] This trend is also exacerbated by the existing high proportion of undiagnosed cases in many Asian countries, resulting in delayed glycemic control and increased risk of complications.[3] This condition indicates the need for more comprehensive diabetes management.

People with type 2 diabetes show higher levels of depression and anxiety compared to the general population.[10] Depression and anxiety are related to poor glycemic control,[11,12] diabetes complications,[13] and lower prognosis and quality of life.[14–17] Psychological distress triggers activation of the sympathetic nervous system, increased cortisol and catecholamines, which ultimately increases the risk of metabolic syndrome.[18,19] Furthermore, patients who experience psychological distress tend to experience difficulties in diabetes self-care,[20] so that glycemic control worsens and triggers serious complications.[12] In the long term, microvascular complications (eg, retinopathy, neuropathy) and macrovascular (eg, myocardial infarction, angina pectoris, and stroke) frequently occur and have been shown to reduce health-related quality of life (HRQoL) significantly.[21–24] In addition, depression and diabetes distress often accompany DM and are associated with low self-care (drug compliance, diet, physical activity, glucose monitoring) in sufferers, which in turn increases the high level of morbidity and reduces the quality of life.[22,24,25]

To achieve optimal disease control, patients need to understand the importance of diet and medication and be able to adapt them to their physical activity routine.[23] Therefore, education is an essential component of diabetes management.[26] However, formal health education is often less than optimal due to the lack of active patient participation, short consultation times, and minimal integration of psychological support.[27,28] These limitations highlight the need for innovative approaches that can deliver education more effectively. Psychoeducational interventions, which integrate disease education with psychosocial support, represent one such strategy that may enhance patient engagement and improve both clinical and psychological outcomes without necessarily requiring additional consultation time. Previous reviews reported that psychoeducation-based interventions can reduce emotional distress and glycemic control.[29] Psychoeducational interventions integrating disease education and self-care skills with psychological components are key strategies for improving glycemic control, care behaviors, and psychosocial outcomes.[30–34]

Although numerous studies report significant effects of psychoeducational interventions, their implementation in patients with diabetes mellitus is often hampered. The barriers include a lack of knowledge and skills among healthcare workers, time constraints, and minimal policy support and incentives from healthcare institutions.[35,36] Furthermore, cultural factors that emphasize physical aspects over psychological ones contribute to low awareness of the importance of mental support in diabetes management.[36] Other barriers arise from low health literacy and patient motivation, variations in psychoeducation delivery methods, and limited access to technology for specific groups.[34,37] These barriers indicate that successful implementation of psychoeducation in diabetes requires increased capacity of health workers, policy support, and an adaptive approach to patient culture and technology.

To date, no scoping review has comprehensively identified and synthesised existing evidence on psychoeducational interventions for diabetes mellitus in Asian countries, nor has it evaluated their impact on clinical, behavioural, and psychosocial outcomes. Existing review studies conducted among Asian populations include lifestyle-tailored interventions,[38] culturally based interventions in self-management,[39] diabetes self-management education,[40,41] dietary interventions,[42] and psychoeducation for pregnant women.[43] However, none specifically and systematically examine psychoeducational interventions for diabetes across Asian settings. Given Asia's unique culture, languages, family structures, and diverse healthcare systems, there is a critical need for a rigorous review of psychoeducational interventions in this context, assessing their feasibility and effectiveness within real-world resource constraints. In addition, health expenditure related to diabetes care in Asian countries has shown a steady and significant rise over recent decades, reflecting both the growing prevalence of diabetes and the economic strain on healthcare systems.[44,45] Therefore, this scoping review aimed to systematically identify, map, and synthesize psychoeducational interventions implemented for adults with type 2 diabetes mellitus in Asian countries.

Materials and Method

Study Design

This study adopted a scoping review design to map psychoeducational interventions for the management of type 2 diabetes mellitus in Asian countries. The review followed the Arksey and O'Malley framework and was reported in accordance with the PRISMA extension for scoping reviews (PRISMA-ScR).

Eligibility Criteria

Screening and selection were performed independently by three reviewers (RS, HH, and IY) using the PRISMA flow (see Figure 1). Research questions and inclusion thresholds were structured with the PICOT framework:

- Population (P): Individuals with diabetes mellitus (type 2) living in Asian countries.
- Intervention (I): Psychoeducational programs.
- Comparator (C): Usual care or standard education.
- Outcomes (O): Patient-reported and clinical outcomes related to diabetes self-management (eg, HbA1c and other glycemic indicators, diabetes knowledge, self-efficacy, medication adherence, lifestyle behaviours, diabetes distress/ depression, quality of life, etc).
- Type of study (T): Randomized controlled trials (RCTs) studies.

Inclusion criteria in this study were full-text, English-language studies employing RCT designs that evaluated psychoeducational interventions for diabetes management in Asian settings. Although this review was conducted as a scoping review with the primary aim of mapping and describing the range of psychoeducational interventions, delivery formats, and outcome measures, we focused on studies with stronger internal validity. Therefore, we restricted inclusion

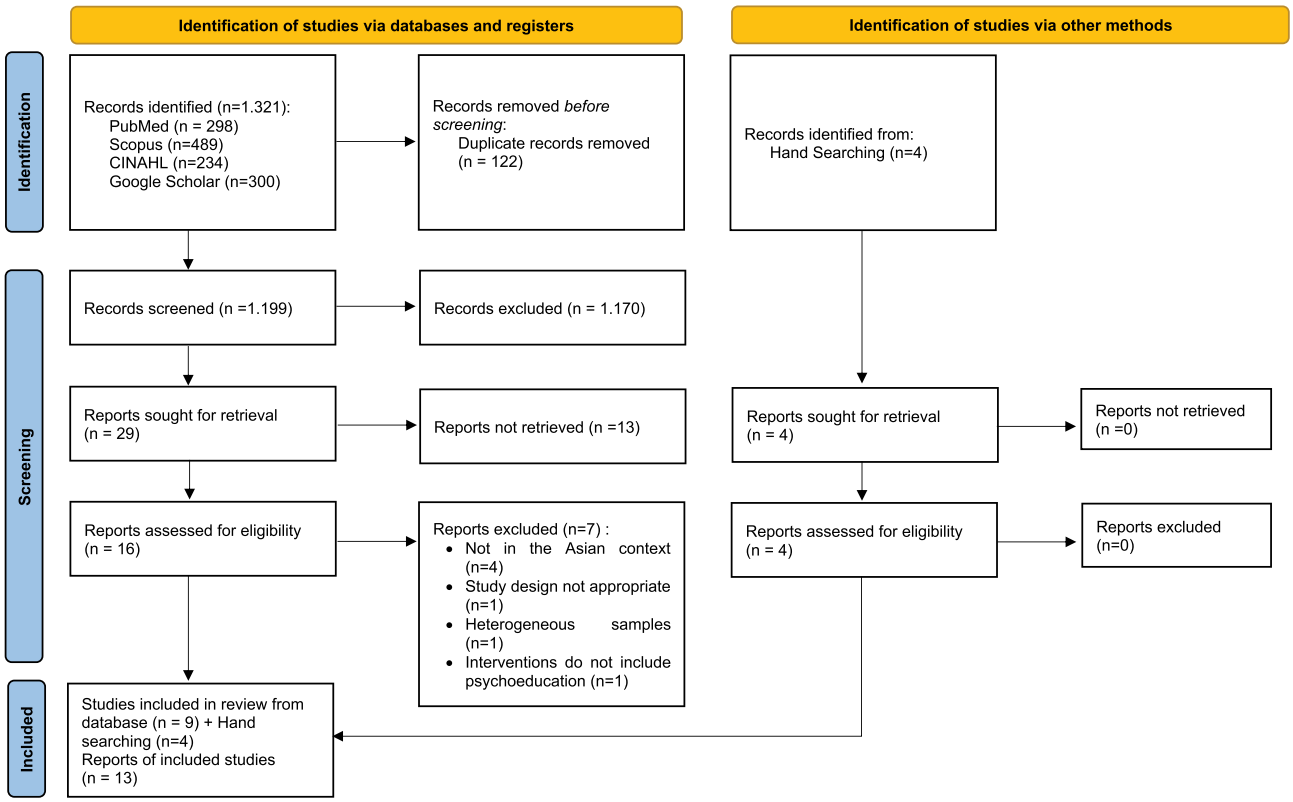

Figure 1 PRISMA Flow Diagram. Adapted from Page MJ, McKenzie JE, Bossuyt PM et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71. Creative Commons.[46]

to randomized controlled trials (RCTs), which are generally considered the most robust design for evaluating intervention effects, and synthesized their findings narratively.

Articles were excluded if the full text was unavailable, not in English, or were secondary research (eg, reviews, commentaries). No date limits were applied to maximize coverage. Full-text availability was required to enable detailed extraction of intervention components, outcome measures, and methodological characteristics, as well as to allow a comprehensive critical appraisal. Articles were classified as "full text unavailable" only when the complete manuscript could not be obtained despite attempts through institutional subscriptions, inter-library access, and/or direct contact with the corresponding authors.

Search Strategy

A literature search was carried out by three independent reviewers (RS, HH, and IY) comprehensively through six databases: CINAHL, PubMed, Scopus, and Taylor & Francis on 28 July 2025. Core search keywords combined controlled terms and keywords for diabetes, psychoeducation, and outcomes, restricted to Asian contexts. The keywords used were:

> diabetes type 2[MeSH Terms]) OR (diabetes mellitus[MeSH Terms] AND psychoeducational intervention OR psychoeducation OR psycho education[MeSH Terms] OR cognitive behavior therapy[MeSH Terms] OR cognitive behavioral therapies[MeSH Terms] OR CBT AND clinical outcome OR patients outcome OR Psychologycal distress OR depression[MeSH Terms] OR anxiety[MeSH Terms] OR mental health[MeSH Terms] OR mental illness[MeSH Terms] OR quality of life[MeSH Terms] OR psychologycal well being.

Boolean operators AND/OR were used to refine and broaden retrieval across databases. The authors also performed hand searching (backward/forward citation tracking of included papers and relevant reviews) on Google Scholar to identify additional eligible studies.

Study Selection and Quality Appraisal

All records were de-duplicated in Mendeley before independent title/abstract and full-text screening against the eligibility criteria. Methodological quality was assessed by two reviewers *(RS* and HH) using the Joanna Briggs Institute (JBI) critical appraisal tools: 13 items for RCTs. Each item was rated Yes/No/Unclear/Not applicable; "Yes" scored 1, and other responses scored 0. Studies with a JBI score <70% were excluded. Discrepancies were discussed, and a consensus was reached among all authors. In this study, no unresolved disagreements remained.

Data Extraction and Synthesis

Data were extracted by two reviewers *(RS* and HRA) into standardised tables capturing: author/year, country, design, sample size, participant characteristics, intervention model, comparator, outcomes, and main findings, and rechecked by HH and IY. For transparency and comparability, extracted information was organized into four summary tables: Table 1 (JBI score of included studies), Table 2 (Study Characteristics such as study, country, design, participants, measures, intervention, and control, Table 3 (Patient Characteristics such as mean age, education, female, HbA1c, and comorbidity, and Table 4 (Intervention Characteristics include intervention, method, content, follow-up and frequency, and outcome.

All extracted data were verified in a final cross-check to minimize errors prior to synthesis. The analytic procedure commenced with the systematic organization and tabular display of extracted data by study. Each finding was then examined and explicated in depth, strictly aligned with the extracted variables. To safeguard accuracy and mitigate extraction error, the authors conducted a final audit of all included studies. Given heterogeneity in intervention models and outcomes, the authors undertook a thematic, exploratory narrative synthesis rather than meta-analysis.

Results

Study Selection

The initial database search identified 1,321 records (PubMed: 298, Scopus: 489, CINAHL: 234, and Google Scholar: 300). An additional four records were obtained through hand searching. After removing 122 duplicates, a total of 1,199

Table 1 Critical Appraisal Results

Study	Design	Critical Appraisal Score
Abbas et al (2023)[33]	RCT	9/13
Cinar et al (2014)[47]	Prospective RCT	9/13
Chew et al (2018)[48]	Cluster RCT	9/13
Chiu et al (2016)[49]	RCT	9/13
Guo et al (2022)[50]	RCT	10/13
Jung et al (2015)[51]	RCT	9/13
Li et al (2016)[52]	RCT pilot study	9/13
Liu et al (2015)[53]	RCT	10/13
Maghsoudi et al (2019)[54]	RCT	10/13
Sharif et al (2014)[55]	RCT	11/13
Shayeghian et al (2016)[56]	RCT	10/13
Xu et al (2021)[32]	RCT	10/13
Zuo et al (2020)[57]	RCT	10/13

records were screened based on title and abstract. Of these, 1,170 records were excluded for failing to meet the inclusion criteria. Subsequently, 29 full-text articles were retrieved for eligibility assessment, of which 13 were unavailable in full text. Sixteen studies underwent full-text review, of which seven were excluded due to factors such as non-Asian context (n=4), inappropriate study design (n=1), heterogeneous samples (n=1), and interventions that did not include psychoeducation (n=1). The hand-searched studies (n=4) all met eligibility criteria. In total, 13 studies were included in this review, comprising nine from database searches and four from hand searching.

Critical Appraisal Results

The critical appraisal using the JBI checklist demonstrated that the majority of studies achieved relatively high methodological quality, with scores ranging from 9/13 to 11/13 (see Table 1). This indicates that most trials fulfilled the key criteria for randomized controlled trials, although some limitations prevented them from reaching the maximum score. Meanwhile, the remaining studies generally scored between 9 and 10 out of 13, which still represents good quality but suggests a minor risk of bias, particularly in aspects related to blinding. This challenge is inherently difficult to achieve in psychoeducational interventions. Overall, the appraisal results indicate that the included studies are methodologically robust and can be considered reliable.

Characteristics of Studies

In this review, the majority of studies analyzed were RCTs conducted in several Asian countries, focusing on psychoeducational and psychosocial interventions for patients with type 2 diabetes mellitus (T2DM) (see Table 2). Most of the studies identified in this review originated from China,[32,50,52,53,57] with a total of six studies evaluating various forms of psychoeducational interventions in patients with type 2 diabetes mellitus. In addition, Iran (n=3) was in second place with three studies,[54–56] Pakistan, Turkey, Malaysia, Taiwan, and Korea each contributed only one study. In general, these studies recruited adult and elderly patients with sample sizes ranging from 53 participants in the pilot study to over 1,200 in the community-scale trial.[32,52] This variation in sample sizes demonstrates efforts to assess the effectiveness of interventions not only on a small clinical scale, but also in a broader community setting.

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Table 2 Characteristic of Studies

Study	Country	Design	Participant	Measurement	Intervention	Control
Abbas et al (2023)[33]	Pakistan	RCT	90 patients with T2DM	• Diabetes Distress Scale (DDS) • Patient Health Questionnaire (PHQ) • Short Health Anxiety Inventory (SHAI) • Diabetes Quality of Life Questionnaire (DQLQ) • General Medication Adherence Scale (GMAS)	Structured and individual Cognitive Behavior Therapy (CBT), conducted over 16 weeks with 8–10 sessions	Waitlist (no therapy, only pre- and post-measurements) .
Cinar et al (2014)[47]	Turkey	Prospective RCT	186 patients with T2DM	• HbA1c (glycated hemoglobin) • Tooth-Brushing Self-Efficacy Scale (TBSES) • Problem Areas in Diabetes Scale (PAID – 13 item modified version) • Stress (1 item from WHO QoL)	Health coaching 5–6 face-to-face sessions + 3–4 telephone sessions over 10 months	Formal Health Education: standard education, general information.
Chew et al (2018)[48]	Malaysia	Cluster randomized controlled trial	124 Malay adults with T2DM	• Diabetes Distress Scale (DDS-17) • PHQ-9 (depression) • Malay Brief Illness Perception Questionnaire (MBIPQ), • WHOQOL-BREF (quality of life), • Diabetes Management Self-Efficacy Scale (DMSES) • Summary of Diabetes Self-Care Activities (SDSCA) • Positive Affect (CES-D subscale) • Clinical outcomes (HbA1c)	VEMOFIT (Value-based Emotion-Focused Educational Programme)	Attention control (active listening and support, not structured)
Chiu et al (2016)[49]	Taiwan	RCT	174 patients with T2DM	• CES-D 10 – Center for Epidemiologic Studies Depression Scale (depressive symptoms) • PAID – Problem Areas in Diabetes Scale (diabetes-specific emotional distress) • HbA1c – glycemic control (medical chart, followed up to 8 months)	Minimal Psychological Intervention (MPI) Delivered via telephone by trained nurses/ psychology assistants	Usual care
Guo et al (2022)[50]	China	RCT	100 patients with T2DM	• DDS-17 for distress • Diabetes Self-Efficacy Scale • SDSCA for Summary of Diabetes Self-Care Activities • HbA1	Nurse-led Mindfulness-Based Stress Reduction (MBSR) + usual diabetes education	Usual diabetes education only
Jung et al (2015)[51]	Korea	RCT	56 adults with T2DM	• Diabetes Distress Scale (DDS-17) – diabetes-related distress • Perceived Stress Response Inventory (PSRI) – psychological stress response • Plasma cortisol – stress biomarker (RIA method) • Fasting blood glucose – clinical outcome	Korean mindfulness-based stress reduction (K-MBSR) 8-week Korean mindfulness-based stress reduction program. Twice weekly, 60–120 min sessions	Patient education sessions (standard DM management education).
Li et al (2016)[52]	China	RCT pilot study	53 patients with T2DM	• Diabetes Distress Scale (DDS) – diabetes-related distress • General Self-Efficacy Scale (GSES) – overall self-efficacy • Diabetes Empowerment Scale – Short Form (DES-SF) – psychosocial self-efficacy • WHOQOL-BREF – quality of life	Diabetes Conversation Maps Education: Six 1-hour group sessions over 4 weeks	Traditional Diabetes Education Six 1-hour classroom-style sessions over 4 weeks

Liu et al (2015)[53]	China	RCT	127 patients with T2DM	• Self-Rating Depression Scale (SDS) – depressive symptoms • Self-Rating Anxiety Scale (SAS) – anxiety symptoms • Diabetes Knowledge Test (DKT) – diabetes knowledge • Diabetes Self-Care Scale (DSCS) – self-management behaviors • Diabetes Distress Scale (DDS) – diabetes-related distress • Audit of Diabetes-Dependent Quality of Life (ADDQoL) – quality of life • Clinical outcomes: HbA1c	Peer Education Support (PES) + Usual Diabetes Education (UDE) Health education with psychosocial support and emotional counseling,	Usual Diabetes Education (UDE)
Maghsoudi et al (2019)[54]	Iran	RCT	80 elderly with T2DM	• Diabetes Distress Scale (DDS-17)	Acceptance and Commitment Therapy (ACT) Group therapy, eight sessions, 90 minutes each, once weekly; Delivered by a clinical psychologist with support from a nurse.	Routine Education and Care
Sharif et al (2014)[55]	Iran	RCT	60 patients with T2DM	• Beck Depression Inventory (BDI, 21 items) **–** depressive symptoms • HbA1c **–** glycemic control	Cognitive Behavioral Group Therapy (CBGT) Conducted by a psychiatrist, a psychiatric nursing professor, and a trained student	Routine care at the clinic, no structured therapy
Shayeghian et al (2016)[56]	Iran	RCT	100 patients with T2DM	• HbA1c – glycemic control (pre, post, 3-month follow-up) • Summary of Diabetes Self-Care Activities (SDSCA) – self-care behaviors • Acceptance and Action Diabetes Questionnaire (AADQ) – acceptance of diabetes-related thoughts and feelings • Brief COPE – coping styles	Group-based Acceptance and Commitment Therapy (ACT) + standard education	Education-only control group
Xu et al (2021)[32]	China	RCT	1,208 adults with T2DM and comorbid anxiety/depression (597 in GCBT, 611 in UC) from 48 communities	• HbA1c • PHQ-9 (depression) • GAD-7 (anxiety) • Pittsburgh Sleep Quality Index (PSQI)	Group CBT (GCBT) + Usual Care: Delivered by trained general practitioners	Usual Care
Zuo et al (2020)[57]	China	RCT	187 adults with T2DM	• PSQI – sleep quality • Diabetes-Specific Quality of Life Scale (DSQLS) • HbA1c	CBT for Sleep + Aerobic Exercise + UC: Delivered in groups (8–10 people) by trained general practitioners (3-day training).	Usual Care

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Table 3 Patient Characteristics of the Included Studies

Study	Mean Age	Education	Female (%)	HbA1c (IG) (%)		Comorbidity (IG)
				Pre	Post	
Abbas et al (2023)[33]	36.93(6.87)	Matric (57.7%)	51.2	N/I	N/I	Hypertension (60.1%)
Cinar et al (2014)[47]	30–65 years	N/I	N/I	7.5 ±1.5	6.9 ± 1.3	N/I
Chew et al (2018)[48]	55.7 years	Secondary school (60%)	60	9.9±1.8	9.4 ± 1.9	Hypertension (81%) Dyslipidaemia (68%)
Chiu et al (2016)[49]	64.7 (8.3)	6 grades and below (40%)	45.9	8.1	0.4	Hypertension (54.1) Lung diseases (2.4) Heart diseases (11.8)
Guo et al (2022)[50]	61.12 (7.34)	Senior high school and less (62%)	58	7.91 ± 1.66	7.30±1.18	N/I
Jung et al (2015)[51]	67 (9.13)	Elementary school (66.67%)	47.6	N/I	N/I	N/I
Li et al (2016)[52]	63.17 (9.44)	High school or college (45.8%)	50	N/I	N/I	N/I
Liu et al (2015)[53]	64.1 (4.73)	High school (37.5%)	56.25	7.39 ± 1.07	7.26 ± 0.87	N/I
Maghsoudi et al (2019)[54]	62.95 (3.86)	N/I	N/I	N/I	N/I	N/I
Sharif et al (2014)[55]	51-60 years	<Diploma (72.4%)	72.4	N/I	N/I	N/I
Shayeghian et al (2016)[56]	55.18 (8.26)	High school and lower (58%)	66	N/I	N/I	N/I
Xu et al (2021)[32]	63.81 (9.94)	N/I	68.84	7.97 ± 1.75	7.33 ± 1.32	N/I
Zuo et al (2020)[57]	63.9 (10.2)	N/I	66	8.1±1.9	7.1 ± 1.1	N/I

Abbreviation: N/I; No Information.

The measurement instruments used are varied, reflecting the research's multidimensional focus on clinical, psychological, and behavioral aspects of self-care. Most studies measure diabetes distress using the Diabetes Distress Scale (DDS). At the same time, symptoms of depression and anxiety are assessed using standard instruments such as the PHQ-9, CES-D, SDS, and GAD-7.[32,33,49,53] In addition, clinical indicators, such as HbA1c levels, are the primary measures of glycemic control.[47,56,58] Some studies also added instruments for quality of life,[48,52] self-efficacy,[50,52] self-care,[53,56] and sleep aspects using the Pittsburgh Sleep Quality Index (PSQI).[32,57]

Characteristics of Participants

The characteristics of the patients included in the study showed a wide age range (see Table 3), from a mean of 36.9 years in Pakistan[33] to 67 years in Korea.[51] Most studies involved middle-aged and elderly participants, reflecting the highest burden of diabetes in these age groups.[32,48,49]

In terms of education and gender, the majority of patients have a lower secondary education background, with a large proportion only completing elementary to high school.[49–51] A small proportion of studies involved participants with higher education, such as high school or college graduates.[52] Meanwhile, the proportion of women tends to be higher, ranging from 45.9% to 72.4%, with some studies reporting a predominance of female participants.[32,56]

The mean HbA1c levels in the intervention group ranged from around 7.3% to almost 10%, indicating that the study participants had varying glycemic control, from relatively well controlled to poor.[48,53,57] The most frequently reported comorbidity was hypertension, followed by dyslipidemia, heart disease, lung disease, and other chronic conditions, indicating a high burden of multimorbidity in the diabetes population.[33,48,49]

Table 4 Characteristic of Intervention, Content, and Outcomes

Study	Intervention	Method	Content	Follow-up and Frequency	Outcomes
Theme I: Cognitive-Behavioral and Acceptance Intervention					
Abbas et al (2023)[33]	Cognitive Behavior Therapy (CBT) for patients with Type 2 Diabetes Mellitus (T2DM)	Individual sessions (face-to-face) by clinical psychologists, structured protocol based on Beck, Hilliard, and Hood	- Psychoeducation (adherence, depression, anxiety, QoL) - Cognitive conceptualization and restructuring - Adherence training - Activity scheduling - Problem-solving skills - Coping strategies improvement - Muscle relaxation and guided imagery - Lapse & relapse prevention - Homework assignments and diary keeping	8–10 sessions over 16 weeks (one session every 10–12 days, 45–60 minutes each).	**Significant**: - Reduced Diabetes Distress, Depression, and Health Anxiety - Improved Quality of Life, Medication Adherence, and Physical Activity.
Sharif et al (2014)[55]	Cognitive Behavioral Group Therapy (CBGT)	Group therapy delivered by a psychiatrist, a psychiatric nursing professor, and a trained nursing student	Psychoeducation, cognitive restructuring, stress management, relaxation, assertiveness, homework.	Duration: 4 weeks; Sessions: 8 sessions (90 min each), held twice weekly	**Significant**: Depression scores significantly decreased **Not significant**: HbA1c improved significantly within both groups, but no significant difference between CBGT and control ($p = 0.473$)
Xu et al (2021)[32]	Group Cognitive Behavioral Therapy (GCBT) + Usual Care	Delivered by **general practitioners** trained in a 3-day CBT course; Homework + daily practice; peer support + GP monitoring	- Psychoeducation on stress and diabetes - Breathing relaxation, progressive muscle relaxation, and Baduanjin exercise - Cognitive restructuring, emotion regulation, stress management - Problem-solving, self-monitoring, and behavioral activation	10 sessions over 7 weeks; Usual GP follow-up every 3 months for both groups	**Significant**: - Reduced depression and anxiety - Improved HbA1c at 6 and 12 months - Better sleep quality - Improved BMI and stress outcomes **Not significant**: HbA1c was not different at 2 months
Zuo et al (2020)[57]	CBT for Sleep + Aerobic Exercise + Usual Care	Delivered in groups of 8–10 by GPs trained in CBT (3-day training); 40–50 min sessions + 10–15 min discussion	- Psychoeducation: sleep hygiene, sleep–diabetes link - Sleep diary use - Cognitive restructuring of irrational beliefs about sleep - Relaxation: breathing, progressive muscle relaxation, meditation - Behavioral activation - Aerobic exercise: 150 min/week, supervised and home-based	7 sessions across 2 months; Follow-up assessments at 2 and 6 months	**Significant**: - Sleep quality improved (PSQI) - QoL improved (DSQLS) - HbA1c reduced significantly at 6 months **Not significant**: HbA1c change at 2 months is not significant

(*Continued*)

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Table 4 (Continued).

Study	Intervention	Method	Content	Follow-up and Frequency	Outcomes
Maghsoudi et al (2019)[54]	Acceptance and Commitment Therapy (ACT)	Group-based therapy conducted by a clinical psychologist and a nurse	- Session 1: Building therapeutic communication, introduction, creative helplessness - Session 2: Control is the problem (metaphors, emotion control) - Session 3: Acceptance of thoughts, cognitive defusion, self vs language - Session 4: Observing self vs conceptualized self, mindfulness exercises - Session 5: Values clarification, linking goals with values - Session 6: Committed action, overcoming obstacles, and willingness - Session 7: FEAR algorithm (identifying barriers), forgiveness, ACT committed action algorithm - Session 8: Review goals, relapse prevention, and planning for post-therapy	Duration: 8 weeks; Sessions: once weekly, 90 minutes each; and Follow-up: emotional distress measured at 3 time points → baseline, post-intervention, and 2 months after intervention	**Significant**: Emotional distress significantly reduced in the ACT group immediately after the intervention (p=0.02)
Shayeghian et al (2016)[56]	Group-based Acceptance and Commitment Therapy (ACT) + standard education	10 group sessions (approx. 2 hours each); Conducted by a clinical psychologist trained in ACT for Diabetes	- Mindfulness meditation and experiential exercises - Metaphors and role play (eg, "chessboard metaphor," "passengers on the bus") - Acceptance of diabetes-related thoughts and feelings - Cognitive defusion techniques - Values clarification (identifying personal values and goals) - Committed action (setting behavioral goals aligned with values) - Relapse prevention and maintaining adherence	10 weekly sessions (~2 hours each); Assessments: baseline, post-intervention, and 3-month follow-up	**Significant**: - HbA1c significantly decreased at posttest and 3-month follow-up - Self-care behaviors significantly improved - Acceptance significantly increased **Not significant**: No significant changes were observed in the control group beyond routine education
Theme II: Mindfulness and Stress Reduction Intervention					
Guo et al (2022)[50]	Nurse-led Mindfulness-Based Stress Reduction (MBSR) + usual diabetes education	8 in-person sessions during hospitalization + 8-week maintenance.	- Mindfulness training themes: non-judging, patience, beginner's mind, trust, non-striving, acceptance, letting go - Guided practices: mindfulness of breathing, body scan, standing, stretching, supine breathing - Home practice supported with 11 audio-guided sessions (total 233 minutes) - Participants submitted daily screenshots to monitor adherence Feedback and reminders are provided if participants miss practice	8 sessions across hospitalization (daily, 2 hours each) Maintenance: 8 weeks of WeChat-based practice (30 min/day, 6 days/week)	**Significant**: - Reduction in diabetes distress (DDS total and all four subscales) - Improvement in diabetes self-efficacy - Improvement in diabetes self-management (SDSCA) - Reduction in HbA1c (p = 0.03, group × time effect) **Not significant**: HbA1c improvement not significant after Bonferroni correction (borderline result)
Jung et al (2015)[51]	K-MBSR vs Walking	Conducted by a PI trained in MBSR (completed specialist course, weekly supervision)	- Mindful eating, body scan, mindful walking, breathing meditation, hatha yoga, quiet sitting - 8 themes (one theme each week) - Audio-CD guided practice + home assignments	2 sessions/week × 8 weeks (16 total)	**Significant (within groups)**: - K-MBSR: reduction in cortisol and PAI-1 levels - Walking: reduction in psychological stress, cortisol, PAI-1 - Patient education: reduction in psychological stress and PAI-1 **Not significant (between groups)**: No significant differences among the three groups for stress response, blood glucose, or vascular inflammation

Theme III: Educational and Coaching-Based Intervention					
Cinar et al (2014)[47]	Health Coaching (HC) vs Formal Health Education (HE)	Delivered by a dental health professional, face-to-face coaching sessions	- Empowerment for daily diabetes and oral health practices (healthy diet, physical activity, tooth-brushing) - Capacity building (self-efficacy, self-esteem) - Taking responsibility for one's own health - Individualized goals and monitoring progress	**Duration**: 16 months total (10-month intervention + 6-month follow-up) **Frequency**: HC: 5–6 in-person + 3–4 phone sessions	**Significant**: - HbA1c (7% reduction vs no change) - Clinical attachment loss - Tooth-brushing self-efficacy - Stress levels
Chew et al (2018)[48]	VEMOFIT (Value-based Emotion-Focused Educational Programme)	Group-based education, led by Malay nurse-coaches with physician support	- Exploration of personal beliefs about diabetes, complications, control targets, lifestyle, and medication - Training emotional skills (recognizing and managing self/ others' emotions - Social support, short- and long-term goal setting - Workbook and take-home diary; option to bring significant other	4 biweekly group sessions over 6 weeks, a booster session at 3 months, and a follow-up at 6 months.	**Significant**: Reduced diabetes distress improvements in HbA1c, blood pressure, and self-efficacy; VEMOFIT tended toward improved quality of life and self-efficacy
Chiu et al (2016)[49]	Minimal Psychological Intervention (MPI)	Delivered via telephone by trained nurses/psychology assistants	- Exploration of daily lifestyle (diet, sleep, exercise, blood glucose control) - Discussion of feelings and lifestyle changes post-diagnosis - Problem-solving tailored to individual issues - Training in self-management skills - Reattribution therapy (encouraging alternative explanations, reducing self-blame) - Role-playing to practice alternative coping strategies	**Duration**: 6 weeks of intervention **Contacts**: 3–4 telephone calls (30–60 min each) **Assessments**: baseline, end of intervention (6 weeks), 1-month post (10 weeks), HbA1c monitored up to 8 months	**Significant**: - Reduction in diabetes-specific distress among patients with >1 complication - Improvement in glycemic control was observed 3–8 months post-intervention **No significant**: Depressive symptoms (CES-D)
Li et al (2016)[52]	Diabetes Conversation Maps Education	Small group (≈7 participants per session), Interactive discussion using visual Conversation Map tools and discussion cards	Conversation Maps sessions (6 total): - Diabetes overview - Living with diabetes - Risk factors and complications - Starting insulin - Foot care - Healthy eating and exercise - Emphasis on interactive dialogue, peer support, and goal-setting after each session	6 one-hour sessions over 4 weeks; Required attendance: ≥4 sessions; Monthly follow-up phone calls for 3 months	**Significant**: - Decreased significant decrease in the intervention group at 6 months vs the control group - Improved psychosocial self-efficacy, psychological, and environmental domains significantly **Not significant**: General self-efficacy and QoL
Liu et al (2015)[53]	Peer Education Support (PES) + Usual Diabetes Education (UDE)	Delivered through group discussions, peer support activities, exercise together, and biweekly contacts (phone/SMS/email/ meetings)	- Group discussions on diet, medication, psychological adjustment, lifestyle, and homemade recipes - Peer leaders exercising with peers ≥150 min/week - Emotional support, positive encouragement, and role modelling - Problem-solving, role-playing, goal-setting, and monitoring - Continuous reminders for behavioral change and self-care adherence	Duration: 6 months; Group discussions: at least once per month; Peer leader contact: at least once every 2 weeks; Exercise with peers ≥150 min/week	**Significant**: Improved anxiety, depression, diabetes knowledge, distress, self-management, and quality of life. **Not significant**: No significant differences in overall HbA1c, BMI, blood pressure, or lipid profiles between groups after 6 months

Characteristics of Intervention

The analysis of intervention characteristics revealed considerable variation in both format and delivery across the included studies (see Table 4). Although the interventions were diverse, they could be systematically grouped into three major themes based on their theoretical foundation, delivery method, and educational content. The first theme encompasses cognitive-behavioural and acceptance-based interventions, which focus on cognitive restructuring, emotional regulation, and value-based behavioural change. The second theme highlights mindfulness and stress-reduction intervention, emphasizing awareness, relaxation, and stress management. Finally, the third theme captures educational- and coaching-based interventions that integrate health education, counseling, peer support, and coaching strategies. These three themes provide a structured framework for understanding how psychoeducational interventions have been designed and implemented in Asian settings.

Theme I: Cognitive-Behavioral and Acceptance Intervention

Cognitive-behavioral and acceptance-based interventions were the most dominant categories in this study. Cognitive Behavioural Therapy (CBT), both in individual and group formats, is widely used to improve emotional regulation, reduce distress, and enhance self-management in patients with diabetes.

Cognitive and acceptance-based interventions are generally delivered with structured modules and a consistent schedule. Abbas et al (2023) conducted 16 weeks of individual CBT (8–10 sessions, 45–60 minutes), consisting of psychoeducation on depression, anxiety, and quality of life, as well as skills training such as cognitive restructuring, problem-solving, scheduled activities, and relaxation.[33] Sharif et al (2014) provided group CBT over 8 sessions (2 times per week, 90 minutes) that included psychoeducation, cognitive restructuring, stress management, relaxation exercises, and homework.[55] In China, Xu et al (2021) developed a group CBT guided by trained general practitioners, consisting of 10 sessions over 7 weeks, encompassing stress and diabetes psychoeducation, breathing relaxation, progressive muscle relaxation, Baduanjin exercises, and cognitive restructuring, plus routine monitoring every 3 months.[32] Meanwhile, Zuo et al (2020) adapted CBT for sleep problems through 7 group sessions (40–50 minutes plus a short discussion) with materials on sleep hygiene, cognitive restructuring related to sleep, use of a sleep diary, relaxation exercises, and 150 minutes of aerobic exercise per week.[57]

Meanwhile, Acceptance and Commitment Therapy (ACT)-based interventions focus more on accepting diabetes, mindfulness, clarifying life values, and committing to behavioral change. Maghsoudi et al (2019) conducted 8 group ACT sessions (90 minutes each week) that included an introduction to ACT, mindfulness exercises, cognitive defusion, values clarification, and relapse prevention.[54] Shayeghian et al (2016) presented 10 group ACT sessions (2 hours per week) led by trained psychologists, including meditation, role-play, metaphors, acceptance of diabetes-related thoughts, and values-based action planning.[56]

Theme II: Mindfulness and Stress Reduction Intervention

Mindfulness-based programs typically integrate mindfulness exercises, meditation, and gentle yoga into a psychoeducational curriculum. Guo et al (2022) implemented Nurse-led Mindfulness-Based Stress Reduction for 8 intensive sessions during hospitalization, followed by an 8-week WeChat-based maintenance phase.[50] The material includes mindfulness of breathing, body scans, mindful stretching, and exercises to accept thoughts without judgment. Participants also engage in independent practice for 30 minutes per day, six days a week, with monitoring through the submission of daily practice logs.[50] Then, Jung et al (2015) adapted the Korean version of MBSR (K-MBSR) with an emphasis on mindful eating, body scan, mindful walking, breathing, hatha yoga, and silent meditation. The intervention consisted of 16 sessions (2 per week for 8 weeks), guided by trained facilitators, and included audio CDs and homework.[51] With this structure, patients are taught to become more aware of the relationship between stress, emotions, and diabetes management through consistent, repetitive practice.

Theme III: Educational and Coaching-Based Intervention

Interventions in this theme centre on health education, coaching, and social support, using a variety of methods, from individual counselling to educational groups to peer support. Cinar et al (2014) implemented health coaching through 5–6 face-to-face sessions plus 3–4 telephone sessions over 10 months, accompanied by a 6-month follow-up. The coaching material focuses on patient empowerment in diet, physical activity, oral health, and self-health responsibility.[47] Chew et al (2018) implemented the VEMOFIT program as 4 group sessions (every 2 weeks for 6 weeks) led by nurses, with support from doctors.[48] The content emphasizes exploring patients' beliefs about diabetes, emotional skills, social support, and setting short- and long-term goals. The program includes a workbook, diary, booster session at month-3, and follow-up at month-6.[48]

Chiu et al (2016) used Minimal Psychological Intervention (MPI) through 3–4 telephone calls lasting 30–60 minutes over 6 weeks.[49] The content includes exploration of daily lifestyle, discussion of feelings after diagnosis, problem solving, self-management exercises, and reattribution therapy.[49] In addition, Li et al (2016) developed Diabetes Conversation Maps Education, comprising 6 group sessions (1 hour each week for 4 weeks), based on visual tools and interactive discussions. Participants were invited to engage in a dialogue about diabetes, insulin, the risk of complications, foot care, diet, and physical activity, with monthly telephone follow-ups for 3 months.[52] Liu et al (2015) emphasized Peer Education Support (PES) with group discussions, joint activities such as sports ≥150 minutes per week, role-playing, goal-setting, and regular communication via SMS/telephone.[53] This intervention lasted 6 months, with meetings at least once a month and contact with a peer leader every 2 weeks.

Study Outcomes

The outcomes reported across the included studies can be broadly categorised into three domains: psychological, behavioural and self-management, and clinical and functional.

Theme I: Psychological Outcomes

Psychological outcomes were the most frequently assessed and demonstrated consistent benefits across different psychoeducational approaches. Significant reductions in diabetes-related distress were observed in several trials.[33,48–50,53] Improvements in depression and anxiety symptoms were reported in multiple studies,[32,33,55] while broader reductions in emotional distress, stress responses, and health anxiety were also documented.[33,54] Furthermore, acceptance of illness improved significantly following acceptance-based interventions.[56] Importantly, several studies also reported enhancements in quality of life (QoL) as part of the psychological outcomes.[32,33,48,53,57] Collectively, these findings emphasize the strong role of psychoeducational interventions in improving psychological well-being among individuals with diabetes.

Theme II: Behavioral and Self-Management Outcomes

Behavioral and self-management outcomes formed the second domain, highlighting changes in self-care behaviors and daily disease management. Interventions consistently led to improvements in self-efficacy and diabetes self-care, as reported across multiple trials.[33,48,50,52,56] Among group and peer-based interventions, patients also showed enhanced diabetes knowledge and adherence, which facilitated better disease management in everyday life.[32,53] These results suggest that psychoeducation not only improves psychological functioning but also strengthens patients' confidence and skills for long-term diabetes management.

Theme III: Clinical and Functional Outcomes

Clinical outcomes were frequently evaluated using objective biomedical indicators. Glycemic control (HbA1c) was the most commonly assessed parameter, with significant improvements reported in several studies, although results were not universally consistent.[32,47–49,56,57] Stress-related biomarkers, such as cortisol and PAI-1, were also reduced in one trial,[51] while oral health outcomes improved in another.[47] Beyond these, some interventions demonstrated additional benefits

such as better sleep quality and physiological resilience.[32,57] These findings suggest that psychoeducational interventions may contribute not only to psychosocial health but also to tangible biomedical improvements.

Discussion

This review aims to identify and synthesize psychoeducational interventions in the management of diabetes mellitus in Asia. From the results of the literature search, 13 RCTs were successfully included. These interventions can be grouped into three main models: (1) cognitive-behavioral and acceptance interventions, (2) mindfulness and stress reduction interventions, and (3) educational and coaching-based interventions. The outcomes achieved vary, but in general can be grouped into three major domains: psychological (diabetes distress, depression, anxiety, acceptance, quality of life), behavioral (self-care, self-efficacy, adherence, knowledge), and clinical (HbA1c, BMI, stress biomarkers).

Overall, the results of this review show that psychological outcomes are the domain that most consistently shows improvement, confirming the relevance of psychoeducation as a primary intervention strategy to reduce the emotional burden of diabetes patients. Behavioral and clinical outcomes also show positive results, but with greater variation. Differences likely influence this in intervention intensity, facilitator competency, and the extent to which the program is adapted to the local cultural context. These findings align with global studies showing that psychoeducational interventions often have a faster impact on behavioural and psychosocial outcomes than on clinical indicators.[26,29,59]

CBT and ACT-based interventions are the most widely studied models, with high consistency in improving psychological outcomes. CBT is effective because it focuses on cognitive restructuring and emotion regulation skills, which directly reduce distress and increase adherence.[33,55] ACT emphasises acceptance of chronic conditions and a commitment to the value of life, both of which are relevant in the context of diabetes requiring long-term care.[54,56] The theoretical justification is that psychological burdens such as depression and distress often inhibit self-care behaviors, so interventions that address cognitive-emotional barriers may produce indirect effects on glycemic control.[54,56] However, the limitations of this model include the need for trained personnel (psychologists/psychiatrists) and the high intensity of sessions, which may make it less practical for primary care settings with limited resources.[54,56]

Mindfulness-based interventions, although fewer in number, are unique in that they focus on mindfulness and physiological stress regulation.[50,51] Guo et al (2022) showed that nurse-led MBSR with digital support reduced diabetes distress and increased self-efficacy.[50] Mindfulness increases self-regulation, decreases physiological activation of stress (cortisol), and improves perception of illness.[51] This model is easier to implement in the community because it does not always require specialist staff, but can be trained to nurses or facilitators or health workers.[60–62] The challenge is maintaining patient self-practice consistency, which often decreases over time.[60–62] Compared to CBT/ACT, mindfulness may be technically simpler, but its effects tend to be more optimal and depend on adherence to practice.[63,64]

Education and coaching models are the most varied and easily adaptable across cultures. Interventions such as health coaching,[47] VEMOFIT,[48] Conversation Maps,[52] and peer support[53] emphasizes increased knowledge, self-management skills, and social support. The outcomes achieved varied: some studies reported clinical improvements (HbA1c, blood pressure), while others focused more on psychological and behavioral outcomes. Rationally, this model works through a patient empowerment mechanism. When patients understand their disease, receive emotional support, and engage in group settings, their motivation and self-efficacy increase, ultimately influencing self-care behaviors.[58] The advantage of this model is its scalability, which can be implemented in primary care at a relatively low cost, using nurses, peer leaders, or community educators. However, its clinical effectiveness tends to be more variable than that of CBT or ACT, as it depends on the intensity of implementation and the level of patient involvement.

When comparing models, CBT/ACT has the most substantial evidence for psychological outcomes; mindfulness offers a more straightforward yet more effective approach to stress regulation; and education and coaching excel in affordability, sustainability, and cultural adaptability.[50] In the Asian context, education- and coaching-based models have the potential to be more widely adopted due to their alignment with primary care capacity and the needs of large populations. However, their clinical outcomes are less consistent. Conversely, CBT/ACT is more appropriate for patients with high distress or significant psychological problems. Therefore, the choice of intervention model should be tailored to the patient's profile, clinical goals, and available resources.

Although most psychoeducational interventions show positive results, some studies report insignificant outcomes, particularly in clinical settings. For example, Chiu et al (2016) found that while diabetes distress was reduced, depressive symptoms did not show significant improvement.[49] Liu et al (2015) also reported that HbA1c, blood pressure, body mass index, and lipid profile were not significantly different between the intervention and control groups, although knowledge and quality of life increased.[53] Similar findings were reported by Sharif et al (2014), where a decrease in HbA1c occurred in both groups but did not differ significantly between groups.[55] Even in a mindfulness study in Korea, Jung et al (2015) found no differences between groups for stress response, blood glucose levels, and vascular inflammation.[51] These results indicate that although psychoeducation has a positive impact on psychological and behavioral dimensions, the effects on clinical indicators tend to be more variable and may be influenced by the duration of the intervention, sample size, patient baseline, and ongoing follow-up.

In general, the most widely used and proven effective content includes: psychoeducation about diabetes and its complications, cognitive restructuring, relaxation techniques (breathing, progressive, mindfulness), clarification of life values, problem solving, goal setting, social support, and relapse prevention strategies.[33,50,52,57] Tools such as workbooks, diaries, interactive discussions, and traditional physical exercises (Tai Chi, Ba Duan Jin) are widely used. This confirms that the success of psychoeducation lies not only in the intervention's format, but also in the combination of knowledge transfer, strengthening psychological skills, and social empowerment.

The psychoeducational interventions identified in this review share many similarities with those implemented in non-Asian settings. Cognitive–behavioral and acceptance-based approaches, mindfulness-based stress reduction, and structured educational or coaching programs have all been widely described in Western populations, targeting standard mechanisms such as maladaptive cognitions, emotional regulation, self-efficacy, and health-related behavior change. However, several features of the Asian trials reflect culturally specific adaptations. Many interventions explicitly integrated local cultural and religious values, relied on group-based formats that capitalize on peer and family support, and were delivered by nurses or general practitioners within resource-constrained primary care systems. These characteristics suggest that, while the theoretical foundations of psychoeducational interventions are broadly comparable across regions, cultural tailoring in Asian countries may enhance acceptability, engagement, and feasibility without changing the core psychological mechanisms targeted.

Several barriers to implementing psychoeducation still need to be addressed. The main challenge is maintaining long-term patient engagement, particularly with high-frequency interventions or self-paced practice that requires discipline.[50,53] In addition, limited trained personnel, competing health service priorities, and uneven digital infrastructure are broad-scale obstacles.[65–68] To address this, integrating psychoeducation into routine diabetes services, training healthcare workers such as nurses and community workers, utilizing digital platforms, and adapting content to suit local culture and language can be effective strategies to increase the sustainability and impact of interventions.[69–71]

Strengths and Limitations

This review is among the first to comprehensively map psychoeducational interventions for diabetes management specifically within Asian countries. The study applied rigorous methodology guided by the Cochrane Handbook and reported in accordance with PRISMA standards, ensuring transparency and reproducibility. A structured eligibility framework (PICOT) was used, and methodological quality was appraised with the Joanna Briggs Institute (JBI) checklist, strengthening the reliability of the included evidence. The review also captured a broad spectrum of outcomes, psychological, behavioural, and clinical, providing a holistic understanding of intervention effects. Moreover, categorising interventions into three distinct models (cognitive-behavioural/acceptance, mindfulness or stress reduction, and educational/coaching) provides a practical framework for clinicians, researchers, and policymakers to design and implement culturally tailored programs.

Despite the strengths, several limitations must be acknowledged. First, the review included only randomised controlled trials published in English, potentially excluding relevant studies in local Asian languages and introducing language bias. Second, the heterogeneity of interventions, outcomes, and follow-up durations precluded meta-analysis, limiting the ability to draw pooled quantitative conclusions. Third, most included studies had relatively short follow-up periods, which constrained understanding of the long-term sustainability of psychoeducational benefits. Fourth, many interventions were conducted in controlled research settings, raising concerns about generalizability to real-world clinical practice, where resources and training may be limited.

Conclusion

This review demonstrates that psychoeducational interventions play a crucial role in the management of type 2 diabetes mellitus in Asian settings. All included studies were conducted among patients with type 2 diabetes, and three major models were identified: cognitive-behavioral and acceptance-based approaches, mindfulness and stress-reduction programs, and educational or coaching-based strategies. Across these studies, outcomes consistently indicated improvements in psychological well-being and self-management behaviours, whereas clinical outcomes, such as glycemic control, showed mixed results. These findings suggest that psychoeducation is highly effective in addressing the psychosocial and behavioral dimensions of type 2 diabetes care, although its impact on biomedical outcomes is more variable.

Although the current evidence is limited to type 2 diabetes, the psychological and behavioral mechanisms targeted by these interventions (eg, coping skills, emotional regulation, and self-management competencies) are also relevant to other types of diabetes. Future research should therefore not only include long-term evaluations and comparative effectiveness studies within type 2 diabetes, but also rigorously test psychoeducational interventions in other diabetes populations (such as type 1 diabetes and gestational diabetes) and in diverse age groups. In addition, greater use of digital and hybrid delivery models, along with evaluations of cost-effectiveness and implementation strategies, is needed to support broader integration of psychoeducation into routine diabetes care.

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